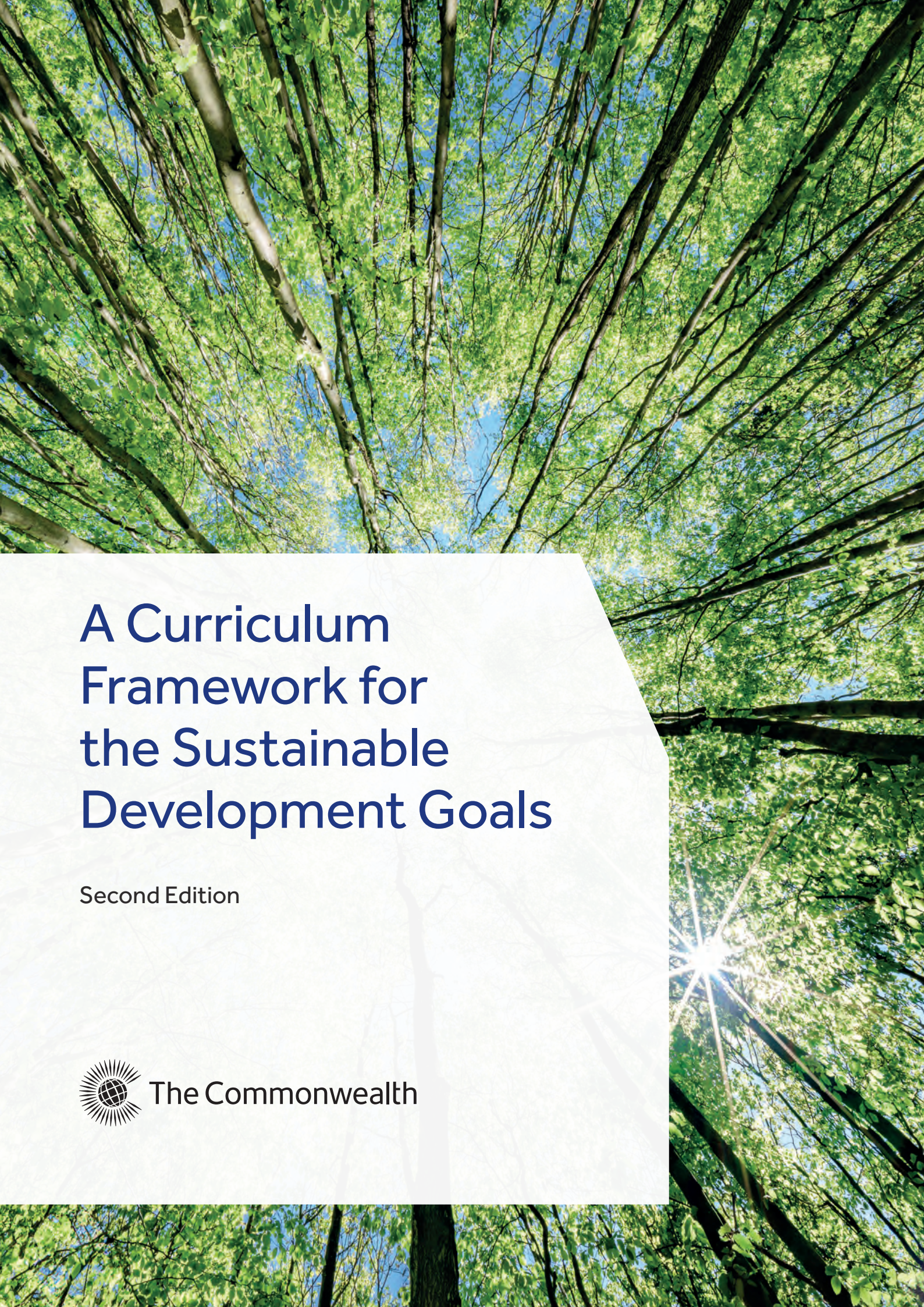

A Curriculum Framework for the Sustainable Development Goals

Second Edition

The Commonwealth

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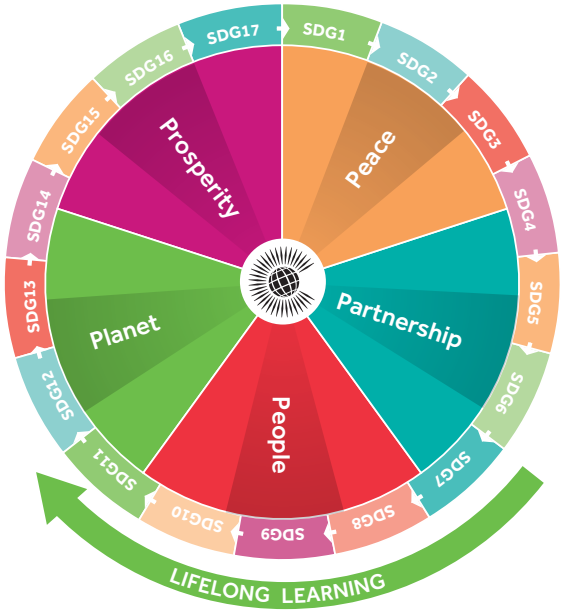

The Commonwealth

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Contents

Foreword

Education is the most powerful catalyst for change. It shapes values, builds skills, and unlocks the potential of every learner to create a more just, sustainable and hopeful future.

When the Curriculum Framework for the Sustainable Development Goals (SDGs) was first piloted in Fiji in 2016, we took a bold step to connect the global goals with local classrooms and to equip learners everywhere to contribute meaningfully to sustainable development.

Since then, this framework has inspired action across continents – from universities in Canada exploring food security, to schools in the Philippines aligning science education with the SDGs, to vocational training in Africa embedding green skills for the future of work. Its reach and adaptability prove a simple truth: education is a unifying force, capable of transforming societies while reflecting each country's unique context.

This new edition comes at a critical moment. Climate change, technological disruption, and persistent inequality are reshaping our world and testing our resilience. To meet these challenges, learners must be prepared not only with knowledge, but with the creativity, responsibility, and compassion to shape solutions.

The framework responds to this need. It champions sustainability, digital literacy, inclusion and critical thinking across the life course of education. It invites policymakers, educators and communities to work together to ensure no learner is left behind, and every learner is empowered to thrive.

This publication serves as both a powerful tool and a call to action. It affirms the Commonwealth's enduring belief that education can light the path towards a resilient, inclusive, and thriving future for all.

The Hon. Shirley Botchwey
Commonwealth Secretary-General

Acknowledgments

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Finally, we recognise the educators, researchers, and practitioners worldwide who have piloted, adapted or referenced the framework in curricula, teacher training, and community learning, demonstrating its practical impact and global significance.

Acronyms and Abbreviations

AI	artificial intelligence
AR	augmented reality
BIM	building information modelling
CCEM	Conference of Commonwealth Education Ministers
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
CSR	corporate social responsibility
DRR	disaster risk reduction
ECCE	early childhood care and education
ECE	early childhood education
ECOSOC	Economic and Social Council of the UN
EIA	environmental impact assessment
ESD	education for sustainable development
FAO	Food and Agriculture Organization of the UN
FGM	female genital mutilation
GBV	gender-based violence
GDP	gross domestic product
GIS	Geographic Information System
ICT	information and communications technology
ILO	International Labour Organization
IMF	International Monetary Fund
IoT	internet of things
IPCC	Intergovernmental Panel on Climate Change
LDCs	least developed countries
LIC	low-income country
LMIC	low- and middle-income country
MDGs	Millennium Development Goals
MIC	middle-income country
NGO	non-governmental organisation
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development

PPP	public–private partnership
R&D	research and development
SCP	sustainable consumption and production
SDGs	Sustainable Development Goals
SIDS	small island developing states
SMEs	small and medium-sized enterprises
SRH	sexual and reproductive health
STEM	science, technology, engineering and mathematics
TVET	technical and vocational education and training
UMIC	upper middle-income country
UN	United Nations
UNCCD	UN Convention to Combat Desertification
UNDP	UN Development Programme
UNESCO	UN Educational, Scientific and Cultural Organization
UNEP	UN Environment Programme
UNICEF	UN Children's Fund
UNODC	UN Office on Drugs and Crime
UN-OHRLLS	UN Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States
UNWCD	UN World Commission on Environment and Development
VR	virtual reality
WASH	water, sanitation and hygiene
WFP	World Food Programme
WHO	World Health Organization

1. 2030 and the Sustainable Development Goals

In September 2015, the United Nations adopted the 2030 Agenda for Sustainable Development ('the Agenda'), including the 17 Sustainable Development Goals (SDGs). Succeeding the Millennium Development Goals (MDGs), the SDGs provide a comprehensive, integrated framework for global development, aiming to balance economic growth, social inclusion and environmental sustainability.

The Agenda is a global plan of action for people, planet, and prosperity, grounded in universal peace and partnerships. It promotes human dignity, equality, environmental stewardship, and freedom from want and fear (UNGA 2014). Emphasising the interdependence of the SDGs, it calls for holistic and integrated implementation while allowing flexibility for country-specific priorities aligned with national development strategies (UNGA 2015a). The concept of sustainable development itself traces back to Our Common Future (UNWCED 1987), which defined it as development that meets present needs without compromising future generations.

Figure 1.1 The five Ps of sustainable development (Visser 2015)

Source: UN Sustainable Development Goals (SDGs), 2015

Structuring the SDGs

Several frameworks have been proposed to interpret the SDGs. The 2030 Agenda is grounded in the five pillars of sustainable development: People, Planet, Prosperity, Peace, and Partnership (Figure 1.1). One common approach is to group them under the three pillars of sustainable development – economic, social and environmental – which are unified by themes of peace, justice, equity and global partnership (Figure 1.2). Another uses the six essential elements identified in the UN Secretary-General's synthesis report – dignity, people, prosperity, planet, justice and partnership – to guide implementation (UN General Assembly 2014) (Figure 1.3).

Education is at the heart of the 2030 Agenda. SDG 4 commits to inclusive, equitable, quality education and lifelong learning, extending beyond schools to non-formal and informal settings. It equips people with the knowledge, skills, values, and attitudes needed for fulfilment, social cohesion, and economic and cultural participation.

Recognised since the 1992 Rio Earth Summit and reaffirmed at Rio+20, education is both a goal and a catalyst for all SDGs. It reduces vulnerability, builds human capital for knowledge economies, and advances social justice – making it indispensable to national development strategies.

The Commonwealth's contribution

In 2012, Commonwealth education ministers established a Ministerial Working Group on the post-2015 development agenda. The group produced the Commonwealth Recommendations for the Post-2015 Development Framework for Education, which was widely circulated among key multilateral and bilateral partners, including the UN Educational, Scientific and Cultural Organization (UNESCO), the UN Children's Fund (UNICEF), the UN Development Programme (UNDP), the UK's Department for International Development (DFID), the Canadian International Development Agency (CIDA) and the Australian Agency for International Development (AusAid).

A Sub-Committee on Post-2015 Educational Development was also formed, which developed the *Commonwealth Goals and Targets (CMGT)* and illustrative indicators. These inputs significantly shaped the formulation of SDG4.

At the heart of the CMGT were bold commitments: to expand post-basic education for decent work and sustainable livelihoods; to eliminate disparities in learning outcomes across gender, income, geography, disability, and social group; and to uphold the enduring principles of access, equity, and quality.

These priorities continue to guide Commonwealth co-operation in education today.

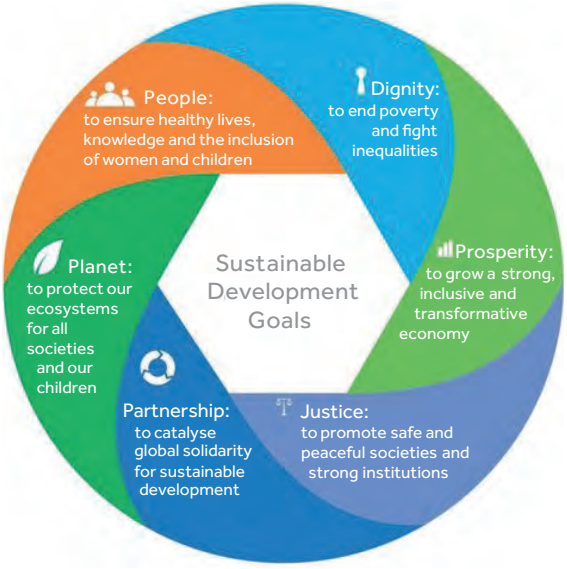
The centrality of education

Education is a catalyst for development, shaping the knowledge, skills, values, and attitudes that enable individuals and societies to pursue sustainable development. It drives social and economic transformation and lays the foundation for peace, tolerance, and sustainability.

By equipping learners of all ages with competencies such as respect for human rights, gender equality, and environmental stewardship, education nurtures responsible global citizens. Its benefits are profound: research by World Bank economists (Montenegro and Patrinos 2012; 2014) shows that, on average, each additional year of schooling increases an individual's earnings by 10 per cent. Beyond economic gains, quality education improves health and wellbeing, reduces the likelihood of conflict, and enhances socio-economic prospects for future generations (UNICEF 2015).

Sustainable Development Goal 4, Target 4.7, captures this vision, emphasising that by 2030 all learners should acquire the competencies necessary to promote sustainable development, peace, global citizenship, and cultural appreciation. In this way, education is not just a human right – it is a force for building a resilient, inclusive, and thriving world.

Figure 1.3 Clustering of SDGs according to six essential elements (UN General Assembly 2014)



Conference of Commonwealth Education Ministers

The Commonwealth has long championed education as a cornerstone of sustainable development and resilience. In 2015, at the 19th Conference of Commonwealth Education Ministers (CCEM) in The Bahamas, ministers reaffirmed that education must equip learners to meet the social, economic and environmental challenges of their communities. The *Nassau Declaration* set out strategic priorities: placing education for sustainable development at the heart of planning, building resilience in vulnerable states, and ensuring that future generations are empowered to contribute meaningfully to society.

This vision was further strengthened at the 21st CCEM in Nairobi (2022), where ministers emphasised education's vital role in post-pandemic recovery, inclusive economic growth, and responding to global challenges such as climate change and systemic shocks. Key commitments included integrating green and digital skills across curricula, supporting teachers' professional development and wellbeing, promoting lifelong learning, and embedding climate, entrepreneurial, and digital competencies at all levels of education. The Commonwealth Secretariat's Strategic Plan for 2025-2030 aims to bridge the digital divide by harnessing new technologies to revolutionise distance education, to connect classrooms, communities, and capital, and to create financing instruments such as a Youth Entrepreneurship Fund.

Aligned with the UN Transforming Education Summit, this mandate emphasises cross-sectoral and multistakeholder engagement and recognises youth as central actors in shaping the future. Within this evolving landscape, the Commonwealth *Curriculum Framework* provides member countries

Figure 1.2 Intersecting goals: social, economic and environmental sustainability

1. End poverty in all its forms everywhere
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3. Ensure healthy lives and promote well-being for all at all ages
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5. Achieve gender equality and empower all women and girls
6. Ensure availability and sustainable management of water and sanitation for all
7. Ensure access to affordable, reliable, sustainable and modern energy for all
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10. Reduce inequality within and among countries
11. Make cities and human settlements inclusive, safe, resilient and sustainable
12. Ensure sustainable consumption and production patterns
13. Take urgent action to combat climate change and its impacts
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
17. Strengthen the means of implementation and revitalize the global partnership for sustainable development

with a practical pathway to align national curricula with the SDGs, ensuring that education remains a powerful tool for building resilient, inclusive, and forward-looking societies.

The changing nature of work

Technological change is transforming the world of work, with automation and digitisation reshaping job functions and skill demands. By 2030, half of the core skills required for employment are expected to change, combining cognitive, interpersonal, and digital competencies. This presents both a challenge and an opportunity: without action, youth and vulnerable groups risk exclusion from the labour market; with foresight, education can equip learners with the skills needed for sustainable livelihoods, innovation, and global citizenship. The Commonwealth Secretariat's *Curriculum*

Framework for the Sustainable Development Goals (2017) laid the foundation for this future, identifying 21st-century skills – digital literacy, critical thinking, collaboration, and problem-solving – as essential for equity, resilience, and inclusion across member countries.

Rationale for the revised Framework

The revised *Curriculum Framework for the SDGs* reflects both continuity and renewal, responding to evolving global priorities and recent ministerial commitments. Anchored in the 2030 Agenda for Sustainable Development, it provides a coherent pathway for learning across the life course – from early childhood education, through primary and secondary schooling, to TVET, tertiary education, and lifelong learning.

Beyond aligning educational levels, the framework integrates critical global themes – climate resilience, digital inclusion, and equity – into curricula, teaching, and learning outcomes. In doing so, it equips learners with the knowledge, skills, and values necessary to thrive in a rapidly changing world, ensuring that education serves as a catalyst for sustainable development, inclusion, and innovation across Commonwealth member countries.

A truly relevant curriculum does more than transmit knowledge – it shapes learners into thoughtful, capable, and ethical actors in a rapidly changing world. The framework embraces this vision, enabling learners to understand global and local challenges, think critically, and apply knowledge in ways that advance social, economic, and environmental sustainability.

By linking knowledge, skills, values, and action, it guides member countries in aligning education with the SDGs, encouraging collaboration across sectors, and empowering learners to contribute meaningfully to their communities. It offers both strategic direction and practical tools, supporting the transformation of curricula that are inclusive, forward-looking, and responsive to the pressing needs of today's learners and the societies they will shape tomorrow.

2. Outline of the Curriculum Framework for the SDGs

Aim and purpose of the Curriculum Framework

The Curriculum Framework is a flexible guide designed to support countries in shaping education systems that are relevant, inclusive and future-ready. Rather than prescribing a fixed syllabus, it provides a model for integrating knowledge, skills, values, and attitudes, preparing learners not only for employment but also for active and meaningful participation in society. At its core, the framework aligns national curricula with the SDGs, ensuring that education contributes to individual wellbeing, social inclusion, and sustainable development.

Grounded in the Commonwealth Charter and aligned with the SDGs, the framework positions education as a driver of individual wellbeing, social inclusion, and sustainable development. It emphasises lifelong learning across the life course – from early childhood to adulthood – and across formal, non-formal, and informal settings, enabling learners to adapt to changing contexts and contribute to resilient and sustainable communities.

By using this framework, countries can tailor curriculum content to local priorities while connecting to shared global aspirations, encouraging education systems that are coherent, locally relevant, and globally responsive. Rooted in Commonwealth values such as equity, respect for diversity, sustainability, and human rights, it empowers learners to shape a just and inclusive future.

It encourages critical thinking, ethical awareness, civic engagement, and creativity. The framework empowers learners to be responsible global citizens. It serves as a resource for policymakers, educators, curriculum developers, and community leaders to develop education systems that are coherent, locally relevant, and globally responsive, and that cultivate the knowledge, competencies, and values needed for a just and inclusive future.

Framework application

The framework is intentionally broad and adaptable, enabling application across diverse age groups and learning settings. It provides a holistic perspective for aligning education with sustainable development, helping countries to assess strengths, identify gaps and chart pathways for curriculum transformation. This adaptability allows education systems to remain coherent and context-sensitive while addressing interconnected global challenges such as climate change, digital disruption, health crises and inequality.

Guided by the seminal UNESCO Delors Report (*Learning: The Treasure Within*, 1996) and its four pillars of lifelong learning, the framework emphasises the following.

1. *Learning to know* – the acquisition of knowledge and skills, including the development of critical thinking, literacy and the ability to learn throughout life.
2. *Learning to do* – applying knowledge and skills to real-world situations, developing competencies, adaptability and problem-solving abilities.
3. *Learning to live together* – building social skills, respect for others, understanding diverse cultures, and co-operating effectively in a globalised world.
4. *Learning to be* – fostering holistic personal development, encouraging creativity, responsibility and reflection.

These enduring principles were envisaged for all forms of learning – formal, non-formal and informal – recognising that meaningful learning occurs across all stages and contexts of life.

A key feature of the framework is its focus on three interconnected dimensions of learning: knowledge and understanding, which provide the foundation for informed action; skills and applications, which enable problem solving and innovation; and values and attitudes, which shape ethical behaviour, empathy and civic participation. Together,

these elements support holistic competencies that support lifelong learning and sustainable development. The framework adopts a life-course perspective, recognising learning at all stages and encouraging cross-sectoral collaboration. It values diverse knowledge systems – including indigenous, local and scientific knowledge – and promotes empathy, ethical reflection, civic responsibility and systems thinking to equip learners for a complex, rapidly changing world.

The competencies outlined in this volume call for inclusive approaches to teaching and assessment that reflect diverse learner needs and contexts. All learners – regardless of socio-economic background, language proficiency, ability status or cultural identity – should have equitable opportunities to demonstrate their knowledge and skills. This may involve integrating multiple learning areas, gathering naturally occurring evidence of competencies (such as portfolios, logbooks or workplace reports), and providing reasonable accommodations for learners with disabilities, including those with special educational needs. Addressing these persistent gaps is essential to creating learning environments that are genuinely equitable and supportive for all.

Integrating learning across the life course

Achieving sustainable development through education requires more than curriculum reform; it requires a shift in how learning is understood and supported throughout life. This framework promotes education that cultivates sustainable ways of thinking and living, grounded in ethical choices, resilience and a commitment to the common good. Learning is life-wide, occurring not only in schools, training centres and universities, but also through family, community, the workplace, the media and everyday experience.

The framework applies across formal, non-formal and informal pathways. Formal education, structured around curricula, assessments and qualifications, should complement non-formal learning opportunities such as those offered by museums, non-governmental organisations, public health campaigns and agricultural extension services. Informal learning, by contrast, emerges through daily life – via media, online platforms, oral traditions and spontaneous social interactions. Together, these modes of learning form a rich and inclusive ecosystem that supports lifelong learning.

This integrated approach ensures education remains accessible, relevant and empowering for all learners, regardless of age, background or circumstance.

Core competencies for sustainable development

Sustainable development depends critically on the competencies of all citizens. These competencies go beyond knowledge and technical skills to include values, attitudes and dispositions that strengthen both individual capacity and collective responsibility. They encompass the ability to work collaboratively, communicate effectively, make informed decisions, solve problems, build community, and demonstrate ethical behaviour, empathy, resilience and personal responsibility.

In this framework, *competencies* are understood as integrated clusters of knowledge, skills, values and attitudes that learners are expected to acquire through a successful learning process. They apply across all 17 SDGs and remain relevant throughout the lifelong learning continuum.

While the terms *'competence' and 'competency' are often used interchangeably, 'competence' typically denotes general ability, whereas 'competency'* tends to emphasise demonstrable outcomes and the process of acquiring them.

Guiding principles for developing competencies

The development of competencies in this framework is guided by the following principles.

- Establishing a set of integrated competencies, derived from core capabilities that learners of all ages need for active and responsible participation in all aspects of life, in support of the SDGs.
- Ensuring that these competencies encompass cognitive and metacognitive skills, together with empathy, ethics, compassionate values, and the capacity to express social and environmental concerns and adapt behaviours accordingly.

- Defining the transformative competencies required to navigate 21st-century challenges – such as problem-solving, conflict resolution, critical thinking and accountability – while empowering learner agency, co-agency and collective agency. This includes empowering learners to set goals, collaborate, reflect, and act responsibly.
- Prioritising holistic learner development, grounded in positive values and attitudes that promote societal wellbeing and environmental sustainability, including the *One Health* approach in the context of SDG 3.

These integrated competencies and learning outcomes are grouped into three domains*: knowledge and understanding, skills and applications, and values and attitudes* (see Figure 2.1).

The framework promotes both core and cross-cutting competencies that support sustainable development through education. Together, these competencies strengthen cognitive, emotional and behavioural capacities, enabling learners to engage meaningfully with sustainability challenges in diverse contexts.

Key competency clusters

1. **Envisioning change**
   The ability to imagine alternative futures and connect long-term goals with present-day actions. This includes identifying relevance and meaning for different stakeholders, motivating action through shared aspirations, and cultivating ownership of processes and outcomes.
2. **Critical thinking and reflection**
   The capacity to question assumptions, reflect on current beliefs, and assess the socio-economic, environmental and cultural structures that shape the world. This competency builds confidence in addressing complex dilemmas and enables learners to develop alternative perspectives and greater metacognitive awareness.
3. **Systems thinking**
   Understanding interdependence and complexity. Systems thinking shifts focus from isolated parts to dynamic wholes, encouraging learners to consider feedback loops, interconnections and adaptive approaches to problem-solving.
4. **Building partnerships**
   Encouraging collaboration, dialogue and collective learning. This competency supports the creation of shared visions, enhances stakeholder engagement, and strengthens the ability to communicate and exchange knowledge effectively.
5. **Participation in decision-making**
   Empowering individuals and communities to engage in analysis, planning and action. It aims to develop a sense of ownership, responsibility and the ability to act collectively, reinforcing self-organisation, autonomy and the capacity for sustainable change.

Cross-cutting competencies

The following cross-cutting competencies are essential across all SDGs and form the basis of effective learning outcomes.

- **Cognitive skills,** including critical thinking, information analysis, problem-solving, planning and communication.
- **Socio-emotional skills** such as empathy, intercultural sensitivity, resilience, ethical responsibility and teamwork.
- **Values and attitudes** of inclusivity, respect, equity, social justice, care for others, service orientation and commitment to sustainability.

The framework embraces an inquiry-based approach to learning (DFAT 2013), encouraging learners to explore issues, develop planning and research skills, make informed decisions, and communicate their findings in meaningful ways. Inquiry or exploration may be conducted individually or in groups. The framework also emphasises entrepreneurial skills, cultural understanding and global citizenship, ensuring that competencies are applied in real-world contexts and contribute to equitable and sustainable development.

In line with definitions from Rychen and Tiana (2004) and the IEEE (2015), competencies are not limited to content mastery but extend to the motivation, behaviours and values that guide actions in diverse learning and professional environments. Recognising and validating such competencies is fundamental for workforce development, curriculum reform, credentialing, and policy design.

When embedded in national curricula, the competencies outlined in this framework provide a practical pathway for localising the SDGs and aligning education with national development priorities. They empower learners of all ages to translate knowledge into meaningful action and to actively shape inclusive, sustainable futures for their communities.

A lifelong vision for learning

A life course approach to education recognises that learning is a continuous process, shaped by diverse experiences and evolving needs from early childhood through adulthood.

Commonwealth countries acknowledge the importance of effective teaching and learning across all phases – not only to motivate learners to continue their educational journeys, but also to equip them with the knowledge, skills and values needed to thrive in a changing world.

At the 15th CCEM in Edinburgh (2003), Amartya Sen observed: *"the nature of the curriculum is of relevance to the development of technical skills (such as computing) that facilitate participation in the contemporary world. However, there are also other issues involved since schooling can be deeply influential in the identity of a person and the way we see ourselves and each other"* (Sen 2004). Sen's insight remains highly relevant today, as education systems grapple with the dual challenge of preparing learners for employment while nurturing their sense of identity, belonging and purpose.

Learner agency and intersecting identities

In today's complex and interconnected world, individuals increasingly navigate multiple and intersecting identities. This calls for a renewed approach to education – one that promotes learner agency and empowers people of all ages to shape their own learning.

Figure 2.1 Competencies in the Curriculum Framework

Knowledge and understanding	Skills and applications	Values and attitudes
• Understanding of key social, environmental and economic challenges and complexities • Understanding of local, national and global challenges and complexities • Knowledge to respond to these challenges and complexities • Multiple literacies • Lifeskills • Understanding of key socio-political challenges and conflicts • Differential and multiscalar understanding • Systems theory and reflexivity	• Analysis • Factfinding • Listening, observing and problem solving • Independent learning and critical thinking • Goal-setting skills • Planning and decision-making • Ability to identify and solve problems, and to set goals • Effective communication and social integration skills • Capacity to think independently • Self-reflective and reflective skills	• Sense of purpose and hope • Commitment to justice • Confidence, resilience and adaptability • Openess, respect for diversity • Communication, engagement and integration • Responsible, active, productive and engaged citizens • Duty bearers • Commitment to community engagement for constructive responses to societal issues • Self-esteem, self-understanding and clearer sense of identity

Developing the capacity to *learn to learn* is central to this vision, enabling learners to adapt, reflect and grow throughout life.

Such involvement contributes directly to a range of public agendas, including health and wellbeing, peace, social justice, social cohesion and employability.

National curricula must encourage critical thinking, ethical reflection and creative dialogue from diverse perspectives. Learners should be given opportunities to exchange ideas and explore alternative solutions to economic, environmental and social challenges – locally, nationally and globally. Integrating the SDGs into curricula enables learners to reflect on their multiple, intersecting identities, recognise their roles in living together on a shared planet, and contribute to building more sustainable and equitable futures in an interdependent world.

Learning across diverse settings

Learning occurs across a wide range of settings – from formal to non-formal education and informal pathways – and along the continuum from early childhood care and education through to tertiary and adult education. This life course perspective is illustrated in Figure 2.1, while Table 2.1 shows how integrated competencies and learning outcomes are clustered into three domains: knowledge and understanding, skills and applications, and values and attitudes.

The *Curriculum Framework* is a flexible guide, not a prescriptive model. It supports diverse national contexts and encourages local adaptation, which is why it does not prescribe specific methods for assessing learning across the SDGs.

Designed as a lifelong learning tool, the framework applies across formal, non-formal and informal education settings. Many of these use alternative, competency-based assessments. Educators are encouraged to adopt inclusive teaching and assessment practices that reflect learners' varied needs and contexts. All learners – regardless of socio-economic background, language proficiency, ability or cultural identity – should have equitable opportunities to demonstrate their competencies.

This may include portfolios, logbooks, workplace reports and reasonable accommodations for learners with special educational needs.

Traditional assessments often fail to capture complex outcomes such as creativity, collaboration and ethical reasoning. The framework promotes authentic formative assessment methods that support learning and development (Villarroel *et al*. 2020).

Aligned with UNESCO (2021), the framework calls for meaningful assessment practices that reflect broad educational goals. These should value both learning processes and outcomes that support individual growth and collective wellbeing – such as empathy, co-operation and negotiation – which are best observed in real-world contexts like group work and conflict resolution. Countries and educators should design these assessments in line with national curricula.

Curriculum framework mapping: overview

This section outlines how the Curriculum Framework supports the integration of SDG-related competencies across all levels of education. Chapters 3–19 present matrices that demonstrate how these competencies can be applied to each SDG to develop engaged global citizens committed to sustainable development (see Table 2.1 for the template).

The matrices are illustrative rather than prescriptive, exhaustive or checklist based. They offer flexible guidance for curriculum review, auditing, or development, and can be tailored to the specific needs and contexts of individual countries.

Built on a matrix model, the framework identifies core competencies that align with the 17 SDGs, providing a practical tool for localising global goals through education.

Table 2.1 Matrix used for the mapping of the Curriculum Framework

Goal [insert number] – [insert title] (for example, Goal 13 – Climate Action)

[Insert SDG description] (for example, Protect the Planet – Take urgent action to combat climate change and its impacts)

		Knowledge and understanding	Skills and applications	Values and attitudes
Life course	ECCE	*	*	*
	Primary education	*	*	*
	Secondary education	*	*	*
	TVET	*	*	*
	Tertiary education	*	*	*
	Adult education	*	*	*

3. Goal 1 – No Poverty

End poverty in all its forms everywhere

What is poverty?

Until recently, poverty was understood in terms of income – or a lack of one. To be poor meant that one could not afford the cost of providing a proper diet or home. However, poverty is about more than a shortfall in income or calorie intake. Amartya Sen (2001), winner of the Nobel Prize for Economics and whose work inspired the UN Development Programme (UNDP) Human Development reports, argues that poverty should be understood as a deprivation of substantive freedoms, the capabilities that allow individuals to lead lives they value. The UNDP *Human Development Report* (UNDP 1997) defines poverty as 'The denial of opportunities and choices most basic to human development – to lead a long, healthy, creative life and to enjoy a decent standard of living, freedom, dignity, self-esteem and the respect of others.'

Those in extreme poverty often prioritise basic survival, such as securing food and fuel, over education. Even relative poverty, where individuals live above the extreme poverty threshold but below their country's standard of living, leads to social exclusion and limits access to education and economic opportunities.

The World Bank and others have emphasised that poverty is not merely a matter of low income, but a condition marked by hunger, poor health, lack of education, joblessness, powerlessness, and daily uncertainty – a situation people strive to escape (World Bank 2020). The World Bank explains extreme poverty as living on less than US$2.15 per day, reflecting the minimum income needed to meet basic needs. In 2024, 692 million people lived below this threshold (World Bank Poverty and Inequality Platform 2025). Between 1990 and 2019, the number of people in extreme poverty fell from 2 billion to 660 million, reducing the global poverty rate from 38 per cent to 8.5 per cent. However, progress has been uneven, with some regions lagging. The COVID-19 pandemic reversed gains, increasing the number of people in extreme poverty by about 70 million in 2020. If current trends continue, 575 million people will still be living in extreme poverty and only one-third of countries will have halved their national poverty levels by 2030 (World Bank 2022).

Multidimensional poverty: beyond income

Beyond income, poverty is measured through multidimensional indicators that account for social and economic deprivations. The societal poverty line (SPL) adjusts with a country's wealth, while the multidimensional poverty measure (MPM) considers factors such as monetary poverty (income below US$2.15/day), education deprivation (children not in school, adults without primary education), and basic infrastructure deprivation (lack of electricity, clean water and sanitation). Alarmingly, 39 per cent of multidimensionally poor people are not captured by monetary poverty alone, hence the importance of non-monetary factors (World Bank 2025). Multidimensional poverty remains deeply entrenched, with sanitation, adult educational attainment, and access to electricity as the most prevalent deprivations. In sub-Saharan Africa, more than 50 per cent of households experience multidimensional poverty, with South Asia not far behind. Investing in education, healthcare and infrastructure is essential for breaking this cycle.

COVID-19 and human development setbacks

The COVID-19 pandemic caused profound disruptions beyond income losses, severely impacting education, healthcare and overall wellbeing. School closures lasted on average about one year globally, with even longer interruptions in many middle-income countries. This disruption led to a significant collapse in human capital at critical stages of development, particularly affecting millions of children and young people in low- and middle-income countries. An analysis of global data on individuals under 25 at the pandemic's onset indicates the lasting consequences: students today could lose up to 10 per cent of their future earnings due to education disruptions caused by COVID-19. Moreover, cognitive deficits in toddlers affected

by the pandemic could translate into a 25 per cent reduction in earnings in adulthood (Schady *et al*. 2023).

The economic and social costs of inaction

A comparison of the poverty shock in 2020 and 2021 with the impact of the current learning losses on long-run poverty simulations suggests that the persistence of poverty from learning losses will exceed the contemporaneous crisis-induced poverty shock for many countries. The reason is that the drag on growth could persist for decades if unaddressed – even though the implications of learning loss for aggregate growth may appear modest within any one year. In low-income countries (LICs), the crisis increased the number of years spent in poverty by 6.1 per 100 persons for the two-year period 2020–21, whereas the loss in learning may lead to an additional total of 13.3 years in poverty per 100 persons, distributed over the longer 2022–50 period. The same metrics for low- and middle-income countries (LMICs) and upper middle-income countries (UMICs) are 6.6 and 4.5 years in poverty now in 2020-21 and 11.8 and 12.9 years in poverty over the future (2022–50), respectively. In 80 per cent of the countries studied, the simulated future poverty increase due to learning loss exceeds the measured short-run increase in poverty. These simulations are a point-in-time comparison that projects current conditions into the future. To the extent that the losses of 2020 can be reversed through policies addressing learning loss, the projected declines can be corrected, and a comeback could even be quite rapid. But such outcomes will depend in part on the policy choices (World Bank 2022).

Some of the most impactful fiscal decisions governments make involve allocating resources toward long-term income growth. Investments in education, health, infrastructure, and research and development (R&D) yield substantial benefits, especially when targeting marginalised populations. Research shows that early childhood investments significantly increase lifetime earnings and overall wellbeing (Hendren and Sprung-Keyser 2020).

A global report, *The Price of Inaction* (UNESCO *et al*. 2024), produced by UNESCO, the Organisation for Economic Co-operation and Development (OECD), and the Commonwealth Secretariat, estimates the fiscal and social costs of failing to invest in education. It examines the consequences of early school leaving and lack of basic skills, including economic losses, increased crime, higher early pregnancy rates and weakened social cohesion. The report finds that if no action is taken, by 2030, the global annual cost of children leaving school early will reach US$6 trillion, while the cost of having children without basic skills will hit US$10 trillion – exceeding the combined gross domestic products (GDPs) of France and Japan. By comparison, a 10 per cent reduction in school dropouts and learning poverty increases annual GDP by 1–2 percentage points. Countries that prioritise education investments will reap long-term benefits in economic stability, productivity and innovation. Education is not only a fundamental human right but also a cost-effective strategy for economic development.

Investing in human capital for a resilient future

Human capital – the knowledge, skills and health that people accumulate over their lives – is key to unlocking a child's potential and enabling countries to achieve a resilient recovery and sustainable growth. However, the pandemic disrupted not only education but also essential services , including maternal and child healthcare and job training. Without urgent action, these setbacks could have intergenerational consequences.

Losses of wellbeing from non-monetary impacts – including learning loss – are heterogeneous across countries but substantial. The wellbeing losses from non-monetary impacts could exceed the wellbeing losses solely from the current increases in monetary poverty in most countries. The wellbeing losses are smallest on average for high-income countries and largest on average for middle-income countries (World Bank 2022). Low-income, rural children are likely to experience a broader range of physical stressors – such as substandard housing, noise, and overcrowding – as well as psychosocial stressors, including family instability, early childhood separation, and exposure to community violence, compared to their middle-income peers (Evans and English 2002).

Mental health is both a driver and outcome of poverty. Integrating mental health and psychosocial support (MHPSS) into education ensures that learners are emotionally and psychologically ready to engage, learn and contribute economically. This integrated approach not only supports individual

wellbeing but also builds more equitable, resilient and economically inclusive societies – core to achieving SDG1.

Targeted policies to reverse losses in foundational learning, health and skills are critical. Countries must increase investments in human capital to enhance resilience against overlapping threats such as health shocks, conflict, slow growth and climate change. However, policies can have quite different effects depending on a country's economic status. Higher-income economies are more resilient due to stronger health and education systems and greater household and business wealth. In contrast, low- and middle-income countries (LICs and MICs) face structural barriers that limit the effectiveness of financial and fiscal policies during crises (Loayza and Pennings 2020). Fiscal constraints, an informal economy and limited financial reach exacerbate vulnerability.

Education: a pathway out of poverty

Education is one of the most effective tools for poverty reduction (Awan *et al*. 2011). Higher education levels are associated with lower poverty rates, as education equips individuals with knowledge and skills that increase earning potential. The direct effect of education on poverty is through improved income, while the indirect effect includes better access to healthcare, sanitation and housing.

Educated women play a crucial role in breaking the cycle of poverty. Gender disparities deepen poverty, as women face greater obstacles to accessing education and employment – a situation often described as the 'feminisation of poverty', with women bearing a disproportionate share of its burden. Girls' education has a multiplier effect, leading to healthier families and communities. Educated mothers are twice as likely to vaccinate their children, reducing infant and maternal mortality. Women with secondary education earn 10–20 per cent more annually and reinvest 90 per cent of their earnings into their families and communities.

Conversely, poverty remains a significant barrier to education. A UNESCO (2016) study of 101 low- and middle-income countries found that the poorest students receive, on average, 5 fewer years of schooling than the wealthiest. Children in poverty are more likely to experience psychosocial stress, inadequate living conditions, exposure to violence and reduced educational achievement. This 'toxic stress' can disrupt brain development, leading to difficulties in concentration, memory and emotional regulation. According to the CDC's *Data and Statistics on Children's Mental Health*, based on the 2016–2019 National Survey of Children's Health, more than 20 per cent of children below the federal poverty line have a mental, behavioural or developmental disorder. Additionally, National Health Service (NHS) data indicate that 1 in 4 children from low-income households in the UK exhibit probable mental disorders, showing the link between economic hardship and mental health challenges (CDC n.d.; NHS 2023).

Evidence shows that children from low-income families are more likely to be removed from parental care. Poverty also affects children's subjective wellbeing – including self-esteem and life satisfaction – though this area has received less research attention. Stigma associated with poverty can limit children's participation in school and community life, harming peer relationships and self-confidence. Longitudinal studies further show that childhood poverty is linked to lower life satisfaction in adulthood (Griggs and Walker 2008).

People with disabilities, who number around 1.3 billion globally are at higher risk of poverty due to persistent discrimination and barriers that limit their participation in education, employment and social services (WHO 2023; ILO 2015). This exclusion contributes to their over-representation among the world's poorest, especially in low- and middle-income countries. Poverty and disability form a reinforcing cycle: poverty increases vulnerability to disability, while disability intensifies poverty. Breaking this cycle requires the full inclusion of people with disabilities in all development efforts and systems.

Investing in education to eradicate poverty

Expanded education opportunities that ensure equality and equitable access to quality education and learning, and that reach the most disadvantaged groups, will break the intergenerational transmission of poverty. These opportunities will also build resilience to adverse shocks and improve income security and will move people out of poverty (Vladimirova and Le Blanc 2015). Similarly, availability of different forms of education and flexibility of educational systems will retain children and young people in learning environments. Formal schooling may not hold any

practical application for disadvantaged children and young people and may not help them break the cycle of poverty or maximise their potential.

In the poorest households, children often balance contributing to family income or chores with attending school, leading many to drop out. This perpetuates educational disadvantage across generations, as children of low-skilled parents face greater risks of poor academic outcomes. Disparities in spending on education per child or young person between rich and poor countries are large and have continued to widen (Al Samarrai *et al*. 2021). A workforce with limited skills and aspirations undermines productivity, economic growth and competitiveness. To break this cycle, governments and partners should invest in education to ensure all children complete basic schooling by 2030. Key priorities include expanding early childhood education, improving school infrastructure, enhancing teacher training, implementing gender-transformative policies and offering second-chance education for those who have dropped out.

Investing in education is critical for sustainable poverty reduction. Quality education equips individuals with the skills needed for employment, enhances resilience to economic shocks and strengthens national economies. Research shows that early investments in education yield the highest long-term economic returns (Hendren and Sprung-Keyser 2020). Beyond economic gains, education also drives innovation and productivity, laying the foundation for long-term stability and inclusive growth.

Despite the clear long-term benefits of education, investment remains inadequate due to short-term political cycles. Policymakers often prioritise immediate gains over long-term investments in human capital. However, research demonstrates that spending on health, education and R&D yields the highest long-term economic returns. Countries with strong education systems are more resilient to crises and better prepared for economic growth. Targeted policies in low- and middle-income countries (LICs and MICs) can mitigate structural barriers to effective education investment (Loayza and Pennings 2020).

COVID-19 has underlined how progress achieved over decades can vanish suddenly. High-return investments in education, research and development, and infrastructure projects are imperative. Governments need to improve their preparation for the next crisis. They also should improve the efficiency of their spending. Better procurement processes and incentives for public sector managers can boost both the quality and efficiency of government spending. Investing in education not only reduces poverty and inequality but also strengthens economic growth, innovation and global stability. Without urgent action, the world risks missing SDG4's 2030 target – leaving millions without the knowledge and skills they need to thrive. Governments, businesses and civil society must prioritise education investment to build a more equitable and prosperous future for all.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Self, others and the community** • Recognise self and others as part of a family, school and wider community. • Understand that people have diverse needs and resources (for example, food, shelter, clothing). • Identify familiar places of support and learning, such as homes, schools, clinics and community centres. **Awareness of inequality** • Recognise that not everyone has the same things (for example, toys, clothes, homes). • Understand that some people may need help and support from others. **Basic concepts of wellbeing** • Know that caring for others, being clean, fed, safe and loved are essential for everyone's wellbeing. **Entrepreneurship education** • Recognise basic needs (food, shelter, clothing). • Identify distinct roles in the community (shopkeeper, builder, farmer). • Understand simple exchanges (giving, receiving, trading).	**Communication and expression** • Ask and answer questions about daily life and differences observed in others' experiences. • Use storytelling, drawings, role play and discussions to explore concepts like helping, sharing and caring. **Social and emotional skills** • Engage in co-operative activities such as turn-taking, helping others and team play. • Practise empathy by identifying and responding to classmates' feelings or needs. **Problem solving and responsibility** • Solve simple problems, for example, how to include a peer or share resources fairly. • Apply self-care routines (for example, hygiene, tidying up) as part of developing personal responsibility. **Entrepreneurial mindset** • Participate in pretend play and storytelling involving work and trade. • Engage in group tasks like sorting, counting or 'selling' items in classroom shops. • Explore cause-and-effect through play-based simulations.	**Empathy and generosity** • Show kindness and willingness to help others in class or during play. • Share materials, take turns and comfort others when upset. **Fairness and respect** • Develop an early understanding of fairness – why everyone deserves a chance. • Respect differences in how people live and the resources they have. **Belonging and inclusion** • Recognise the importance of everyone being included and valued in the classroom and beyond. • Appreciate that they can make a positive difference through kind actions. **Curiosity and awareness** • Express interest in learning about the lives of others and how people live in different ways. • Begin to understand the idea of fairness in the wider world and the value of helping others. **Co-operation** • Engage in sharing, fairness and co-operation. • Begin developing empathy by understanding different life circumstances.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**Understanding poverty** • Define poverty in age-appropriate terms and recognise its presence locally and globally. • Distinguish between absolute and relative poverty, and between monetary and multidimensional poverty. • Explore the causes of poverty, including lack of education, unemployment, environmental degradation and social inequality. • Understand how poverty affects access to food, water, education, healthcare and housing. **Inequality and global context** • Compare social, demographic and economic conditions between different countries and regions. • Recognise the role of inequality in perpetuating poverty and limiting access to opportunities. **Social and institutional roles** • Understand how families, communities, governments and organisations contribute to reducing poverty. • Explore the role of education, fair employment and social protection in breaking cycles of poverty. **Financial awareness** • Explore the concept of work and basics of money, budgeting, saving and needs versus wants. • Understand how personal financial decisions impact individuals and communities. • Recognise the importance of fair wages, employment opportunities and economic stability. **Entrepreneurship education** • Explore basic local economic activities and their link to community wellbeing. • Learn how education can improve livelihood opportunities.	**Critical thinking and analysis** • Engage in discussions and debates about poverty, challenging assumptions and developing arguments. • Use statistics, graphs and maps to analyse poverty levels in different countries. • Reflect on individual experiences and assumptions about wealth and poverty. **Problem solving and decision-making** • Participate in simulations that demonstrate the challenges faced by people in poverty. • Work in teams to develop and propose solutions for reducing poverty in communities. • Evaluate the effectiveness of different policies and interventions. **Communication and expression** • Write persuasive essays, letters, or speeches advocating for poverty reduction. • Create posters, presentations or digital content to raise awareness about poverty. • Conduct interviews or surveys to gather perspectives on poverty and inequality. **Entrepreneurial mindset** • Plan and conduct small group projects like class markets or fundraising events. • Use simple tools to track spending and saving. • Introduce decision-making and problem solving in familiar settings.	**Empathy and respect** • Develop empathy for people experiencing poverty through real-life stories and classroom activities. • Appreciate shared human dignity, regardless of economic background. • Show respect for diverse living conditions and family structures. **Responsibility and equity** • Recognise the importance of fairness and social justice in building inclusive communities. • Develop a sense of responsibility to help others and improve their surroundings. • Understand the value of education in overcoming poverty. **Agency and participation** • Feel empowered to have influence, even through small actions. • Show a willingness to engage in community service, peer support or charity efforts. • Value teamwork, co-operation and kindness as essential to shared wellbeing. **Motivation and hope** • Believe that poverty can be reduced and eventually overcome through collective effort. • Stay curious and committed to learning about global issues and solutions. • Develop a growth mindset that values resilience, opportunity and inclusion. • Respect different forms of work.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Understanding poverty** • Poverty as a multidimensional issue, incorporating economic, social and political dimensions. • Distinctions between: – absolute (extreme) poverty – for example, living on less than US$2.15/day. – relative poverty – disparities within and between societies. – monetary and multidimensional poverty, considering access to basic needs. • Global poverty trends illustrated by comparative statistics and case studies. • The relationship between scarcity of resources, economic development, inequality and livelihoods. • Household poverty dynamics and the influence of national economic policies on family income and wellbeing. **Causes and effects** • Systemic causes of poverty, including: – lack of quality education and decent employment opportunities. – political instability and weak governance. – environmental degradation and climate change. – social exclusion and discrimination. • Effects of poverty, including: • limited access to nutrition, clean water, healthcare, education and safe housing. • child labour, exploitation and reliance on sweatshops. • intergenerational poverty and restricted upward mobility.	**Critical thinking and research** • Investigate poverty using primary and secondary sources, analysing data and statistics. • Compare what US$2.15 per day can buy in different countries and explore purchasing power differences. • Apply economic and social theories to real-world poverty challenges. • Engage in debates and structured discussions, challenging stereotypes and assumptions. **Problem solving and practical application** • Conduct financial simulations, such as budgeting on a low income. • Propose poverty alleviation strategies and assess their feasibility. • Participate in case study analysis of successful poverty reduction programmes. **Financial literacy and economic understanding** • Learn about financial management, including budgeting, saving and responsible spending. • Understand basic investment concepts and financial systems. • Apply financial planning to real-life situations, such as household budgeting. **Social responsibility and engagement** • Plan and implement a poverty awareness campaign in the school or community. • Engage in community service projects addressing poverty-related issues. • Work collaboratively to develop action plans for tackling poverty at local or global levels.	**Poverty as a justice and ethical issue** • Develop a sense of social justice and recognise poverty as an ethical concern. • Challenge stereotypes about poverty and understand its complex, systemic causes. • Critically reflect on inequality and ethical business practice. **Empathy, values and civic responsibility** • Cultivate empathy and respect for diverse communities affected by poverty. • Commit to eradicating poverty and supporting policies that promote economic equity. • Value inclusive economic participation and the power of collective action. **Agency, empowerment and innovation** • Develop self-confidence in their ability to drive change. • Value education and financial literacy as tools for economic empowerment. • Develop a mindset of innovation, resilience and social responsibility. **Active engagement and advocacy** • Understand the impact of individual and collective actions in addressing poverty. • Engage in community initiatives and advocacy to promote social change.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education (ctd)	**Inequality and global context** • The relationship between poverty, gender and resource distribution, including barriers to education and employment for women and girls, unequal wages, unpaid labour and limited access to finance. • The role of inequality in perpetuating poverty, locally and globally. • The influence of economic systems and global markets on poverty levels. • The contribution of business practices, financial systems and consumer behaviour to poverty cycles and ethical dilemmas. **Poverty reduction and solutions** • Roles of governments, global organisations (such as the UN and World Bank) and non-governmental organisations (NGOs) in addressing poverty. • Policy measures for poverty reduction, including social protection, taxation and provision of public services. • Financial planning, inclusive economic models and fair trade as strategies for reducing poverty. • Entrepreneurship, including youth- and women-led initiatives, and income-generating models such as co-operatives and social enterprises.	**Entrepreneurial mindset** • Design and implement business or social enterprise ideas in school clubs or communities. • Apply budgeting, basic financial literacy and marketing. • Conduct needs assessments in local communities to identify opportunities. • Apply poverty alleviation strategies such as microfinance, community-based projects, social entrepreneurship.	

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Poverty** • Poverty as a multidimensional challenge requiring economic, social, environmental and policy responses. • Absolute and relative poverty in relation to labour markets and livelihoods. • Links between poverty, employment, education and social services. • Effects of poverty on diverse groups (for example, youth, women, informal workers, and persons with disabilities) and its impact on access to decent work and fair wages. • Intersections between poverty, skills gaps, inequality and lack of opportunities in rural and urban economies. **Causes and effects** • Structural causes of poverty in vocational contexts, including: – unemployment, underemployment and low wages. – reliance on informal labour with limited rights and protections. – restricted access to training, finance, markets and infrastructure. – gender-based discrimination and inadequate childcare or support systems. • Consequences of poverty, including: – low productivity, poor health outcomes and reduced resilience. – intergenerational poverty driven by lack of skills and limited education. • Economic shocks, environmental changes and social exclusion as disruptions to vocational pathways and livelihoods.	**Vocational and technical skills** • Acquire practical skills for employment in growing industries such as renewable energy, information and communications technology (ICT), construction, healthcare and sustainable agriculture. • Learn technical problem solving and innovation to enhance employability. • Develop entrepreneurial competencies, including business planning, marketing and financial management. • Start and manage small businesses or co-operatives using sector-specific skills. **Economic and business skills** • Plan, implement and evaluate livelihood strategies for poverty reduction. • Apply financial literacy, including budgeting, credit management and savings strategies. • Explore income diversification, value addition and sustainable small business practices. • Apply business registration, taxation and compliance to transition informal enterprises into formal economic activities. • Analyse market trends and labour demands to align skills training with economic opportunities. **Workforce readiness and employability** • Develop communication and negotiation skills to succeed in the workplace and business environments. • Gain expertise in teamwork, adaptability and resilience to navigate changing labour markets. • Engage in internships, apprenticeships and work-based learning to apply skills in real-world settings. • Enhance digital skills and technological proficiency to improve employment prospects in modern economies.	**Personal development and lifelong learning** • Cultivate a strong work ethic and a commitment to lifelong learning. • Develop self-confidence, initiative and adaptability for entrepreneurial success. • Build confidence in taking calculated risks and demonstrating leadership. **Entrepreneurial mindset and career readiness** • Take proactive steps in career planning, aligning aspirations with economic and community needs. • Value financial independence and self-sufficiency as key drivers of empowerment. • Recognise the importance of education and vocational training in breaking cycles of poverty. **Ethics, sustainability and social impact** • Commit to sustainability, ensuring enterprises operate in environmentally and socially responsible ways. • Appreciate the social responsibility of businesses and workers in creating equitable economies. • Develop empathy and social consciousness, recognising how people's skills and businesses can contribute to poverty reduction. **Equity and inclusion in economic participation** • Challenge gender biases and stereotypes in employment and business. • Promote inclusivity and equitable access to entrepreneurship and decent work.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET(ctd)	**Inequality and global context** • Inequality as a barrier to vocational training, job opportunities, technology and capital. • Globalisation, technological change and urbanisation as drivers of income disparities. • Employment trends and poverty levels across sectors, including formal, informal and gig economies. • The role of gender, geography and migration in shaping poverty and livelihoods. • Inclusive economic models, including fair trade, co-operatives, social enterprises, green industries and circular economies. • Labour market needs and vocational pathways linked to entrepreneurship and self-employment. **Poverty reduction and solutions** • The role of TVET in poverty reduction through skills development, employability, entrepreneurship and self-employment. • Support systems for youth, women and vulnerable groups in achieving decent work. • Economically and environmentally sustainable enterprises within local and global markets. • Policy, institutional frameworks and partnerships as enablers of decent work, fair wages and inclusive labour markets. • TVET as a contributor to resilience in the context of technological change, climate impacts and global economic shifts.	**Social and community impact** • Participate in community-based projects that address poverty and social development. • Learn how to apply pro-poor development strategies and engage in sustainable community enterprises. • Develop strategies for financial and social inclusion, particularly for marginalised groups. • Link technical skills to income generation and community development. • Apply or use effective poverty reduction strategies, including microfinance, saving groups, social protection systems and sustainable livelihoods models, such as circular economy and green jobs.	

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Understanding poverty** • Poverty as a complex, multidimensional phenomenon shaped by economics, power, conflict, inequality, and environmental, social and political systems. • Distinctions between absolute and relative poverty, and between monetary and multidimensional deprivation, with reference to indicators such as the MPI and SDG metrics. • Poverty dynamics among diverse groups, including women, migrants, indigenous peoples, youth and persons with disabilities. • Links between poverty, climate change, environmental degradation and disasters, and their role in vulnerability and exclusion. **Causes and effects** • Structural drivers such as colonial legacies, unequal trade, environmental stressors and labour market exclusion. • Contributing factors including unemployment, lack of education and healthcare, displacement and conflict. • Impacts on health, education, nutrition, housing, water, sanitation and human security. • Economic shocks—pandemics, crises and technological disruptions—as drivers of poverty and inequality. • The cyclical relationship between poverty and vulnerability, limiting resilience to crises and climate impacts. **Inequality and global context** • National and global inequality as a factor perpetuating poverty, especially for marginalised groups. • Comparative poverty trends and inequality gaps across countries and regions, using global datasets and case studies. • Intersectionality of gender, race, disability and geography in shaping experiences of poverty and exclusion. • Wealth concentration and tax systems as determinants of mobility and public investment. • The influence of technological change, labour markets and industry trends on livelihoods, digital divides and inequality. • Development cooperation, aid frameworks and pro-poor economic policies (e.g., SDG1, Paris Agreement, Addis Ababa Action Agenda).	**Research, analysis and evaluation** • Conduct quantitative and qualitative research on poverty, inequality and development trends. • Apply statistical tools and policy analysis methods to evaluate anti-poverty strategies. • Use fieldwork, including case studies, interviews and surveys, to assess community-level poverty challenges. • Critically assess policies on economic inclusion, social protection and human rights. **Financial and economic skills** • Develop budgeting, savings and investment strategies, especially for low-income and marginalised communities. • Analyse the impact and sustainability of micro-finance, income support programmes and local economic initiatives. • Explore economic resilience models, including diversification of income sources and adaptive social enterprises. **Policy design and strategic thinking** • Design evidence-based poverty alleviation strategies, including community-driven programmes and national policies. • Engage in systems thinking to understand the root causes and long-term impacts of poverty and inequality. • Integrate interdisciplinary solutions that connect environmental, social and economic sustainability. • Develop sustainable business plans that align with SDG1 and SDG8. • Engage in incubator projects, internships and applied research. **Poverty reduction and sustainable solutions** • Apply poverty reduction strategies integrating sustainable development, inclusive growth, and universal social protection. • Use microfinance, social entrepreneurship, and community-driven initiatives to strengthen local economies and livelihoods. • Analyse national efforts that expand equitable access to land, infrastructure, healthcare, education, and decent work. • Develop adaptive strategies to mitigate poverty impacts during disasters, health crises, and economic shocks.	**Social justice, equity and ethical responsibility** • Commit to social justice and equity, ensuring universal access to opportunities and resources. • Recognise the dignity and rights of marginalised communities through a pro-poor and ethically responsible approach. • Demonstrate ethical leadership and civic-minded entrepreneurship in professional, academic and community settings. **Empathy, inclusion and intercultural understanding** • Promote inclusion and economic participation for vulnerable populations, including migrant workers, women and disadvantaged groups. • Manifest empathy, intercultural understanding and awareness of the lived realities of those affected by poverty. • Advocate for inclusive decision-making, ensuring marginalised voices are heard and empowered in policy processes. **Resilience, adaptability and lifelong learning** • Show resilience and adaptability in addressing global challenges, including economic shocks and environmental crises. • Embrace lifelong learning, critical reflection and ethical leadership as tools for personal and societal transformation. **Advocacy and engagement** • Develop advocacy campaigns for social justice, policy reform and economic inclusion. • Participate in debates and dialogues on poverty and global inequality. • Collaborate with NGOs, research institutions, governments and development agencies on pro-poor initiatives.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Understanding poverty** • Poverty as a multidimensional issue affecting access to food, water, health services, decent shelter, education, and safe work. • The ways social inequality, gender roles, and financial exclusion deepen poverty. • The impact of conflict, natural disasters, and economic shocks on families and community income. **Causes and effects** • Structural causes of poverty, including unemployment, low wages, limited resources, and systemic discrimination. • Interconnections between poverty and poor health, malnutrition, illiteracy, and social exclusion. • Long-term effects of poverty on children, families, and societies. **Inequality and global context** • Poverty challenges in local communities compared with those in other regions or countries. • The influence of climate change, gender inequality, and global economic systems on poverty levels. • Variations in access to resources such as land, markets, and finance, and how these shape inequality. • The role of community development agencies, NGOs, and government programmes in addressing poverty. **Poverty reduction and sustainable solutions** • Local and global poverty reduction strategies and their role in supporting household and community development. • Local economic systems and the potential role of micro-enterprise in improving livelihoods. • Sustainable income-generating opportunities, including small businesses, farming, crafts, services, co-operatives, and green jobs. • Micro-finance and inclusive business models that support families, such as savings groups, small loans, financial co-operatives, and community funds.	**Financial literacy and planning** • Apply basic financial skills, including budgeting for household needs, planning for savings and managing loans; and understanding income, expenses, credit, debt and interest rates. • Practise budgeting and financial planning tools through real-life examples. • Recognise the importance of saving regularly and borrowing responsibly. **Access to financial services** • Open a savings account, access micro-loans and engage with local financial institutions. Participate in savings groups or co-operatives. Access mobile banking or community credit facilities. • Understand economic rights to land, property, work opportunities and entrepreneurship. **Income generation and business skills** • Identify and plan small-scale income-generating activities based on community needs and personal strengths. • Apply basic entrepreneurship and marketing skills, such as customer service, simple pricing, record-keeping and packaging. • Access markets, work in co-operatives, or start community enterprises. • Understand the use of small loans and how to make informed decisions about borrowing. • Examine economic resilience strategies, such as diversifying income sources, seasonal employment, skills-building and self-employment. **Communication and collaboration** • Build confidence and communication skills to participate in financial decisions at home and in the community. • Practise negotiation and collaboration for shared business ventures or community development. • Engage in community discussions, decision-making and local development planning. • Discuss how to collaborate with development agencies and government support programmes.	**Empowerment and financial responsibility** • Develop self-confidence and a sense of empowerment to participate actively in economic life and advocate for financial rights. • Encourage financial responsibility and resilience to support long-term income stability and economic independence. **Equity and inclusion** • Commit to economic inclusion by recognising the importance of equitable access to resources and opportunities for all. • Embrace solidarity and shared responsibility, understanding that poverty reduction depends on collective action and support networks. **Collaboration and civic participation** • Engage in community participation and collaborative economic decision-making that promotes inclusive development. • Value co-operation and mutual support in addressing local and global economic challenges. **Proactive and lifelong learning mindset** • Cultivate an initiative-taking, solution-oriented mindset that embraces lifelong learning to navigate and overcome economic challenges.

4. Goal 2 – Zero Hunger

End hunger, achieve food security and improved nutrition and promote sustainable agriculture

The global food crisis: a growing concern

The 2025 Global Outlook by the World Food Programme (WFP) paints a stark picture: 343 million people across 74 countries face acute food insecurity, with 2 million on the brink of famine. The crisis is most severe in regions such as Gaza (Palestine), Sudan, South Sudan, Haiti, and Mali, where conflict, economic instability, and climate extremes converge to exacerbate hunger (WFP 2024a).

The UN Food and Agriculture Organization's (FAO's) Global Information and Early Warning System (GIEWS) similarly identifies 45 countries in urgent need of external food assistance due to climate shocks, prolonged conflict, and economic disruptions (FAO 2025a). Rising food prices, civil unrest, natural disasters, and declining climate resilience are key drivers. In conflict zones, humanitarian access is often blocked, leaving millions without essential support. Social protection systems are critical if the world is to achieve the goal of Zero Hunger.

The dimensions of malnutrition

Food insecurity and malnutrition are multidimensional. According to the WFP (2021), malnutrition includes the following.

- **Undernutrition**, which leads to stunting and wasting.
- **Micronutrient deficiencies**, such as shortages of Vitamin A, iron, or zinc.
- **Overweight and obesity**, which are rising in low- and middle-income countries and constitute forms of malnutrition.

Food insecurity is not a static condition. It can be transitory, seasonal, or cyclical, and is influenced by a range of vulnerabilities – including income fluctuations, displacement, health crises, and climate-related disasters. These shocks reduce food production, particularly among small-scale farmers, and limit access to adequate nutrition.

Intra-household inequalities – such as women and children eating last or least – further compound nutritional risks. Climate change alone is projected to increase hunger by up to 20 per cent by 2050 (WFP 2021).

Education: a cornerstone of nutrition and food security

The global food crisis is no longer solely about food availability – it is a multidimensional development emergency. Nutrition must be recognised as a critical development issue, closely linked to health, learning, and productivity. Indicators such as the Food Insecurity Experience Scale (FIES) and the Global Hunger Index (GHI 2023) point to the persistent impact of malnutrition on wellbeing and socio-economic progress (FAO *et al*. 2023).

Children living in poverty are particularly vulnerable. Food insecurity increases stress, disrupts development and undermines school performance. Chronic malnutrition can lead to stunting, cognitive delays, and emotional distress (Black *et al*. 2013). New entrants to the school system are more likely to come from marginalised groups affected by poverty and malnutrition (UNESCO 2015; Vladimirova and Le Blanc). Research shows that even sporadic exposure to food insecurity is associated with higher rates of absenteeism, hyperactivity, and inattention in school (OECD 2023).

The role of education systems

Education systems play a transformative role in addressing hunger. Beyond providing school meals, they can promote comprehensive food literacy – covering sustainable diets, environmental impacts, land use, and food justice. School-based programmes such as gardens, hygiene education, and nutrition initiatives not only teach essential life skills but also improve enrolment and learning outcomes. In 2023, the WFP supported

21 million schoolchildren through school feeding programmes, though recent funding cuts threaten these gains (WFP 2024b; Reuters 2025).

Integrating nutrition, health, and the 'One Health' approach

Nutrition is deeply interconnected with food systems, health, the environment, and education. The 'One Health' approach – linking human, animal, and environmental health – offers a systems-based framework for improving food security. When embedded in education, it supports sustainable farming, safe food production, and the prevention of zoonotic diseases (WHO 2022).

Embedding education within food security strategies enables a shift from short-term interventions to systemic, long-term solutions that build resilience, promote equity, and support sustainable development. Incorporating nutrition and food systems into science and health curricula empowers learners to make informed dietary choices and contribute to community wellbeing. Lifelong nutrition education can yield intergenerational benefits in health, productivity, and environmental stewardship.

Agricultural education and food systems

Feeding a global population projected to exceed 9.7 billion by 2050 requires more than increased productivity. Agriculture must address land degradation, water scarcity, food loss, pollution, and dietary shifts driven by urbanisation and changing income levels. Education is central to this transformation.

Agricultural education equips learners to adopt regenerative, climate-resilient practices, manage resources sustainably, and respond to shocks such as drought and price volatility. It enables farmers and communities to transition from reactive to proactive approaches in food production and resource management.

Successful initiatives such as the Technologies for African Agricultural Transformation (TAAT) programme demonstrate the power of education in action. TAAT empowers youth through agribusiness parks that provide access to modern technologies, processing facilities, marketing platforms, and entrepreneurship training across agricultural value chains (Malabo Montpellier Panel 2024; TAAT 2025).

Modern agricultural education must extend beyond traditional production to include agribusiness, digital agriculture, and food system innovation. Learners need technical knowledge, market literacy, and digital skills to apply precision farming tools – such as Global Positioning System (GPS), soil sensors, and drones – for sustainable productivity (Eshwood 2024).

Technical and vocational education and training (TVET) institutions play a pivotal role in this transformation. They equip young people – particularly those from vulnerable communities – with agricultural expertise, life skills, and entrepreneurial capacities, enabling them to build resilient and sustainable livelihoods.

By linking sustainability, innovation and entrepreneurship, learners become agents of change – supporting food production, reducing waste, and improving food distribution and nutrition.

Gender, education and food security

Education, especially for women and girls, has a powerful impact on nutrition and food security (USAID 2011). Educated women are more likely to adopt diverse diets, ensure household food stability, and access health services. Girls' education is linked to delayed marriage, lower fertility rates, and improved child health outcomes (Glick 2002; UNICEF 2023).

Gender-responsive education challenges discriminatory food norms and empowers women in agricultural decision-making and leadership. Schools aligned with public health strategies can promote lifelong healthy behaviours – not only among students but also within families and communities (Bundy *et al*. 2009).

Community-based education programmes that integrate functional literacy, nutrition, reproductive health, and agricultural training have demonstrated significant impact in enhancing food security and wellbeing. Initiatives such as the Scaling Up Nutrition (SUN) Movement exemplify multisectoral approaches that combine women's empowerment, education, and nutrition policy reform (scalingupnutrition.org).

Sustainable fishing: an overlooked food security pillar

Fisheries provide vital protein for millions globally, yet overfishing, climate change, and environmental degradation threaten marine food systems. In the Pacific, the Consortium of International Agricultural Research Centers (CGIAR) and partners recommend national vulnerability assessments, climate-adaptive fisheries strategies, and partnerships between scientists, traditional fishers, and governments to build resilience (Bell *et al*. 2016).

Education in sustainable aquaculture, marine biodiversity, and coastal livelihoods is essential for preserving ocean health and sustaining fish-based nutrition. Integrating these topics into formal, non-formal and informal education systems can support long-term food security and environmental stewardship.

Looking ahead: education for sustainable food futures

Achieving sustainable food systems depends on knowledge, innovation, and community empowerment. Scientific advances in genetic diversity, climate-smart agriculture, and agroecology must be accompanied by investment in farmer education, school-based programmes, and digital tools that enhance access to information and skills.

Capacity building across the entire food value chain – from production and processing to distribution and retail – can promote sustainable practices and increase resilience. Education enables critical thinking, adaptive capacity, and the agency to lead systemic change in response to global challenges.

Higher and adult education – particularly in the social sciences, public health, agriculture, and development studies – can equip learners to understand food policy, engage in evidence-based advocacy, and participate meaningfully in decision-making processes. These roles are essential for shaping equitable food systems, protecting the rights of smallholder farmers, and ensuring access to adequate food as a fundamental human right.

Entrepreneurship education linked to food systems opens new pathways for decent work and innovation – from urban farming and sustainable packaging to food technology and circular supply chains. Education can empower learners of all ages to develop enterprises that not only generate livelihoods but also improve local food access and resilience.

Lifelong learning systems are vital for helping communities navigate evolving food systems, market shifts, and environmental pressures. This includes adult and community education on sustainable diets, food budgeting, and home gardening, as well as platforms for preserving indigenous and traditional food knowledge. Intergenerational learning rooted in local food practices and environmental stewardship enhances both cultural continuity and sustainability.

Embedding food systems education in schools, TVET institutions, higher education, and community programmes strengthens the strategic role of education in achieving SDG2 – Zero Hunger. In doing so, it lays the foundation for just, inclusive, and resilient food futures.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Recognising food and its importance** • Learn about different types of food through meals, snacks through related games, songs and stories. • Understand that food helps us grow, stay strong and have energy. • Recognise basic food groups, especially healthy foods like fruits, vegetables and whole grains. **Exploring food through the senses** • Explore tastes, textures, colours and smells of various foods. • Develop local food knowledge. • Use sensory language to describe food (for example 'sweet', 'crunchy', 'smooth'). • Talk about favourite and new foods in safe, supportive settings. **Where food comes from** • Discover where food comes from – plants, animals, farms, gardens and nature. • Learn about food journeys (for example, farm to table) using pictures, toys or role play. • Observe how food grows by participating in planting seeds and caring for plants.	**Food identification and communication** • Identify and name foods in meals and the classroom environment. • Communicate food preferences using words, pictures or gestures. • Sort foods into categories (for example, fruits, vegetables, grains) through interactive play. **Food preparation and choice-making** • Participate in simple food-related activities like washing fruit, arranging snacks or helping to mix ingredients. • Make simple, guided choices between food options and recognise healthier alternatives. • Learn basic hygiene and safety when handling food (for example, washing hands, using utensils properly). **Connecting food with nature** • Engage in growing activities such as watering plants or harvesting from a garden. • Visit farms or community gardens (virtually or in person) to see where food comes from. • Take part in food-themed projects linking seasons, weather and nature cycles.	**Building healthy habits** • Develop a positive and curious attitude toward trying new foods. • Begin forming habits of balanced eating in both school and home settings. • Understand that eating well helps us feel good and grow strong. **Appreciation and gratitude** • Show appreciation for food, those who prepare it and where it comes from. • Develop a sense of gratitude and sharing through group meals and storytelling. • Explore simple ideas about fairness and empathy – for example, people do not always have enough food. **Caring for others and the environment** • Begin to understand that taking care of nature helps grow food. • Participate in group activities that emphasise co-operation and kindness during meals. • Learn to avoid wasting food and water, connecting this to caring for people and the planet.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**Nutrition and healthy eating** • Understand the basics of nutrition and the role of different food groups (for example, carbohydrates, proteins, fats, vitamins, minerals) in a balanced diet. • Identify sources of key nutrients and the benefits they offer to the body. • Understand the difference between portion sizes and serving sizes and how they affect health. **Food origins and systems** • Learn where various foods come from (for example, fruits, vegetables, grains, dairy, meat) and trace their journey from farm to table. • Explore how food is grown, harvested, processed, stored (fresh, dried, frozen, tinned) and transported. • Understand the environmental impact of food production and how to reduce food waste. **Hunger, malnutrition and food insecurity** • Define and differentiate between hunger, malnutrition and food insecurity. • Explore causes of food insecurity such as poverty, conflict, climate change and inequality. • Recognise the consequences of poor nutrition on physical and cognitive development, especially for children. **Food, gender and livelihoods** • Understand the role of food security in supporting family livelihoods and health. • Explore the connection between food systems and gender roles, including the role of women and girls in farming, cooking and food-related decision-making. • Appreciate the importance of indigenous and local knowledge in sustainable food practices.	**Practical food knowledge** • Read and interpret food labels and ingredient lists to make informed food choices. • Identify and choose healthy alternatives to processed and fast food. • Plan simple, balanced meals based on locally available ingredients and dietary needs. • Practise good hygiene (for example, handwashing, cleaning surfaces) in food handling and preparation. **Gardening and food preparation** • Grow fruits and vegetables in school gardens and understand basic gardening techniques. • Participate in preparing simple, healthy meals or snacks in class or at home. • Learn methods of food preservation (for example, drying, storing in cool places) to reduce waste and improve nutrition. **Health and wellbeing practices** • Apply nutrition knowledge to avoid common diet-related illnesses such as obesity, diabetes and undernourishment. • Contribute to maintaining a clean and safe school meal environment. • Share food-related knowledge and healthy practices with family and community members.	**Healthy habits and personal responsibility** • Develop a sense of responsibility for personal health and food choices. • Adopt healthy eating habits and a positive relationship with food. • Commit to carrying these habits into adulthood. **Sustainability and food justice** • Appreciate the cultural significance of food and value local, seasonal and indigenous food traditions. • Develop a willingness to help solve hunger and malnutrition in children's communities. • Recognise that everyone has a role in ensuring food systems are fair, sustainable and inclusive. **Empowerment and social engagement** • Children should view themselves as active agents of change in promoting food justice and sustainability. • Show empathy and solidarity with individuals and communities facing hunger or poor nutrition. • Engage in community or school initiatives that promote better nutrition, food access and environmental care.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Food systems and geography** • Impact of geography on food production, supply and consumption, including variations in climate, soil, water availability and regional growing seasons. • Influence of geographical and economic factors on local and global food availability and prices. **Nutrition and food choices** • Relationship between food choices and cultural, emotional, environmental, nutritional, religious and social influences. • Calculate nutrition requirements based on age, activity level, health status and dietary needs. • Long-term health impact of processed foods, dietary trends and fast-food industries. **Global hunger and food insecurity** • Define and measure global hunger using indicators such as undernourishment, stunting and food insecurity. • Key drivers of hunger, including conflict, poverty, climate change, inequality and market instability. • International frameworks and strategies aimed at reducing hunger, such as the Right to Food, World Food Programme initiatives and sustainable agriculture. • Global hunger metrics like the Global Hunger Index (GHI) and Food Insecurity Experience Scale (FIES). **Sustainability and indigenous knowledge** • The role of indigenous food systems and traditional agricultural practices in promoting sustainability and resilience. • Economic and environmental factors contributing to food waste and food loss. • Waste reduction to support broader goals of food security and environmental sustainability.	**Food planning and analysis** • Plan and evaluate balanced meals based on geographical, seasonal, economic and nutritional considerations. • Use graphs, tables and charts to analyse the energy and nutritional value of food types. • Assess ingredient sourcing for sustainability and environmental impact. **Practical food and environmental skills** • Select, prepare and store food using methods that optimise nutrition and minimise waste. • Participate in gardening, food preparation and preservation projects that promote healthy and sustainable eating habits. • Investigate local and global food supply chains and identify challenges such as overproduction, access and inequality. **Action and advocacy** • Develop and implement social action plans focused on hunger, nutrition or food justice. • Participate in school or community-based food literacy initiatives, such as cooking clubs, gardening programmes or nutrition campaigns. • Integrate indigenous knowledge into educational and sustainability projects. • Research and propose local and global solutions to hunger-related issues, using data and policy evaluation tools.	**Empathy and global citizenship** • Show empathy and solidarity with individuals and communities affected by hunger and malnutrition. • Embrace a strong sense of social responsibility and a willingness to act on issues related to food equity and justice. • Demonstrate a commitment to reducing personal and collective food waste. **Personal and community health** • Develop positive attitudes toward nutrition, sustainability and responsible food choices. • Promote good dietary practices and encourage peers and family members to adopt healthy habits. • Value lifelong learning and self-empowerment in maintaining health and wellbeing. **Respect for culture and sustainability** • Appreciate the cultural and environmental value of indigenous food systems and traditional knowledge. • Advocate for fair, inclusive and sustainable food systems that serve the needs of all communities. • Support school and community efforts aimed at improving access to nutritious food, such as school meal programmes, food banks and agricultural projects.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Sustainable food systems** • Fundamentals of sustainable food systems, encompassing environmental, social and economic dimensions of food production, processing, distribution, preparation and consumption. • Roles of infrastructure, institutions, people and natural inputs in supporting resilient and efficient food systems. **Food safety and nutrition** • Principles of food safety across the supply chain, including hygiene standards, safe storage, transportation and handling procedures. • Basics of nutrition, workforce dietary needs and strategies to ensure food access and wellbeing at workplaces through initiatives like canteens and meal subsidies. **Agriculture and rural economies** • Crop diversification, farm forestry, non-wood forest products and artisanal food production as vital elements of sustainable livelihoods. • Cost structures and management considerations in animal husbandry, including feed alternatives and welfare practices. **Food business and market dynamics** • Economic potential of value-added food products, food tourism and farm-to-fork models for generating income and supporting rural economies. • Food tourism to enhance the visibility of local agricultural businesses and create market opportunities. • Explore food system entrepreneurship. **Community and climate resilience** • How small-scale farmers can adapt to climate challenges through diversified, sustainable practices. • Community food audits to identify hunger risks, food security gaps and local opportunities for improvement.	**Agricultural practice and management** • Implement sustainable farming methods such as agroecology, crop rotation and organic techniques to improve productivity and environmental outcomes. • Apply farm management skills including resource planning, budgeting, risk management and productivity tracking to enhance operational success. **Food safety and processing** • Design and operate supply chain food safety management systems to meet standards across production, processing and retail. • Develop skills in food preservation, processing and packaging to enhance product value and safety. **Business development and innovation** • Apply entrepreneurial thinking to develop agribusiness ventures, including food tourism and artisanal food products. • Conduct market analysis and develop business plans that incorporate marketing, distribution and sustainability strategies. • Engage in training and business simulations to strengthen decision-making, innovation and customer engagement skills. **Community engagement and food access** • Plan, manage and evaluate food gardens or community-based agricultural initiatives to combat hunger and improve food security. • Collaborate with local organisations and stakeholders to implement food security programmes and nutrition education campaigns.	**Sustainability and social responsibility** • Demonstrate commitment to sustainable food production, environmental protection, and ethical treatment of people and animals within the food system. • Promote health and nutrition within the workplace and community, supporting a culture of wellbeing and informed food choices. **Rural empowerment and innovation** • Cultivate an entrepreneurial mindset, seeing opportunities in food production, processing and marketing that contribute to rural development and self-reliance. • Value the importance of food tourism and artisanal food initiatives in enhancing community identity and economic opportunity. **Equity and advocacy** • Show dedication to equitable food access, recognising the social, economic and environmental significance of food security for vulnerable populations. • Advocate for inclusive agricultural policies and innovations that respond to local needs and respect indigenous knowledge and sustainable practices. **Adaptability and leadership** • Embrace innovation, technology and lifelong learning to remain responsive to shifts in agriculture, food markets and global challenges. • Take initiative to lead or support community efforts that advance food system resilience, nutrition security and sustainable development.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Food systems and sustainability** • Key concepts and complex challenges related to global food systems, including the interactions between environmental, social and economic factors. • Sustainable food systems and their components: natural inputs, production processes, infrastructure, institutions and socio-economic relationships across the food chain. **Nutrition, diversification and food safety** • Role of crop diversification and improved nutrition in farm management and food security strategies. • Food safety management systems and regulatory frameworks that govern the safe handling, processing, storage and transport of food along the value chain. **Agricultural innovation and economic development** • Farm forestry, non-wood forest products and artisanal food production as contributors to food security, environmental protection and rural development. • Economic impacts of farm-based enterprises and food tourism, including how value-added products open markets and boost local incomes. **Livestock and workplace nutrition** • Cost structures, feed alternatives and ethical animal husbandry practices to promote welfare and sustainability. • Importance of workplace nutrition, meal subsidies and canteen models in promoting workers' wellbeing and productivity. **Climate and food security** • Climate-resilient agriculture techniques, such as agroforestry and conservation tillage, to improve adaptive capacity and sustainability. • Interconnections between climate change, energy systems and food security, including their effects on food availability, access and supply chains. **Food governance and community solutions** • Community food security audits, identify local hunger challenges and assess opportunities for intervention. • Policy development processes related to food security at the local, national and global levels, with an emphasis on sustainability, rights-based approaches and equity.	**Sustainable agricultural practices** • Design and implement sustainable and climate-smart agricultural systems (for example, agroecology, crop rotation, integrated pest management) that enhance food production and resilience. • Apply techniques for water conservation, soil health improvement and biodiversity protection within food production systems. **Food safety and farm management** • Develop and monitor food safety management systems aligned with international standards to ensure quality control across the food supply chain. • Apply farm management principles, including budgeting, business planning, resource allocation and risk management, to improve agricultural viability and efficiency. **Business and entrepreneurship** • Develop food processing and value addition skills to create innovative, market-ready products. • Use business tools such as market analysis, value chain mapping and marketing strategy to launch and manage food enterprises, including those linked to food tourism and artisanal production. **Community development and policy leadership** • Plan and manage local food production projects, such as community gardens or urban agriculture, aimed at improving food access and nutrition. • Engage in policy-making simulations and case studies to propose evidence-based solutions to food security challenges. • Conduct academic research on food system issues, climate impacts and sustainable agricultural practices using qualitative and quantitative tools. **Analytical and research competence** • Use research methodologies and data analysis to evaluate food security conditions, identify trends and recommend policy or programmatic responses. • Contribute to innovation in agriculture by analysing the performance of sustainable practices and proposing refinements based on field data and community needs.	**Sustainability and responsibility** • Demonstrate a strong commitment to sustainable food systems that prioritise environmental conservation, ethical food production and social equity. • Show leadership in promoting responsible consumption, reducing food waste and advocating for fair and resilient food systems. **Equity and cultural respect** • Respect diverse dietary practices, cultural food traditions and indigenous knowledge as vital elements of sustainable development and inclusive education. • Champion equitable access to nutritious food, especially for marginalised or vulnerable populations. **Innovation and entrepreneurship** • Exhibit motivation to explore new opportunities in agriculture, food tourism and artisanal production that support local economies and sustainable practices. • Display adaptability and innovation in response to shifting environmental conditions, technological changes and evolving food systems. **Advocacy and global citizenship** • Embrace a global perspective on food security, recognising interdependence across nations and sectors. • Commit to taking informed action on hunger, malnutrition and food justice as agents of change within academic, professional and civic spaces.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Foundations of food systems and nutrition** • Holistic understanding of food systems, including how agriculture, nutrition, health and community wellbeing are interconnected. • Value of balanced diets, particularly for vulnerable groups (children, women, the elderly) and their role in promoting better health outcomes. **Community-based food solutions** • Purpose and impact of school feeding programmes, including the roles of parents, educators, farmers and local organisations in supporting children's nutrition. • Explore how traditional knowledge and local farming practices contribute to food security, sustainability and biodiversity. **Sustainable agriculture and environmental resilience** • Sustainable farming systems, including crop rotation, organic farming, mixed cropping and agroecology and how they improve food productivity and protect natural resources. • Impacts of climate change on agriculture and food systems and learn basic strategies to adapt farming methods accordingly. **Social, political and economic contexts** • How food access, choices and outcomes are shaped by policy decisions, subsidies, gender dynamics and land tenure systems. • Economic link between nutrition, agricultural productivity and poverty reduction in rural households. • **Livelihoods and market access** • How artisanal food production and local food processing support rural income, preserve food heritage and open new market opportunities. • Land rights, especially for women and marginalised groups, as a foundation for secure and productive farming.	**Sustainable and adaptive farming practices** • Apply basic sustainable farming techniques, such as agroecology, composting, intercropping and crop rotation, to improve soil health and increase yields. • Manage mixed farming systems effectively, combining crops, livestock and tree planting for balanced nutrition and diversified income. **Nutrition and food security at home and in the community** • Establish home and community vegetable gardens that integrate nutrition education, especially targeting women and caregivers. • Implement simple food hygiene and safety practices in food handling, storage and processing to reduce illness and waste. **Farm and financial management** • Improve farm planning and budgeting skills, including how to allocate resources, assess input costs and manage risks. • Learn how to access credit, agricultural extension services and local markets to strengthen smallholder and community-based food production. **Community learning and knowledge sharing** • Participate in and contribute to community-led agricultural training, storytelling and informal learning circles to share experiences and strengthen collective problem solving. • Promote and engage in artisanal food production (for example, food preservation, fermentation, drying), adding value to crops and extending food availability year-round. **Climate resilience and innovation** • Implement practical climate adaptation strategies, such as drought-tolerant crops, mulching and water conservation, to strengthen local food systems. • Identify local environmental risks and co-develop solutions with peers, agricultural workers and facilitators.	**Community empowerment and collaboration** • Embrace a collaborative mindset by supporting others and working collectively to strengthen local food security and agricultural livelihoods. • Promote women's leadership and participation in farming groups, co-operatives and food governance structures. **Responsibility and stewardship** • Take responsibility for sustainable land use, promoting ethical farming practices that protect biodiversity and ensure fair treatment of workers. • Respect and protect traditional and indigenous knowledge systems related to food, farming and health. **Equity and inclusion** • Support equal access to agricultural resources, land, markets and education, especially for women, youth and disadvantaged groups. • Advocate for inclusive food systems that consider cultural preferences, dietary needs and local food traditions. **Resilience and agency** • Cultivate resilience by responding constructively to climate challenges, price fluctuations and food insecurity. • Recognise the link between healthy diets and economic prosperity and act to improve nutrition access in families, schools and community spaces. **Advocacy and lifelong learning** • Commit to lifelong learning about food systems, agriculture and community health. • Engage in local advocacy efforts that push for better agricultural policies, nutrition programmes and equitable land distribution.

5. Goal 3 – Good Health and Wellbeing

Ensure healthy lives and promote wellbeing for all at all ages

Education as a determinant of health

Achieving SDG3 requires more than robust healthcare systems – it demands an integrated approach that addresses the broader social determinants of health, with education at the forefront. Education shapes health outcomes across the life course by equipping individuals with the knowledge, skills and resources to lead healthier lives. It is linked to life expectancy, morbidity, and health behaviours, and influences employment, income and social mobility. Disparities in education and wealth, often established early in life, are strongly associated with differences in healthy ageing (Wu *et al.* 2020).

Schools also serve as vital spaces for promoting health and wellbeing. Beyond academic instruction, they offer opportunities for physical activity, emotional development, and social connection. For many children – especially those from disadvantaged or abusive households – schools provide safety, structure and access to essential services (WHO 2021).

The reciprocal relationship between health and education

The relationship between education and health is reciprocal and mutually reinforcing. Healthy students are more likely to attend school regularly, engage actively in learning, and perform well academically (Lee 2024). In turn, education supports better health outcomes over time by supporting preventive behaviours, informed decision-making and healthier lifestyles (Hahn and Truman 2015).

Conversely, poor health can undermine educational achievement. Chronic illness, malnutrition or mental health challenges may lead to absenteeism, reduced concentration and lower academic performance (Ro *et al.* 2016). Children with long-term health conditions or special educational needs often face additional barriers, including limited access to tailored support and fragmented care between health and education systems. Stigma and discrimination can further isolate learners, increasing the risk of disengagement and early school dropout.

Addressing these challenges requires inclusive education policies, co-ordinated support services, and safe, welcoming school environments that uphold the dignity and rights of all learners.

Health and education disparities are particularly pronounced among disadvantaged populations. Socio-economic hardship, family instability and limited access to resources contribute to both poor health and lower educational attainment. Tackling health inequities is therefore a critical strategy for closing achievement gaps and promoting social mobility (Koivusilta *et al.* 2003; Basch 2011).

A life course approach to neurological development

Children's health and development are shaped by their early experiences. The Children's Rights Charter (UN 1989) affirms the need for universal access to healthcare, especially during vulnerable stages of growth. The first 1,000 days of life from conception to age two – are particularly critical. Adequate nutrition, care and stimulation during this period support optimal brain development, immune function and long-term wellbeing (UNICEF n.d.).

The *Fair Society, Healthy Lives* report also known as the Marmot review (Marmot 2010) identified six policy priorities for reducing health inequalities, including giving every child the best start in life and strengthening ill-health prevention. These priorities align with the life course approach, which emphasises how early adversity – such as trauma, poverty or neglect – can have lasting effects on neurological development and health outcomes.

The impact of stress on brain development

The life course approach shows the cumulative impact of early experiences – particularly during childhood – on health and wellbeing throughout an individual's lifespan. Social, cultural and economic determinants significantly influence these developmental trajectories. Exposure to adverse childhood experiences, such as trauma or abuse, can induce chronic stress, which disrupts brain development. The timing of such stressors is crucial: different stages of development affect different brain regions.

For example:

- The **hippocampus**, linked to memory, may be affected during early childhood.
- The **frontal cortex**, responsible for decision-making and emotional regulation, is vulnerable during adolescence.
- The **amygdala**, associated with fear and stress responses, can be impacted by prolonged exposure to trauma.

These disruptions can result in long-term consequences, including increased vulnerability to mental health disorders, impaired learning, and reduced resilience.

Resilience, vulnerability and the role of education

Understanding how genetic and biological processes interact with environmental factors is essential to identifying the pathways that contribute to individual resilience or vulnerability (Bowes and Jaffee 2013). A nuanced understanding of the timing and effects of stress is vital for recognising vulnerabilities at various stages of life.

Early childhood education (ECE) plays a vital role in mitigating the effects of early adversity. Quality ECE programmes support cognitive and emotional development, promote resilience, and lay the foundation for lifelong learning and wellbeing. By intervening early, education systems can help prevent negative health outcomes and improve academic achievement.

This integrated approach is central to SDG3. Education systems – through targeted programmes, inclusive policies and cross-sector collaboration – can contribute to healthier, more resilient individuals and communities.

Health literacy and public health education

Education plays a pivotal role in advancing public health by promoting health literacy and facilitating access to essential services. School-based immunisation programmes – such as those focused on immunisation, nutrition, and menstrual health – are particularly effective in improving health outcomes and reducing inequalities. For example, school-based vaccination initiatives often achieve higher and more equitable coverage than clinical or community settings (Ward *et al.* 2013), while menstrual health education helps reduce stigma, improve attendance, and promote dignity for girls (Zipp and Mwambwa 2023).

Nutrition education, when combined with school feeding programmes, supports physical and cognitive development, improves attendance and reduces dropout rates – especially among vulnerable populations. Embedding health literacy into curricula ensures that learners acquire the knowledge and confidence to make informed health decisions and engage with healthcare systems throughout life.

Health protection and resilience

Health protection involves preventing and mitigating risks related to communicable diseases, environmental hazards, and emergencies. Education systems are essential in building resilience by equipping individuals with the skills to understand and manage these risks. The COVID-19 pandemic calls attention to the importance of health literacy in disease control, with schools serving as critical venues for disseminating accurate information and promoting preventive behaviours (Falcón 2022; Matterne *et al.* 2020).

Strengthening the health workforce is also vital. Education and training programmes must prepare healthcare professionals to respond to evolving challenges, particularly in resource-limited settings. Rapid training during public health emergencies, such as COVID-19, emphasised the need for scalable, inclusive education models (Raghupathi *et al.* 2020). A resilient health workforce depends on robust medical education, interdisciplinary collaboration, and values-based leadership.

Table 5.1: Life stages and brain development

Life stage	Brain regions affected by stress and the effects
Prenatal period	Maternal stress impacts brain regions such as the hippocampus, frontal cortex and amygdala, shaping the baby's stress response system. These effects can influence later behaviour, including unsociable behaviour, ADHD (attention-deficit/hyperactivity disorder), substance abuse, mood and anxiety disorders, as well as learning, memory and cognitive development. Early educational interventions can help mitigate these effects by supporting cognitive and emotional development. Maternal education can support stress reduction and resilience.
Early childhood	Hippocampal development is affected, resulting in later mental health problems and impaired learning and cognition. Early educational support can help address these challenges and promote better cognitive and emotional outcomes.
Adolescence	Development of the frontal cortex can lead to difficulties in controlling emotions and cognitive processes, which is often when mental health issues emerge. Adolescents are also more vulnerable to risk-taking and harmful behaviours due to a surge in dopamine activity that drives reward-seeking behaviour, which the developing frontal cortex may struggle to regulate. Educational programmes focusing on emotional regulation, violence and conflict management, and decision-making can help mitigate these challenges.
Adulthood and ageing	In adulthood and ageing, stress accelerates the decline of the hippocampus, contributing to memory and cognitive issues, such as Alzheimer's disease. Stress management at work, lifelong learning and cognitive stimulation can help mitigate these effects and support brain health.

Mental health and emotional wellbeing

Mental health is a critical dimension of public health and education. Symptoms of psychological distress have risen globally, especially since the pandemic. School-based social and emotional learning (SEL) programmes are among the most effective strategies for promoting mental health across income levels (WHO 2022). These programmes help reduce stigma, strengthen emotional resilience, and create inclusive learning environments.

Culturally responsive and age-appropriate mental health education is particularly important in post-crisis, conflict-affected, or marginalised settings. Education can raise awareness of the social determinants of mental health – such as poverty, discrimination, and violence – and empower learners to address these challenges collectively. Supporting emotional wellbeing in educational settings strengthens social cohesion and equips learners with the skills to navigate personal and societal challenges with empathy and confidence.

Environmental determinants of health

The health and wellbeing of individuals and communities are deeply influenced by environmental factors such as climate change, biodiversity loss and sustainability. These factors affect not only physical health but also affect mental and social wellbeing.

Education systems offer a powerful platform to address these challenges by integrating learning about environmental risks and their consequences. The health of humans, animals and ecosystems is interconnected, requiring integrated responses to shared threats such as zoonotic diseases, antimicrobial resistance and ecosystem degradation. The 'One Health' approach promotes cross-sector collaboration to improve health outcomes and sustainability. By equipping students with this knowledge, education can cultivate systems thinking and empower individuals and communities to take informed, proactive steps to mitigate environmental harm and promote sustainable practices.

Although not a new concept, One Health has gained renewed attention due to the increasing frequency and severity of threats that link the health of human, animal, plant and environmental health. It promotes a holistic, systems-based approach that recognises these interconnections and the need for integrated responses (FAO *et al.* 2022).

One health in education

Integrating One Health concepts into school curricula enhances learners' understanding of complex interdisciplinary topics and promotes active engagement. Pre-service teachers play a vital role in designing, implementing and assessing these educational interventions.

Case studies show that pupils exposed to One Health teaching demonstrate strong skills in data analysis, mathematical model evaluation, systems thinking and socio-scientific reasoning. Instructional approaches that incorporate One Health principles also improve student enjoyment and engagement (Hobusch *et al.* 2024).

Breaking down traditional disciplinary silos is essential to adopting a holistic educational approach. Teacher education is central to promoting the intersectionality of One Health and education for sustainable development (ESD). For example, the emergence and spread of diseases such as SARS-CoV-2, monkeypox, West Nile fever, Lyme borreliosis, campylobacteriosis and echinococcosis illustrate the interconnectedness of human, animal and environmental health.

Effective strategies must focus on addressing the root causes of zoonotic diseases at this nexus. This requires integrating expertise from ecology, conservation biology, wildlife biology and veterinary medicine, alongside medical and microbiological input into wildlife disease research. A comprehensive, multidisciplinary response is essential.

Education can play a key role by furthering systems thinking, raising awareness of these interdependencies, and equipping learners with the knowledge and skills to support co-ordinated action across health, agriculture and environmental sectors.

Education, spiritual wellbeing and holistic health

While SDG3 focuses on physical and mental health, a more holistic approach to wellbeing – aligned with SDG4.7's emphasis on inclusive and transformative education – recognises spiritual wellbeing as vital to personal and collective resilience. SDG4.7 calls for education that promotes sustainable development, global citizenship and wellbeing – making it a natural complement to SDG3.

Education systems that create space for reflection, purpose and cultural identity can nurture learners' sense of meaning and connectedness. This is especially important in contexts where spiritual traditions are deeply embedded in community life and healing practices (e.g. traditional ceremonies, meditations, prayer).

By integrating spiritual development – through values education, interfaith dialogue and culturally relevant pedagogies – education can support a more comprehensive vision of health, grounded in dignity, empathy and belonging.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Personal hygiene and wellbeing** • Recognise the importance of washing hands, brushing teeth and bathing to stay healthy. • Understand the connection between food choices and health, including the benefits of eating fruits, vegetables and drinking water. **Healthy habits** • Learn basic nutrition, including the importance of eating a balanced diet. • Understand the value of physical activity for maintaining good health. **Emergency preparedness** • Learn basic safety rules and emergency procedures, including evacuation drills. • Recognise common safety signs and what to do in an emergency. **Signs of health challenges** • Understand basic signs of poor health, including symptoms of hunger, unclean environments, and the impact of stress or trauma on wellbeing. **Resilience and life skills** • Learn about resilience and the ability to overcome challenges. • Understand the importance of treating others kindly and how to recognise and prevent bullying.	**Motor skills development** • Develop basic motor skills such as running, jumping and balancing to promote lifelong physical activity. • Participate in fun physical activities and games to build co-ordination and strength. **Hygiene and food safety** • Practise proper handwashing, food handling and hygiene routines in everyday activities. • Learn how to keep personal items and spaces clean to prevent illness. **Safety in emergencies** • Demonstrate the ability to follow safety instructions during emergency drills and real-life situations. • Apply simple first-aid steps for minor injuries. **Social and emotional literacy** • Develop skills to identify and manage personal feelings and emotions. • Build the ability to form positive relationships with peers and adults through sharing, empathy and respect. **Autonomy and goal setting** • Cultivate the ability to make decisions, set personal goals and take steps toward achieving them. • Engage in activities that encourage independence and responsibility.	**Self-confidence and self-awareness** • Build a positive self-image and recognise personal strengths and achievements. • Develop an understanding of the importance of self-care for physical and mental wellbeing. **Health and wellbeing as a priority** • Appreciate the role of healthy habits, such as proper hygiene and nutrition, in maintaining overall health. • Build a lifelong commitment to staying active and engaged in physical activities. **Positive relationships and respect** • Promote kindness, respect and co-operation through positive interactions with peers and adults. • Value diversity and understand the importance of inclusivity in social settings. **Safety and responsibility** • Develop a strong sense of responsibility for personal safety and the safety of others. • Encourage behaviours that prevent harm and promote wellbeing in the community. **Appreciation of play and active recreation** • Develop a love for play and active recreation as a means of physical and social development. • Value recreation as an essential component of a healthy lifestyle.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**Personal hygiene and sanitation** • Importance of personal hygiene, including handwashing, dental care, and proper sanitation to prevent diseases. • Transmission and control of common infections, including respiratory and waterborne diseases. **Healthy eating and nutrition** • Concept of a balanced diet and the importance of healthy food choices for overall wellbeing. • Role of different food groups and how nutrition supports physical and mental health. **Physical literacy and active living** • Benefits of physical activity for health and development. • Participation in a variety of physical activities that promote fitness and health. **Mental and emotional health** • Understanding mental health, recognising emotions, coping with stress, and practising self-care. • Common mental health conditions and the importance of support and intervention. **Harmful behaviours and pressures** • Effects of harmful behaviours, including substance abuse, bullying, and peer pressure. • Strategies to maintain positive and healthy choices. **Emergency preparedness and safety** • Basic first-aid principles and the importance of safety in emergencies. • Pedestrian and cycling safety, including helmets and traffic rules. **Non-communicable diseases and disabilities** • Common non-communicable diseases (NCDs) such as diabetes, heart disease, and obesity, and their risk factors. • Basic understanding of physical and mental disabilities, emphasising empathy and inclusion. **Anti-violence and bullying prevention** • Effects of violence and bullying, and the importance of respectful relationships. • Prevention and response to bullying in physical and digital spaces.	**Application of health knowledge** • Apply knowledge of personal hygiene, sanitation and healthy living in everyday practices, such as choosing healthy foods and exercising regularly. • Practise good hygiene and food handling practices at school and home. **Health communication** • Develop the ability to communicate healthy living practices to family and community members, including sharing knowledge about nutrition, exercise and hygiene. • Engage in discussions about health topics, demonstrating the ability to access and apply information for making informed decisions. **Decision-making and risk analysis** • Recognise and evaluate positive and negative influences on health. • Develop critical thinking skills to analyse risks, make informed decisions and practise healthy behaviours (for example, in relation to food choices, physical activity or resisting peer pressure). **Coping and social skills** • Strengthen coping strategies to manage stress, emotions and challenges related to health and wellbeing. • Develop social and cognitive skills for healthy relationship-building and communication. **Emotional expression and self-regulation** • Learn how to express feelings in a healthy way, using self-control and impulse management. • Practise emotional regulation and seek assistance when needed to manage physical or emotional stress. **Safeguarding** • Be able to identify harmful behaviours, intervene appropriately and support peers who may be affected. • Navigate online spaces safely and responsibly, recognising the signs of cyberbullying and using technology in a positive way. • Practical applications include peer support programmes, school-wide campaigns, and the ability to engage in positive online interactions while respecting the rights and dignity of others.	**Responsibility for personal health** • Develop a sense of responsibility for personal wellbeing, placing value on hygiene, sanitation, nutrition and regular physical activity. • Cultivate an attitude of personal empowerment in making healthy choices and reducing risks to physical and mental health. **Positive health habits** • Establish lifelong positive habits related to healthy eating, physical fitness and wellbeing. • Develop an understanding of the importance of self-care and preventive health practices. **Empowerment and action** • Gain confidence to act in promoting healthy practices in their own lives and among peers and family. • Recognise the power of sharing knowledge to encourage others to make healthier choices. **Self-respect and responsibility** • Cultivate a positive attitude toward oneself, recognising the importance of self-care, self-worth and respect for others. • Take responsibility for one's actions, including resisting peer pressure and respect personal and sexual rights. • Contribute to the creation of safer, more inclusive environments both in-person and online. • Value safety and the well-being of self and others in all activities. • Show responsibility and care by assisting those with special needs during emergencies. • Cultivate awareness of safe environments and make decisions that minimise risk in daily activities, such as walking, cycling, or sports. **Tolerance, respect and understanding** • Develop tolerance and respect for others' differences, including physical and mental abilities, cultures and emotions. • Promote inclusive behaviours and empathetic responses in social and school settings. **Sexuality and relationship respect** • Cultivate a positive and respectful attitude towards sexuality, relationships and personal boundaries. • Understand the significance of consent and mutual respect in forming healthy, respectful relationships.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Personal hygiene and sanitation** • Importance of handwashing, dental care, and proper sanitation for disease prevention. • Transmission and control of common infections, including respiratory and waterborne diseases. **Nutrition and healthy lifestyles** • Concept of a balanced diet and the role of different food groups in supporting physical and mental health. • Benefits of physical activity across the life course and promotion of fitness and health. • Relationship between nutrition, exercise, rest, and long-term wellbeing. **Mental and emotional health** • Understanding mental health, emotional regulation, stress, anxiety, and resilience. • Impact of academic, social, and digital pressures on wellbeing. • Awareness of mental health conditions, stigma, and sources of support. **Non-communicable diseases and disabilities** • Common non-communicable diseases (NCDs) such as diabetes, heart disease, obesity, and their risk factors. • Basic understanding of physical and mental disabilities, with emphasis on empathy, inclusion, and accessibility. **Harmful behaviours and pressures** • Effects of substance abuse, bullying, peer pressure, and other harmful behaviours on health and wellbeing. • Understanding strategies to resist harmful influences and promote healthy decision-making. **Emergency preparedness and safety** • Basic first-aid procedures and principles of safety in emergencies. • Awareness of pedestrian, cycling, and general safety practices to prevent accidents and injuries.	**Critical analysis and decision-making** • Evaluate health information and influences (for example, media, social norms, advertising). • Make informed decisions about nutrition, physical activity, substance use, relationships and personal safety. **Health communication** • Develop the ability to clearly express health-related concerns and advocate for health-promoting behaviours within family, peer groups and community. • Participate in debates, campaigns or peer education initiatives on health topics. **Practical life skills** • Apply skills in basic first aid, emergency response and risk assessment. • Use digital and community resources to access accurate health information and support services. **Application to real-world contexts** • Connect personal behaviours to broader societal health challenges (for example, antimicrobial resistance, vaccination hesitancy). • Analyse how local and global health issues affect communities, using case studies or community mapping. **Coping and emotional regulation** • Practise stress management, emotional literacy and help-seeking behaviours. • Strengthen interpersonal skills for conflict resolution, empathy and maintaining healthy relationships. **Personal and social responsibility** • Engage in service-learning or health-related projects to address community needs. • Collaborate on group activities that promote shared responsibility for wellbeing (for example, peer mentoring, awareness campaigns).	**Respect for health as a human right** • Develop an appreciation for equitable access to healthcare, clean water, nutritious food and safe environments. • Advocate for the right to health and wellbeing for all, especially marginalised or vulnerable groups. **Self-respect and autonomy** • Value bodily autonomy, personal boundaries and informed choices in health and relationships. • Build confidence in making independent decisions that support personal and collective wellbeing. **Empathy and inclusion** • Show empathy toward those experiencing mental illness, disability, illness or marginalisation. • Promote inclusive attitudes and challenge stigma and discrimination in health and education. • Recognise importance of respectful relationships and understanding rights in both physical and digital spaces. • Avoid risks such as sexting, online exploitation, and strategies for safe digital behaviour and digital safety. **Social justice and global solidarity** • Recognise and value the role of global co-operation in tackling health inequities (for example, SDG3, global vaccination efforts). • Support policies and actions that reduce disparities and improve health outcomes worldwide. **Commitment to healthy, sustainable living** • Value long-term health and sustainability over short-term convenience or trends. • Embrace habits that contribute to physical, mental, social and environmental wellbeing.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**General health knowledge** • Global and local disease patterns and health determinants, including social, environmental, and behavioural factors. • Health system structures and the balance between preventive and curative care. • Preventive and curative health financing and its implications for development outcomes. • Public health policies and their influence on individual and community wellbeing. **Health and social care / community health** • Common communicable and non-communicable diseases, including conditions affecting persons with disabilities and chronic health issues. • Mental health, sexual and reproductive health, and patient rights. **Public and environmental health** • Preventive health regulations, such as vaccination requirements and compliance with public health policies. • Sanitation, water safety, waste management, and air quality for community health and environmental sustainability. • Disease vectors, environmental contaminants, and their impacts on public health. **Hospitality and food services** • Food hygiene regulations, foodborne illnesses, and safe food handling procedures. • Nutrition, dietary planning, and food safety standards. **Agriculture and food safety** • Farm-to-table safety, chemical use, and their impact on health. • Storage, transport, and monitoring of food to prevent contamination. **Emergency and disaster response** • Health risks in emergencies and disasters, triage protocols, and mass care principles. • First aid, cardiopulmonary resuscitation (CPR), and infection prevention measures. **Occupational health and safety** • Workplace hazards, ergonomics, safety protocols, and occupational disease prevention. • Legal standards, health regulations, and auditing procedures.	**For all health-related fields** • Apply first aid and emergency response techniques. • Communicate health risks and promote healthy behaviours within communities. • Use data to evaluate health needs and support decision-making. **Health and social care/community health work** • Deliver basic health education, conduct wellness checks and support patient navigation. • Facilitate emotional support and referral systems. **Public and environmental health** • Inspect facilities for health risks; develop sanitation and clean water strategies. • Monitor environmental indicators and enforce safety guidelines. **Hospitality and food services** • Maintain hygienic food prep areas; apply HACCP (hazard analysis and critical control points). • Prepare nutritious meals according to dietary needs. **Agriculture and food safety** • Assess and manage risks in food production; enforce hygiene in storage and distribution. • Apply biosafety protocols in farming and livestock care. **Emergency and disaster response** • Implement evacuation plans and triage systems. • Collaborate with medical teams in rapid response scenarios. **Occupational health and safety** • Conduct risk assessments, enforce PPE (personal protective equipment) use and train workers on safe practices. • Investigate accidents and develop corrective action plans.	**For all health-related fields** • Promote respect for human dignity, cultural sensitivity and commitment to equity in health access. • Promote public health values such as prevention, inclusion and sustainability. • Recognise health as a human right and a shared community responsibility. **Health and social care/community health work** • Promote empathy and confidentiality in client care. • Empower individuals to take charge of their health. • Recognise and respect cultural and faith-based health-promoting practices in client care, ensuring that health interventions are inclusive, respectful and aligned with individuals' cultural and spiritual beliefs. **Public and environmental health** • Promote responsibility for sustainable practices that protect long-term community health. • Advocate for environmental justice. **Hospitality and food services** • Be accountable for food safety and client wellbeing. • Take pride in serving healthy, nutritious and culturally appropriate meals. **Agriculture and food safety** • Take stewardship of food systems that support nutrition and wellbeing. • Promote ethical responsibility in pesticide and antibiotic use. **Emergency and disaster response** • Be calm under pressure and prioritise human life. • Show solidarity and co-operation during crises. **Occupational health and safety** • Commit to zero harm, accident prevention and worker wellbeing. • Respect workplace diversity and inclusion in safety planning.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Public health and health sciences** • Social determinants of health and connections between health, education, environment, gender, and poverty. • Structure and function of global and national health systems, including financing, governance, and service delivery. • Epidemiology, disease prevention, health promotion, immunisation strategies, and burden of disease. • Health policy, ethics, and public health law. • Emergency preparedness, surge capacity, and humanitarian health response. **Medical and clinical knowledge** • Biomedical sciences, clinical medicine, population health, and pharmacology. • Mental health, trauma-informed care, and recognition of abuse and violence. • Healthcare ethics, patient rights, and informed consent. • Lifespan health and connections between early childhood development and long-term health. • Health systems strengthening, integrated care, and quality improvement. **Education, psychology, social and youth work** • Developmental psychology, child protection, and mental and emotional health. • Influence of trauma, abuse, and environmental stressors on wellbeing and learning. • School health, inclusive education, and psychosocial support systems. • Intersectionality and social inequalities in access to health and support services.	**Public health and health sciences** • Conduct health research, analyse health data and apply evidence to health planning. • Design, implement and evaluate health promotion and disease prevention interventions. • Promote interdisciplinary teamwork and communication across health and social sectors. • Ensure the capacity to influence health policy and engage in health decisions. **Medical and clinical training** • Engage in clinical reasoning, diagnosis and treatment aligned with population health priorities. • Ensure emergency and trauma response, infection control and patient safety. • Promote effective communication with diverse patients and interprofessional teams. • Provide leadership in service delivery, mentorship and continuous quality improvement. **Education, psychology and social work** • Ensure early identification and referral of mental health and safeguarding issues. • Support students' socio-emotional development and resilience. • Work with families, health professionals and communities to promote child wellbeing.	**Health equity** • Commit to health equity, community empowerment and people-centred care. • Promote ethical leadership, transparency and social accountability in public health. • Value participatory approaches, community health initiatives and local knowledge. **Health provision** • Respect diversity, dignity and cultural needs in care provision. • Commit to continuous learning, reflection and lifelong service. • Advocate for universal health coverage and human rights in health. **People centred care** • Respect children's rights and child-centred care approaches. • Value inclusive, trauma-informed and non-discriminatory education systems. • Empower learners to be advocates for health and social justice. **Sports science and physical education** • Promote lifelong physical activity and healthy lifestyles. • Respect inclusion, gender equity and cultural diversity in sport. • Believe in the role of movement in holistic wellbeing.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education (ctd)	**Sports science and physical education** • Health benefits of physical activity and links to mental wellbeing. • Physical literacy and movement across the life course. • Inclusive approaches to physical activity for all ability levels. • Injury prevention and safe sport environments. **Environmental, development, and public policy studies** • Connections between climate change, health, displacement, and disease, and related policy considerations. • Health rights relating to safe water, air quality, and sanitation, with emphasis on equity and justice. • Impacts of urbanisation and food systems on health, wellbeing, and environmental sustainability. • Evidence-based policy formulation, ethical considerations, and integration of strategies addressing complex challenges. • Intersectionality in health and development, including gender, socio-economic status, and access to resources.	**Sports science and physical education** • Plan and deliver physical education for diverse learners. • Use sport and recreation for social cohesion, health promotion and inclusion. • Monitor and evaluate the impact of sport-based health programmes. **Environmental, development and public policy studies** • Design and implement interdisciplinary interventions that integrate of health, environmental sustainability and social equity, with a focus on addressing systemic inequalities. • Apply systems thinking to critically assess and solve complex, interconnected health and environmental challenges, ensuring long-term, sustainable solutions. • Lead community-based research and advocacy initiatives, emphasising the promotion of environmental health, community resilience and the empowerment of marginalised groups in policy decision-making processes. • Develop evidence-based policy recommendations that reflect a comprehensive understanding of the intersections between climate change, public health and socio-economic disparities. • Craft integrated policy strategies that encourage collaboration across sectors, emphasising ethics, inclusivity, and human rights principles in the formulation of health and environmental policies.	**Sustainable development** • Commit to sustainable development, health justice and ecological stewardship. • Value interdisciplinary collaboration to promote healthy societies. • Uphold the principles of equity and social justice in the design and implementation of policies and interventions, ensuring all communities, particularly vulnerable and marginalised groups, have access to the benefits of sustainable development and environmental health. • Commit to a systems-oriented mindset that values the interconnectedness of health, the environment and socio-economic factors, developing holistic solutions for sustainable wellbeing. • Champion community empowerment and participation, advocating for the active involvement of local stakeholders in decision-making processes that affect their health and environment. • Demonstrate ethical responsibility by advocating for policies that prioritise human rights, environmental integrity and public health, while considering long-term societal and ecological impacts. • Promote a culturally sensitive and inclusive approach to policymaking, acknowledging diverse perspectives, values and traditional knowledge in the pursuit of sustainable solutions. • Cultivate a sense of global citizenship, recognising the collective responsibility to address global health and environmental challenges, and developing solidarity across borders and cultures.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Community health and wellbeing** • Basic health literacy, including nutrition, hygiene, sanitation and disease prevention. • Mental health awareness, particularly in workplaces and community settings. • Maternal, neonatal and child health, including antenatal care and child development. • Signs and consequences of child abuse and neglect. • Public health measures and local health services. **Parenting and family life education** • Constructive parenting approaches supporting healthy child development. • Impact of home environments on early childhood health and learning. • Importance of hygiene, nutrition, emotional security and stimulation in young children's lives. **Workplace and lifelong health learning** • Health and safety in the workplace, including psychosocial risks. • Common mental health issues, such as stress and burnout, and their implications. • Healthy lifestyles that support lifelong productivity and wellbeing.	**Community health and wellbeing** • Promote stress management and coping strategies in daily life and crises. • Interpret health information to make informed personal and family decisions. • Participate in health-related activities, such as first aid, immunisation drives or awareness campaigns. • Support positive parenting practices and nurturing caregiving roles. • Use advocacy and communication skills to function as a bridge between community members and health providers. **Parenting and family life education** • Apply responsive and respectful parenting techniques. • Build healthy relationships and open communication within families. • Recognise when to seek help for family-related health or development issues. **Workplace and lifelong health learning** • Identify personal stressors and managing emotional health at work. • Use health information to improve quality of life and work–life balance. • Apply health strategies and routines to maintain productivity and reduce risk.	**Healthy lifestyles** • Appreciate healthy lifestyles and positive mental health practices. • Recognise the lifelong role of parents and caregivers in shaping children's wellbeing. • Respect all community members' health needs, including vulnerable or marginalised groups. • Promote a sense of personal and collective responsibility for health and wellbeing. • Be willing to take initiative in building a supportive, informed and resilient community. **Family dynamics** • Value nurturing, respectful family dynamics. • Believe in every child's right to a safe and loving upbringing. • Recognise empathy, patience and mutual respect as foundations of strong families. **Self- and mutual care** • Respect self-care and mutual care in professional settings. • Recognise health as a shared responsibility between individuals, employers and communities. • Provide motivation for continuous personal development and lifelong learning for health.

6. Goal 4 – Quality Education

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Education as a catalyst for sustainable development

Sustainable Development Goal 4 (SDG4) aims to ensure inclusive, equitable and quality education for all, while promoting lifelong learning opportunities for all. Yet progress toward this goal is significantly off track. Around the world, education systems face overlapping challenges – poor quality, unequal access, limited relevance, and chronic underfunding. These issues not only hinder the achievement of SDG4 itself but also threaten progress across the entire 2030 Agenda.

Education is a foundational driver of sustainable development. It equips individuals with the knowledge, skills, values and agency needed to improve health (SDG3), reduce poverty (SDG1), promote gender equality (SDG5), support decent work (SDG8), tackle climate change (SDG13), and sustain peace and institutions (SDG16). Without urgent action to transform education systems, the ripple effects will be felt across all sectors of society.

In many regions, particularly in sub-Saharan Africa, high student-teacher ratios, limited teacher training, and inadequate professional development continue to undermine learning outcomes (UNESCO and International Task Force on Teachers 2024). Inaction carries steep costs. Learning poverty and early school leaving could result in lifetime earnings losses of US$21 trillion globally, while governments may lose up to US$1.1 trillion annually in foregone revenue due to skills gaps and low productivity (UNESCO *et al*, 2024; UNESCO, 2025).

Universal primary and secondary education (SDG4.1)

Despite global efforts, millions of children and young people remain excluded from education. As of 2025, an estimated 272 million children and youth are still out of school. In many low- and lower-middle-income countries, dropout rates are high, and even those in school often fail to acquire basic skills. Alarmingly, 70 per cent of 10-year-olds in these countries cannot read and understand a simple text – a figure that rises to 90 per cent in the poorest nations (UIS and GEMR 2025). This widespread learning poverty has long-term consequences for individuals, communities and national development.

Closing the education gap will require substantial investment. To meet SDG4 targets by 2030, an additional US$97 billion in annual funding is needed. Yet public spending remains highly unequal. On average, low-income countries spend just US$55 per learner, compared to US$8,532 in high-income countries (UNESCO *et al.* 2024). These disparities are compounded by overcrowded classrooms, inadequate infrastructure and a shortage of trained teachers – particularly in sub-Saharan Africa where qualified educators are often under-supported (UNESCO and International Task Force on Teachers 2024).

Without urgent action, the consequences will be severe – not only for individual learners but for national economies. Skills gaps and early school leaving reduce productivity, limit innovation, and constrain long-term growth. Investing in universal, quality education is therefore not only a moral imperative – it is a strategic necessity for sustainable development.

Early childhood development and pre-primary education (SDG4.2)

Early childhood education (ECE) plays a critical role in shaping a child's cognitive, emotional and physical development. It lays the foundation for future learning, health, and social wellbeing. Yet access to quality early learning opportunities remains highly unequal – particularly in low-income countries, where children from the poorest households are least likely to be enrolled, despite benefiting the most (UNICEF 2020; 2024).

Globally, only about 40 per cent of children aged 3 to 5 are enrolled in early childhood education programmes (UNICEF 2024). In many of the world's

poorest regions, enrolment rates are significantly lower, reinforcing early developmental gaps and perpetuating cycles of disadvantage. Without access to quality early childhood care and education (ECCE), children face reduced readiness for school, lower learning outcomes, and diminished long-term prospects.

UNICEF's report *The Right to a Strong Foundation* (2024) addresses the transformative potential of ECCE – not only for individual children, but for national development. Early learning improves school retention, health outcomes, and social integration. It also contributes to human capital development, making it a strategic investment for governments seeking inclusive and sustainable growth.

Expanding access to ECCE must be a priority for achieving SDG4.2. This includes targeted support for marginalised communities, investment in trained early childhood educators, and integration of ECCE into national education systems. Without these efforts, inequality begins before formal schooling even starts – and the opportunity to break the cycle of disadvantage is lost.

Gender equality and inclusion in education (SDG4.5)

While gender disparities in education have narrowed at the primary level, they persist at higher levels and among marginalised groups – including children with disabilities, indigenous communities, and those affected by poverty or displacement. SDG4.5 calls for the elimination of gender disparities and equal access to all levels of education and vocational training. Yet progress remains uneven, shaped by complex and context-specific patterns of disadvantage.

UNESCO (2022) reports that, across 74 low- and middle-income countries, gender disparities in lower secondary education are evenly split: 27 countries show disadvantages for boys, 24 for girls, and 23 have achieved parity. However, disparities widen at the upper secondary level, with 33 countries showing disadvantages for boys and 31 for girls. Boys are also more likely to repeat grades in primary school – an issue observed in 130 out of 142 countries – indicating deeper challenges in retention and progression.

Globally, boys face growing risks of educational disengagement, reflected in higher repetition and dropout rates, weaker learning outcomes, and widening gender gaps in reading and literacy. UNESCO (2020; 2022) estimates that around 132 million boys of primary and secondary school age are currently out of school. At the same time, girls continue to encounter major barriers, including child marriage, gender-based violence, and discriminatory social norms. Addressing boys' disengagement does not detract from efforts to support girls; rather, it reinforces the need for a balanced, inclusive approach that improves learning outcomes for all and tackles structural inequalities.

Ensuring gender equality in education is both a human rights imperative and a catalyst for progress across the 2030 Agenda. Education empowers individuals to access better livelihoods, exercise their rights, and participate fully in society. Advancing SDG4.5 contributes directly to poverty reduction (SDG1), improved health and wellbeing (SDG3), gender empowerment (SDG5), inclusive economic growth (SDG8), and peaceful, just societies (SDG16). Achieving gender parity in education strengthens education's role as a powerful enabler of sustainable development.

Literacy and numeracy (SDG4.6)

Ensuring that all youth and a substantial proportion of adults attain literacy and numeracy is a core target of SDG4 – and remains an urgent global priority. Foundational skills in reading, writing and mathematics are essential for lifelong learning, yet millions of learners continue to fall behind, with gender disparities and low proficiency levels undermining progress (UNDESA n.d.).

According to UNICEF (2022a), girls globally are 1.3 times less likely than boys to acquire basic mathematical skills. While the gender gap in mathematics has narrowed or even closed in about half of the countries with available data, progress remains fragile and uneven (UNESCO 2023). This gap is rooted in persistent gender norms and stereotypes that discourage girls from engaging with mathematics and science from an early age. These disparities have long-term consequences, limiting the development of critical cognitive skills such as logical reasoning, quantitative analysis and problem solving. Addressing these disparities

requires deliberate, gender-responsive education strategies that support all learners – both girls and boys – in acquiring foundational skills.

However, foundational learning challenges affect all learners. In a study of 34 low- and middle-income countries, three-quarters of Grade 4 students failed to meet minimum numeracy benchmarks. In 79 middle- and high-income countries, more than one-third of 15-year-olds do not meet the minimum standard in mathematics. These deficits are not confined to any one region or income group – they represent a global learning crisis (UNICEF 2022b).

In contrast to trends in mathematics, boys are significantly disadvantaged in reading. Data from 57 countries show that 10-year-old boys consistently perform below girls in basic literacy assessments – a trend that persists through adolescence. Learning poverty, defined as the inability to read and understand a simple story by age 10, disproportionately affects boys in many contexts. Girls in Grades 2 or 3 are more likely to meet minimum reading standards than their male peers, suggesting that gendered gaps in literacy emerge early and can persist throughout the education cycle.

Improving literacy and numeracy outcomes is essential not only for achieving SDG4.6 but also for advancing progress across all Sustainable Development Goals. Foundational skills enable individuals to participate fully in society, access decent work (SDG8), make informed health choices (SDG3), and contribute to inclusive economic growth and sustainable development. Addressing these gaps requires targeted, gender-responsive strategies that support all learners in acquiring the skills they need to thrive.

Teacher shortages and school safety (SDG4.c)

A well-supported and professionally trained teaching workforce is essential to achieving SDG4. Yet teacher shortages continue to undermine education quality and equity, particularly in low-income and crisis-affected regions. Globally, the proportion of qualified teachers has declined or stagnated in several areas since 2000. Sub-Saharan Africa faces the most acute challenges, with only 69 per cent of primary school teachers meeting minimum qualification standards as of 2022 (UNESCO 2023).

The pupil-to-trained teacher ratio (PTTR) reveals the scale of the problem. In high-income countries, the average PTTR in primary education is 15:1, compared to 52:1 in low-income countries – more than three times higher. These disparities place immense pressure on teachers and reduce the quality of classroom interactions, harming learning outcomes and contributing to broader educational inequality.

Progress in increasing the share of trained teachers between 2015 and 2020 was uneven across regions and education levels. While sub-Saharan Africa saw modest improvements, long-term data show a decline in the percentage of trained teachers – from 85 per cent in 2000 to 64 per cent in 2022 – reflecting systemic challenges in recruitment, training and retention (UNESCO 2023).

School safety is another critical concern. Schools should be safe spaces for learning yet attacks on education and the military use of schools and universities have increased in recent years, particularly in conflict-affected contexts (GCPEA 2022). School-related violence – whether physical, psychological or sexual – can occur on school premises, during commutes, at home or online. These acts often stem from power imbalances and are exacerbated by harmful gender norms and stereotypes, disproportionately affecting girls and other vulnerable learners.

Addressing teacher shortages and ensuring safe, inclusive learning environments are essential to achieving SDG4. This requires sustained investment in teacher training, professional development, and wellbeing, alongside policies that protect learners and educators from violence and discrimination.

Trends shaping the future of education

The future of education is being shaped by powerful global trends – including digitalisation, demographic shifts, environmental crises, and rapid transformations in the labour market. As automation, artificial intelligence (AI), and green transitions redefine the world of work, education systems must evolve to equip learners with the knowledge, skills, and values needed to thrive in an increasingly complex and uncertain world.

Labour markets are changing rapidly. The International Labour Organization (ILO) warns that automation may displace many traditional jobs, while the World Economic Forum (WEF 2025) projects a net gain of 78 million jobs by 2030 due to technological innovation and climate-related transitions, with 40 per cent of core workplace skills expected to change.

These shifts demand a new focus on foundational and transferable skills – such as communication, teamwork, problem solving, and adaptability.

Strengthening teacher capacity is essential, particularly in delivering modern STEM education, sustainability topics, and innovation methodologies. Strategic partnerships between schools, technical and vocational education and training (TVET) institutions, universities, and industry are vital to bridging skills gaps and developing real-world learning. These collaborations support responsive curriculum development aligned with evolving labour market needs.

Aligning education with sectoral priorities is also critical to achieving sustainable industrialisation and resilient infrastructure, in line with SDG9. Vocational and higher education institutions should tailor programmes to support key sectors such as manufacturing, agriculture, digital services, and renewable energy. Curricula that integrate advanced technologies, circular economy principles, and resource management can drive productivity while supporting climate resilience and sustainability (UNESCO-UNEVOC 2022).

Universities and research institutions serve as innovation hubs, generating context-relevant solutions and developing collaboration with the private sector. Policy frameworks that link education with economic planning ensure that graduates are equipped with the skills and adaptability required for inclusive growth, low-carbon industrialisation, and economic diversification.

Education also plays a foundational role in promoting equitable and inclusive economic development, particularly in low-income contexts. By equipping youth, women, and marginalised groups with entrepreneurial and financial literacy skills, education enables pro-poor development strategies that encourage self-reliance and opportunity. Supporting micro, small, and medium-sized enterprises (MSMEs) – often the backbone of local innovation – can further enhance employment and community resilience.

Urbanisation and education

Urbanisation is accelerating rapidly, with 60 per cent of the global population expected to live in cities by 2030, rising to almost 70 per cent by 2050. While urban growth can drive economic development and poverty reduction, it also presents significant challenges – such as overcrowded schools, inadequate infrastructure, environmental degradation, and increased vulnerability to climate-related disasters.

Education plays a critical role in responding to these challenges and in shaping inclusive, safe, and sustainable cities. Urban schools must address issues such as overcrowding, limited access to clean water and sanitation, and the need for disaster preparedness. Integrating climate resilience and safety protocols into school operations is essential, particularly in areas prone to floods, earthquakes, and other natural hazards.

Schools can also serve as hubs for lifelong learning and community engagement, bringing together students, families, and local organisations to co-create solutions to urban challenges. Vocational education and training in areas such as urban planning, green technologies, and sustainable construction can equip learners with the skills needed to support resilient city development.

Tertiary education institutions have a vital role to play in preparing future leaders in urban governance, infrastructure planning, and social equity. By combining technical expertise with ethical leadership, graduates can help shape cities that are inclusive, environmentally sustainable, and responsive to the needs of diverse populations.

Adult and community education further supports urban transformation by enabling individuals to participate in sustainable initiatives – such as green infrastructure, policy advocacy, and climate adaptation. These programmes can empower residents to take ownership of local development and contribute to eco-friendly, inclusive urban spaces.

Education also supports the preservation of cultural heritage in urban settings. SDG Target 11.4 calls for strengthened efforts to safeguard cultural and natural heritage, including traditions, monuments,

and practices. Integrating cultural heritage into curricula – through oral traditions, performing arts, ecological knowledge, and traditional craftsmanship – can promote diversity, strengthen community identity, and support decolonial perspectives in education.

Inclusive urban planning benefits from integrating subaltern knowledge – local, indigenous, and traditional expertise often excluded from formal planning processes. This knowledge offers socially rooted solutions for climate adaptation and urban resilience. At the same time, technological innovation is reshaping urban life, from digital public services to hybrid workspaces. Education must prepare learners to navigate these changes, while addressing challenges such as digital inequality and data privacy.

As cities grow, education systems must evolve to meet the needs of increasingly diverse and densely populated communities. This includes ensuring access for marginalised groups – such as children with disabilities, migrants, and displaced populations – through inclusive policies, assistive technologies, and culturally responsive teaching. Education must also promote peace, empathy, and mutual respect for social cohesion in urban environments.

Education is central to building sustainable cities. It equips individuals with the knowledge, skills, and values to participate in decision-making, advocate for equity, and co-create solutions to urban challenges. As urbanisation continues, education must remain a cornerstone of inclusive and resilient development.

Migration, conflict and global interdependence

Education systems are increasingly called upon to respond to the complex realities of migration, conflict and global interdependence. Climate- and conflict-induced displacement is placing additional pressure on already fragile systems. Yet inclusive, responsive education remains one of the most powerful tools for social cohesion, resilience and long-term stability.

Migration presents both challenges and opportunities. It can disrupt education and social services, but it can also enrich learning environments and deepen intercultural understanding. To harness this potential, curricula and teacher preparation must promote peace, empathy and mutual respect. Support for newcomers should include language learning, psychosocial assistance and academic integration that respects their identities and experiences. The scale of displacement is unprecedented. By the end of 2024, over 42.7 million people were registered as refugees (UNHCR, 2024). Women and children make up most displaced populations and often face additional vulnerabilities, including gender-based violence and exploitation. In 2022 alone, 1 in every 233 people globally fled their country due to war, persecution, or social disorder. More than half of all refugees came from just three countries: Syria, Ukraine, and Afghanistan. Low- and middle-income countries hosted 76 per cent of the world's refugees, with least developed countries (LDCs) providing asylum to 20 per cent (IOM 2025).

Education must respond to these realities by nurturing inclusive learning environments and equipping learners with the skills to navigate diversity, challenge discrimination, and build peaceful societies. This includes integrating global citizenship education, human rights, and intercultural dialogue into curricula. Learners should be encouraged to explore the causes and consequences of migration, understand the impact of globalisation, and engage with issues of equity and justice.

Education also plays a critical role in promoting ethical leadership and inclusive governance. It can empower under-represented communities to participate in decision-making and advocate for their rights. Strengthening civic education and media literacy helps learners critically assess information, resist harmful narratives, and contribute to democratic renewal.

At the global level, science and technology depend on the cross-border flow of knowledge. Education has the potential to strengthen ethical frameworks for global co-operation, enabling collective problem solving even in a fractured geopolitical context. Investments in multilingual education, academic mobility and South–South co-operation are critical to shaping a more connected, peaceful future.

Education must prepare individuals not only to adapt to global change but to shape it. By promoting empathy, equity, and global solidarity,

education can help build inclusive societies that uphold the dignity and rights of all people – regardless of origin or status.

Lifelong learning and equity

In a world shaped by rapid technological change, climate disruption, shifting labour markets, and evolving caregiving responsibilities, lifelong learning is not a luxury – it is a necessity. It enables personal agency, wellbeing, civic participation, and social mobility. Yet most education systems remain focused on early, formal learning, with limited flexibility for continued learning across the life course.

A just and inclusive vision of lifelong learning requires the decolonisation of education. This means integrating diverse knowledge systems, challenging dominant epistemologies, and addressing historical biases and injustices. Equity in education goes beyond access – it demands meaningful, high-quality learning experiences that reflect learners' contexts, identities, and aspirations.

Decolonising education involves recognising and valuing indigenous, local, and historically marginalised knowledge. It requires dismantling Eurocentric and gender-biased narratives and creating curricula that reflect plural ways of knowing and being. Such approaches affirm learner identities and make education more relevant, respectful, and empowering.

Lifelong learning opportunities must be flexible and contextual. These include community learning centres, online and mobile platforms, and the recognition of prior learning. Adults – especially women, older individuals, and those affected by conflict or displacement – must have equitable access to learning that is linked to their lived realities.

Equally important is the strengthening of teaching quality, governance, and assessment systems. As Hanushek and Woessmann (2008) emphasise, it is not the number of years spent in school but the development of cognitive skills that determines long-term outcomes. Learning must support the acquisition of transferable knowledge, problem-solving abilities, emotional regulation, and independent learning capacities. When knowledge remains fragmented or inert, learners struggle to apply it meaningfully (Schneider and Stern 2010).

Lifelong learning is essential for building resilient, inclusive societies. It enables individuals to adapt to change, engage in democratic processes, and contribute to sustainable development. Education systems must embrace this broader vision – one that supports learning at all ages, in all settings, and for all people.

Social inclusion and democratic renewal

Education systems continue to reflect and reproduce structural inequalities, leaving millions of learners marginalised. Girls, children with disabilities, rural learners, and displaced populations often face systemic barriers that limit their access to quality education. Globally, more than 65 million children with disabilities remain out of school (UNESCO 2025), and despite growing awareness, inclusive education remains underfunded and inconsistently implemented. Systems lack comprehensive frameworks and adequate teacher preparation for inclusive practice, leaving educators without the tools or support to meet diverse learner needs.

Addressing persistent exclusion requires more than policy statements – it demands education systems that are responsive to the lived realities of learners. Inclusion must be embedded in the fabric of education, recognising that learners have diverse needs, cultural backgrounds, and ways of knowing. Curricula must be culturally relevant, pedagogies participatory, and policies explicitly designed to challenge bias and discrimination. Educators must be equipped to recognise and value diversity, creating learning environments where all learners feel visible, respected, and empowered to thrive. Schools should function not only as sites of academic instruction but also as safe, affirming spaces that nurture self-worth, belonging, and individual agency.

These imperatives unfold in a global context marked by intensifying conflict, economic volatility, and the resurgence of authoritarianism. Education must therefore play a central role in strengthening democratic values, civic engagement, and the rule of law. Integrating human rights, constitutional law, and democratic governance into curricula enables individuals to understand their rights and

responsibilities, and to engage constructively with institutions. Education also contributes to social stability by reducing vulnerability to crime, poverty, and unemployment – particularly among youth (World Bank 2007).

Beyond shaping citizens, education strengthens institutional accountability. Training programmes for police, judges, and public officials in human rights, gender sensitivity, and conflict resolution promote transparency and trust. Public awareness of legal rights and procedures empowers citizens to hold governments accountable and reinforces confidence in democratic institutions.

Preventing violence and discrimination within educational settings is essential to building inclusive, rights-based learning environments. Gender-based violence, child exploitation, and human trafficking persist in many regions, undermining efforts to build just societies. Schools must be equipped to address these challenges through trauma-informed teaching, conflict-sensitive pedagogy, and restorative justice practices. Approaches such as peer mediation and participatory decision-making help resolve conflict constructively and strengthen social cohesion.

For education to meaningfully contribute to SDG16, it must go beyond academic instruction and incorporate socio-emotional learning, ethical reasoning, and civic responsibility. These components cultivate empathy, cooperation, and peaceful conflict resolution. The concept of *Ubuntu* – emphasising collective responsibility and interconnectedness – offers a valuable framework for ethical leadership and a sense of belonging.

Education must prepare learners not only for employment but for lives of purpose, resilience, and shared responsibility. It must empower individuals to challenge injustice and contribute to inclusive, peaceful, and democratic societies.

Reimagining the future of education

In response to global challenges, educators and policymakers are reimagining education to align with sustainability goals, hands-on learning, and technological advancement. Building future-ready education systems requires a dual commitment: to technological innovation and human-centred development; to digital agility and efficiency, and to ethical, sustainable citizenship.

Technology holds transformative potential. Artificial intelligence (AI), when deployed responsibly, can support personalised learning pathways, enhance diagnostic assessments, and reduce administrative burdens – freeing educators to focus on pedagogy and student engagement. Emerging technologies such as virtual reality (VR) and the Internet of Things (IoT) offer immersive, real-time learning experiences. However, these advances also raise ethical and practical concerns (Mission *et al.* 2024), including algorithmic bias, digital exclusion, and threats to data privacy. A balanced, rights-based approach is essential to ensure that digital innovation enhances inclusion, equity, and social cohesion.

The COVID-19 pandemic accelerated a global shift to digital learning, but it also exposed deep inequalities in access. A joint UNESCO–UNICEF–World Bank (2020) report found that while 53 per cent of households globally had internet access, this dropped below 20 per cent in parts of sub-Saharan Africa. ADEA's (2023) review of 34 African countries indicated significant digital infrastructure gaps and inadequate digital competencies among educators, undermining remote learning. These findings stress the importance of investing in digital equity and educator capacity. Judiciously leveraging AI can help bridge these gaps, capacitating teachers and preparing students for the evolving demands of the future workforce.

As frontline facilitators of learning, teachers must be empowered to model and develop 21st-century competencies, including digital fluency, collaborative problem solving, and social-emotional intelligence. Professional development systems must be reoriented to prioritise these transversal skills across all subject areas, ensuring educators are prepared to meet the evolving demands of their roles in a rapidly changing world.

Education must prepare learners not only for employment but for lives of purpose, resilience, and shared responsibility in an interconnected and uncertain world. This means rethinking education not just in terms of tools or delivery mechanisms, but in terms of purpose, equity, and relevance.

Learning takes place across the lifespan and in diverse contexts – homes, workplaces, religious centres, digital spaces, and communities. Systems that ignore these realities risk excluding the very people they aim to serve. Future-ready education must embrace all forms of learning – formal, non-formal, and informal – through flexible entry points, recognition of prior learning, and stronger lifelong learning infrastructures.

Concurrently, the accelerating climate crisis and unsustainable consumption patterns demand a fundamental reorientation of education systems. Responding effectively to climate change, biodiversity loss, and environmental degradation requires more than technical knowledge – it calls for a transformation of values, behaviours, and worldviews. Education for Sustainable Development (ESD), as articulated in SDG4.7, must be mainstreamed across all levels and modalities of education. This entails cultivating systems thinking, ecological literacy, civic responsibility, and a deep sense of environmental stewardship among learners, enabling them to engage meaningfully in shaping a just and sustainable future.

Digital and environmental literacies must be recognised as foundational competencies. Learners of all ages need the skills to navigate complex issues such as data rights, digital safety, mental health in virtual environments, and sustainable consumption. Embedding these competencies across curricula ensures that individuals are equipped to participate meaningfully and ethically in both green labour markets and digital economies. In response to global challenges, academics are reimagining education by aligning curricula with sustainability goals, hands-on learning, and technological advancement (Financial Times 2025).

Building future-ready education systems requires a dual commitment: to technological innovation and human-centred development; to digital agility and efficiency, and to ethical, sustainable citizenship. Education must prepare learners not only for employment, but for lives of purpose, resilience, and shared responsibility in an interconnected and uncertain global landscape (OECD 2025).

Education must be a force for democratic renewal, social inclusion, and global solidarity. It must empower learners to challenge injustice, embrace diversity, and shape a more just, peaceful, and sustainable future. Achieving SDG4 requires bold policy reforms, sustained investment, and inclusive education systems that leave no learner behind.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Understanding self and others** • Understand awareness of self: personal identity, name, family members and where they live. • Develop basic understanding of emotions: happy, sad, angry, scared, excited. • Recognise that all children have a right to learn and play. • Be aware of classroom routines and daily structure. **Education as a right** • Develop simple recognition that going to school or learning is something all children should have the chance to do. • Understand teachers' and caregivers' roles in helping them learn and feel safe. • Explore basic introduction to the idea of fairness and inclusion (for example, 'everyone gets a turn'). **School environment and learning spaces** • Be familiar with classroom, playground, learning centres and materials. • Be exposed to visual and tactile resources that support learning (for example, books, puzzles, educational toys). • Understand safety and hygiene routines (for example, washing hands before meals, keeping learning spaces tidy). **Readiness for school** • Be aware of what happens in primary school: learning letters and numbers, listening to the teacher, working with others. • Understand basic school rules: raising hands, listening quietly, taking turns. • Explore learning spaces and stimulating environments. • Understand play as an important vehicle for learning. • Use language and literacy to talk and write about experiences.	**Communication and expression** • Use language to express needs, share experiences and ask questions. • Begin reading and writing behaviours: recognising letters, drawing shapes, storytelling. • Develop artistic expression: drawing, painting, dancing, singing, role play to communicate ideas and feelings. **Social skills and collaboration** • Learn about sharing toys and materials. • Explore taking turns during play and group activities. • Ask for help and offer help to others. • Co-operate in simple tasks: tidying up, group storytelling, singing songs. **Problem solving and reasoning** • Respond to challenges during play (for example, building with blocks, completing puzzles). • Explore simple logical thinking: grouping, sorting, identifying patterns. • Participate in discussions about how to solve small problems together. **Physical and motor development** • Develop fine motor skills: manipulating small objects, drawing, stacking, threading beads. • Develop gross motor skills: climbing, running, jumping, throwing and catching. • Show co-ordination and self-regulation during group movement activities. **Learning through play** • Engage in pretend play, role play, imaginative scenarios that promote cognitive and emotional development. • Explore sensory play activities with water, sand, clay, etc. • Use play to make sense of everyday experiences (for example, pretending to be a teacher or a doctor). • Explore creative representation (for example, draw, paint, role play, pretend, make models). • Use logical reasoning. • Develop social skills and behaviours.	**Empathy and respect** • Show kindness to classmates: comforting others, waiting patiently, saying thank you. • Respect differences: recognising that people look, speak, or act differently but are equally important. • Develop a sense of fairness: everyone has the right to play, learn and be safe. **Enthusiasm for learning** • Develop positive attitudes towards stories, books, puzzles and games. • Show curiosity and confidence in trying new activities. • Express enjoyment in learning, even when tasks are challenging. **Sense of belonging and identity** • Feel proud of own name, language, culture and traditions. • Develop self-confidence in group settings. • Build relationships with peers and adults in the learning environment. **Inclusion and participation** • Engage in active participation in classroom activities and routines. • Be open to sharing space and materials with others. • Value group experiences and enjoy co-operative games and learning. **Readiness and resilience** • Be able to transition from home to school routines. • Respond positively to feedback and managing small conflicts. • Develop confidence in being part of a group and expressing thoughts respectfully. • Use initiative and social relations (for example, to make plans and decisions, solve problems encountered in play, express feelings and be sensitive to others). • Participate in early learning. • Feel good about personal identity.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**My right to education** • Understand that education is a right for every child, everywhere. • Recognise that education helps individuals and communities grow and thrive. • Explore stories of children accessing education in different parts of the world. **Purpose and value of learning** • Identify how learning helps with achieving dreams and building a better life. • Recognise how knowledge, skills and attitudes are developed through school. • Understand how school prepares learners to contribute to society. **Education and the world** • Compare education systems and access around the world. • Recognise inequalities in schooling opportunities and reasons behind them. • Understand how education helps address poverty, inequality and global challenges. **Introduction to the SDGs** • Learn about the Sustainable Development Goals as a global effort to make the world better. • Understand that SDG4 focuses on ensuring quality education for all. • Make connections between personal learning goals and the bigger goals of the world.	**Personal learning habits** • Set simple learning goals and reflect on progress. • Develop skills in planning, completing and presenting learning tasks. • Practise concentration, perseverance and curiosity in daily activities. **School participation and responsibility** • Show responsibility in school activities (for example, homework, group work, taking care of materials). • Practise respectful behaviour and co-operation with classmates and teachers. • Take responsibility for own learning and behaviour. **Home–school connection** • Communicate learning experiences with family members. • Reflect on how support at home helps with school success. • Participate in projects or activities that involve family or community learning. **Global awareness** • Explore how other children live and learn in various parts of the world. • Share ideas and cultural practices through stories, images or videos. • Compare opportunities and challenges for children in other countries.	**Respect for education** • Show appreciation for teachers, school and learning materials. • Develop gratitude for the opportunity to attend school and learn. • Express care for school property and the learning environment. **Empathy and solidarity** • Show empathy for children who face barriers to accessing education. • Participate in classroom discussions about fairness, justice and opportunity. • Explore how helping others access education contributes to a better world. **Self-development and citizenship** • Develop self-discipline, responsibility and honesty. • Take pride in effort, improvement and trying new things. • Understand the role of learners as part of a local and global community. **Commitment to the common good** • Recognise how education supports peace, sustainability and shared wellbeing. • Understand that everyone has a role in making the world fairer and more equal. • Value lifelong learning as part of becoming a thoughtful and active citizen.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Education for sustainable development** • Concept of sustainable development and the role of education in achieving it. • Relationship between education and sustainable lifestyles, environmental awareness, and responsible consumption. • How education contributes to achieving other SDGs (for example, gender equality, health, poverty reduction). **Education as a human right** • Education as a fundamental human right protected under international law (for example, the Universal Declaration of Human Rights [UDHR], UN Convention on the Rights of the Child [CRC]). • How access to education supports the exercise of other rights (for example, health, employment, political participation). **Global and historical education campaigns** • Key milestones and global movements for education, including the education for all movement, the MDGs and the SDGs. • Historical campaigns for free and compulsory education, girls' education and inclusive schooling. **21st century literacies and competencies** • Importance of digital literacy, media literacy, financial literacy and data literacy in the modern world. • Competencies needed for life and work in the 21st century, including communication, critical thinking, adaptability and collaboration.	**Critical analysis of educational inequality** • Investigate and analyse the root causes of unequal access to education, including economic, cultural, gender, disability-related and geographic factors. • Use data to compare gender disparities in education access and participation in local, national and global contexts. **Synthesis and application** • Synthesise information from multiple sources to draw informed conclusions about education-related issues. • Apply learning to real-world challenges through projects, campaigns or social innovation focused on education. **Advocacy and inquiry** • Engage in research or inquiry into education issues affecting one's community or country. • Propose solutions, make informed recommendations and advocate for change, particularly around access and quality of education. **Gender equity in education** • Examine the transition from school to work, particularly for girls and marginalised groups. • Develop strategies and personal plans to overcome challenges related to education and employment pathways.	**Recognition of education's transformative power** • Value education not only as a tool for employment but as a means for personal growth, social inclusion and empowerment. • Respect diverse paths and forms of education, including vocational, academic, formal and informal learning. **Empowerment and agency** • Develop confidence in personal capacity to advocate for education rights for self and others. • Cultivate resilience and determination, especially for girls and under-represented groups navigating transitions in life and work. **Equity, justice and co-operation** • Commit to fairness and equal opportunity in education, regardless of background or identity. • Collaborate with others to explore and address educational barriers in the community or beyond. **Global citizenship and solidarity** • Express empathy for those denied educational opportunities and engage in actions that support inclusive education worldwide. • Recognise oneself as part of a global community working toward quality education for all.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Sustainable development in the workplace** • Core concepts of sustainable development, including ecological balance, social inclusion, and economic viability. • Frameworks such as the triple bottom line (people, planet, profit) and their relevance to work and enterprise. **Environmental awareness and eco-literacy** • Concepts of ecological footprint, eco-efficiency, eco-space, and natural capitalism as guides for responsible production and consumption. • Lifecycle analysis and environmental management systems (EMS) across industries and trades. **The '6 rs' and circular economy** • Principles of reduce, reuse, renew, recycle, repair, and rethink in occupational and resource use contexts. • Role of TVET sectors in promoting sustainable material use and waste minimisation. **Entrepreneurship and economic literacy** • Fundamentals of economic literacy, small enterprise management, and ethical entrepreneurship. • Sustainable production models and innovations for green entrepreneurship and inclusive business. **The changing nature of work** • Shifts in labour markets due to automation, digitalisation, climate change, and evolving social values. • Implications of these shifts for career pathways, skills development, and lifelong learning. **Education as a public and global common good** • Education as a fundamental human right and enabler of other rights. • Education as a global common good essential for inclusive, equitable, and democratic societies. **Lifelong learning and sustainable development** • Lifelong learning within frameworks of sustainability, equity, and resilience. • Role of education in achieving sustainable development and transforming societal systems. **Teacher education and pedagogical innovation** • Contemporary theories of pedagogy and andragogy, including learner-centred and inclusive approaches. • Competency-based education and assessment frameworks for diverse learning contexts.	**Work readiness and employability** • Demonstrate key employability traits: integrity, honesty, punctuality, adaptability, teamwork and responsibility. • Apply workplace ethics and effective communication in varied job settings. **Sustainability and problem solving** • Apply sustainability principles to diagnose problems in real work contexts and design relevant, implementable solutions. • Use systems thinking and logical–abstract reasoning to improve environmental and operational performance. **Enterprise and innovation** • Develop and manage small-scale enterprises with a focus on sustainability and community needs. • Integrate environmental, social and economic considerations into product design, service delivery and business models. **Programme evaluation and adaptation** • Identify existing TVET programmes that need updating to meet current labour market needs and sustainability standards. • Engage in participatory curriculum design or local training programme improvements using community feedback. • Plan and implement awareness campaigns or practical learning projects in communities, such as school repair days, skills-sharing workshops or eco-efficiency audits. • Apply governance and accountability frameworks to improve quality assurance in education and training institutions. • Develop and implement education policies, plans, and resource management strategies at national and institutional levels. • Use strategies to challenge gender stereotypes and create inclusive, safe, and supportive learning environments. • Analyse trends in STEM and relate them to future education needs, employability, and labour market shifts. • Integrate Indigenous knowledge and non-formal learning traditions into curriculum and training design. • Assess child growth and development within different social, cultural, and environmental contexts for ECCE programming. • Plan and support ECCE initiatives that strengthen early learning foundations, equity, and lifelong learning pathways.	**Lifelong learning and self-development** • Value ongoing education and reskilling as essential for personal growth and future resilience. • Cultivate a growth mindset and motivation for continuous improvement. **Transformative power of TVET** • Recognise TVET as a driver of innovation, inclusion and sustainable development. • Take pride in vocational skills as powerful tools for change and community development. **Responsibility and community engagement** • Value ethical responsibility in one's trade or sector and actively contribute to local wellbeing. • Promote environmental stewardship and workplace practices that protect future generations. **Visioning a sustainable future** • Envision and act upon alternative, sustainable ways of working, consuming and living. • Show commitment to integrating sustainability into one's career, enterprise and role in society. • Commitment to ethical leadership, transparency, and accountability in education governance. • Respect for equity, fairness, and the use of education as a means to reduce social and gender inequalities. • Openness to challenging biased norms and promoting dignity, inclusion, and participation for all learners. • Appreciation of STEM as a driver of sustainable development and willingness to adapt to innovation and change. • Respect for diverse knowledge systems, including Indigenous, cultural, and community-based learning traditions. • Belief in ECCE as a right and a foundation for social inclusion, holistic development, and lifelong learning.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Education as a public and global common good** • Education's role as a fundamental human right and a key enabler of all other rights. • Education as a global common good, vital to inclusive, equitable and democratic societies. **Lifelong learning and sustainable development** • Concept of lifelong learning within the framework of sustainability, equity and resilience. • Education's function in achieving sustainable development and transforming societal systems. **Teacher education and pedagogical innovation** • Contemporary theories of pedagogy and andragogy in teacher education, including learner-centred and inclusive approaches. • Competency-based education and assessment frameworks relevant to diverse learning contexts. **Governance and leadership in education** • Systems of educational governance, accountability and quality assurance. • Education policy, planning and management at the national and institutional levels. **Equity and gender in education** • The role of education in redressing social, gender and structural inequalities. • How educators can challenge gender norms and promote inclusive learning environments. **Stem and knowledge diversity** • Developments in science, technology, engineering and mathematics (STEM) and their implications for future education and labour markets. • Diverse ways of knowing and learning, including indigenous knowledge systems and non-formal learning traditions. **Early childhood care and education (ECCE)** • Child growth and development in social, cultural and environmental contexts. • Role of ECCE as a foundation for lifelong learning and social equity.	**Critical engagement and reimagining education** • Reconceive education to reflect inclusivity, creativity and diversity of thought and identity. • Analyse local and national learning contexts and propose education strategies tailored to real-world needs. **Policy and advocacy** • Interpret global education goals (including SDG4) and national policies to identify gaps and advocate for reforms. • Contribute to evidence-based policy proposals and engage in advocacy for educational justice. **Curriculum design and assessment** • Design and implement competency-based curricula aligned with sustainable development and human rights. • Evaluate learning outcomes using both quantitative and qualitative tools. **Inclusive pedagogy and gender sensitivity** • Apply inclusive teaching strategies that reflect an understanding of gender, culture and learner diversity. • Engage in research to address gendered barriers and propose interventions that promote equity in access, participation and outcomes. **Research and inquiry** • Conduct educational research on access, equity, quality and learning environments. • Investigate the social determinants of success in primary and secondary education, with special attention to marginalised learners. **Child-focused application** • Create age-appropriate, inclusive learning environments for early childhood and primary learners. • Apply knowledge of child development, rights and care in designing ECCE and teacher training interventions.	**Appreciation of education as a human right** • Uphold education as a right, not a privilege, and commit to advancing access for all, particularly underserved populations. • Recognise the interdependence of education with other human rights, such as health, equality and participation. **Inclusivity and social justice** • Promote inclusive, equitable education that embraces diversity of identity, culture, language and ability. • Challenge all forms of discrimination and exclusion within and beyond educational settings. **Commitment to nation building and global citizenship** • Value education's role in shaping responsible, engaged citizens for national cohesion and sustainable development. • Embrace education's potential to build peace, justice and social solidarity locally and globally. **Professional integrity and empowerment** • Embody ethical leadership in education with a focus on community empowerment, especially for women and marginalised groups. • Value and support ecce as a transformative field that benefits both learners and their caregivers. **Respect for knowledge diversity** • Value different systems of knowledge, including scientific, indigenous, experiential and informal learning. • Appreciate the relevance of traditional and local knowledge in addressing global and local sustainability challenges.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Education as a public good and human right** • Education as a public good and a fundamental human right, accessible to all regardless of age, gender, background, or life stage. • Education as a foundation for the fulfilment of other rights, including health, employment, civic participation, and dignity. **Barriers to education** • Personal, social, economic, and structural factors that can exclude adults and children from education, such as poverty, gender roles, early marriage, displacement, and marginalisation. • Intersectional nature of barriers and their compounding effects across generations. **Literacy, numeracy, and lifelong learning** • Basic literacy, numeracy, and family literacy as essential for adult life, parenting, employment, civic engagement, and self-confidence. • Lifelong learning as a continuous process that supports sustainable development, personal wellbeing, and intergenerational progress. **Non-formal and open learning** • Alternative education modes, including non-formal education, open and distance learning, and community-based programmes, as vital avenues for adult education. • Digital tools and flexible learning models as enablers for access among working adults, rural populations, and underserved communities. **Support for children's education** • Families' role in supporting children's learning, school attendance, and developmental outcomes. • Connections between adult education and improved educational and social outcomes for children and households.	**Personal learning and skills development** • Identify individual learning needs and interests for personal and professional development. • Access and navigate available learning opportunities (formal and informal), such as skills training, digital literacy, community workshops or vocational courses. **Critical reflection and social analysis** • Analyse how poverty, gender norms and structural inequalities impact educational access in the community. • Reflect on one's own life experiences to identify educational gaps and potential pathways forward. **Supportive parenting and family literacy** • Design or participate in activities that promote children's physical, intellectual, emotional and social development at home and in the community. • Apply parenting and caregiving knowledge to support early learning, school readiness and educational engagement at home. **Community participation and lifelong learning** • Engage in community initiatives that promote education, health and livelihoods. • Collaborate with others in local planning or advocacy for improved educational services and support systems.	**Valuing education at all ages** • Appreciate the value of education for personal growth, empowerment and improved quality of life – at any age or stage. • Recognise education as a lifelong journey and embrace continuous learning for employment, social connection, leisure and active citizenship. **Parental and community engagement** • Encourage and support children's schooling and learning through active involvement at home and in school life. • Value the role of families and communities in creating a culture of education, care and opportunity. **Empowerment and self-worth** • Develop a strong sense of self-worth and agency to pursue personal learning goals and life improvements. • Build confidence in one's ability to learn, grow and contribute meaningfully to the household and community. **Inclusion and social responsibility** • Commit to equitable access to education and the inclusion of all learners regardless of gender, literacy level, disability, or life experience. • Show solidarity with others in learning and collective problem solving to build stronger, more resilient communities.

7. Goal 5 – Gender Equality

Achieve gender equality and empower all women and girls

Intersectionality in gender inequality

The 2030 Agenda for Sustainable Development recognises gender equality and the empowerment of women and girls as foundational for equitable and inclusive development. While progress has been made in areas such as reducing child marriage, improving maternal health and expanding access to education, significant disparities persist. These are particularly evident in economic participation, leadership, STEM education, and digital access.

Gender inequality is not experienced uniformly. Intersectional factors – such as disability, ethnicity, rural residence, and minority status – compound disadvantage (UNESCO 2020). Women with disabilities, indigenous women, and those in marginalised communities often face multiple, overlapping barriers to opportunity. In an increasingly digital world, closing the digital gender divide is critical. In low- and middle-income countries, where access and digital skills gaps are more pronounced, bridging this divide could yield economic benefits of up to US$500 billion over five years (UNESCO 2024). Ensuring digital inclusion for women and girls, particularly those from under-represented backgrounds, is therefore essential for sustainable development.

Empowering women and girls

Education is a powerful driver of gender equality. It enhances women's autonomy, economic independence, and capacity for civic participation. The impact of maternal education is especially profound: a child born to a literate mother is 50 per cent more likely to survive past the age of five. In 2015 alone, improved maternal education contributed to the prevention of 4.2 million child deaths (UNESCO 2011; The Lancet 2019).

Educated women are more likely to vaccinate their children, ensure adequate nutrition, and seek medical care – leading to lower maternal and infant mortality rates. Education also influences fertility decisions, with each additional year of schooling reducing childbearing by 0.3 to 0.5 children per woman (UNICEF 2023). Beyond health, education expands economic opportunity: women with secondary education are twice as likely to be employed and can earn 10–20 per cent more annually (UNESCO 2011). They are also more likely to reinvest up to 90 per cent of their earnings into their families and communities, reinforcing intergenerational resilience (World Economic Magazine 2023). Investing in girls' education strengthens families, communities, and societies (Bloom *et al.* 2017).

Barriers to gender equality in education and employment

Despite gains, structural barriers continue to limit women's full participation in education and the workforce (UN Women 2015). Globally, women's labour force participation remains significantly lower than men's – 47 per cent compared to 72 per cent (ILO 2023). The gender pay gap persists, with women earning approximately 20 per cent less than men for comparable work (World Bank 2018). Discriminatory policies, limited access to credit, unequal inheritance rights, and the disproportionate burden of unpaid care work further constrain women's economic mobility (UN Women and DESA 2024).

Access to technical and vocational education and training (TVET) remains unequal. Female enrolment is disproportionately low, and women are often channelled into lower-paying fields (World Bank *et al.* 2024). However, targeted interventions can be effective. For example, Bangladesh's Skills and Training Enhancement Project (STEP) increased female TVET enrolment from 5 per cent to over 20 per cent (World Bank 2019). Tertiary education also plays a transformative role by equipping learners with critical perspectives on gender equality and the tools to challenge systemic barriers.

Gender inequality in education: boys' challenges

While efforts to support girls' education remain essential, emerging evidence show the need to address the educational challenges faced by boys. Boys are increasingly disengaged from education, particularly at the secondary level, with higher rates of grade repetition, school failure, and early school leaving. These trends are shaped by poor early learning experiences, low perceived returns from education, peer pressure, and harmful masculinities that discourage academic engagement (UNESCO *et al*. 2024).

Boys also lag behind girls in reading, literacy and classroom engagement, while girls remain more likely to be out of school at the primary level. Disengagement among boys can hinder the development of gender-equitable attitudes and perpetuate gender hierarchies (UNESCO 2022). This disengagement can undermine SDG5, particularly in efforts to eliminate gender-based violence. Gender-transformative education – engaging boys in learning about equity, mutual respect, and non-violence – is essential to building inclusive, peaceful societies (Flood 2019).

Gender gaps in STEM education and careers

Women remain significantly under-represented in STEM (science, technology, engineering, and mathematics). Globally, they account for only 31 per cent of researchers in science and engineering, with even lower representation in East Asia (26.7 per cent) and South and West Asia (24.3 per cent). Between 2018 and 2023, women comprised just 35 per cent of STEM graduates (UIS 2023; UNESCO 2024).

Deep-rooted stereotypes and biases discourage girls from pursuing STEM pathways, often eroding their confidence despite strong academic performance. In the workforce, women are under-represented in high-growth sectors such as data and artificial intelligence (26 per cent) and cloud computing (12 per cent). These disparities limit women's career opportunities and hinder economic growth. For example, the European Union (EU) is projected to face a shortage of 1.4 million to 3.9 million technology professionals by 2027. Doubling women's participation in tech-related fields could help bridge this gap and generate around EUR 600 billion in GDP (UNESCO 2024).

Addressing biases in educational content and promoting inclusive STEM environments are essential to closing this gap.

Digital inclusion and gender equity

The digital gender divide continues to restrict opportunities for women and girls, particularly in low- and middle-income countries where access to digital tools, internet connectivity, and training is limited. Progress in closing the mobile internet gender gap has stalled, and women's digital inclusion has slowed (GSMA 2024).

Digital literacy is now a critical component of economic participation and social engagement. Ensuring equitable access to digital education, investing in infrastructure, and addressing gendered barriers in technology fields are urgent priorities for sustainable development.

The social and economic costs of gender inequality

The economic and societal costs of gender inequality are profound. Disparities in education alone have led to global economic losses exceeding US$10 trillion, with sub-Saharan Africa losing an estimated US$210 billion – more than 10 per cent of its GDP (UNESCO *et al*. 2024). These losses reflect the missed potential of millions of women and girls who are denied equal access to learning and opportunity.

Investing in gender-transformative education is essential. Such education creates inclusive learning environments, challenges harmful stereotypes, and equips all learners – regardless of gender – with the knowledge, skills, and values needed to promote equality. Evidence shows that engaging boys and men in gender equality efforts accelerates societal change, helping to break cycles of exclusion and discrimination.

To be effective, gender mainstreaming must be embedded across all aspects of education: from curricula and teacher training to school leadership and community engagement. True equality requires not only equal access to education but also equal treatment and opportunity within educational systems and beyond. Education must serve as a catalyst for societal transformation, empowering individuals to challenge injustice and build inclusive, equitable communities.

Gender-based violence and legal barriers

Gender-based violence (GBV) remains one of the most pervasive violations of human rights worldwide. Harmful practices such as female genital mutilation (FGM) and child marriage continue to affect millions. More than 230 million women and girls have undergone FGM, primarily in Africa and Asia (UNICEF 2024). Child marriage undermines health, education, and economic outcomes, and remains prevalent in many regions (OHCHR 2025).

In 2023, women and girls accounted for 44 per cent of new HIV infections, highlighting the gendered dimensions of health vulnerabilities (UNAIDS 2024). While maternal mortality has declined globally, stark disparities persist: 95 per cent of maternal deaths occur in sub-Saharan Africa and South Asia, reflecting significant gaps in healthcare access (WHO 2024).

Legal and institutional barriers continue to restrict women's rights, including limitations on land ownership, inheritance, and access to finance. Addressing these challenges requires a comprehensive strategy that combines legal reform, inclusive education, and community mobilisation. Education can play a pivotal role in raising awareness, shifting norms, and empowering individuals to advocate for change.

Achieving gender equality through systemic change

Education is the foundation of systemic change needed to achieve gender equality. It enables women and girls to claim their rights, participate in decision-making, and access economic opportunities. Achieving SDG5 requires co-ordinated action by governments, education systems, and communities to implement gender-responsive policies, remove legal barriers, and promote inclusive growth.

This includes investing in women's skills development, digital inclusion, and entrepreneurship, while transforming curricula to challenge stereotypes and promote equality. The pace of progress remains far too slow, and the costs of inaction are immense – not only in economic terms but in human potential and societal resilience.

Achieving gender equality is not only a moral imperative – it is an economic necessity and a cornerstone of sustainable development. A world that invests in the education and empowerment of all women and girls, including those from vulnerable or disadvantaged groups, is one that builds stronger economies, more resilient communities, and a more just and equitable global society.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Everyone can enjoy the same things** • All children can enjoy the same activities, such as playing with toys, wearing similar clothes and having fun together. **Anyone can do any job** • Learn through stories, pictures and examples that both men and women can do any kind of work – whether it is being an astronaut, a builder, a teacher, a carer or a scientist. • Everyone has different likes and dislikes – boys may enjoy dressing up and girls may like building with blocks, and both are equally great. **Places where everyone is treated equally** • Discover communities, stories and places where all persons are treated fairly and equally, no matter what. • Identify moments in stories or during play where someone is treated unfairly because of their gender and understand why this is not right.	• Engage in storytelling and imaginative play that challenges stereotypes (for example, girl pilot flying an airplane, boy nurturing a baby doll). • Freely choose from a wide range of play activities, such as pretend cooking, building, gardening or art, without restriction based on gender. • Take part in role play that shows men and women doing the same tasks (for example, firefighters, chefs, doctors, carers). • Participate in co-operative games that involve both boys and girls, promoting teamwork and mutual respect. • Take turns in group activities and share responsibilities fairly (for example, setting the table, cleaning up, handing out materials). • Clearly express personal preferences during play and involve peers in decisions (for example, choosing roles in a story, deciding which game to play). • Work collaboratively to build or create things (for example, solving a puzzle or building a block structure as a team). • Show comfort and confidence exploring any role or activity, including those not traditionally associated with their gender. • Take turns speaking and listening during group activities. Everyone's ideas are important and should be heard.	**Valuing everyone equally** • Understand that all people, regardless of whether they are boys or girls, are equally important and deserve respect. • Treat friends with kindness and fairness. If someone is feeling left out or sad, respond with care and help them feel included. **Appreciate equal chances** • Know that everyone, no matter their gender, deserves the same chances to learn, play and explore. • If one sees someone being treated unfairly because of their gender, speak up and remind others that everyone should be treated kindly and fairly. **Pride in individuality** • Feel good about making own decisions based on interests, not what others expect because of one's gender.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**Understanding gender roles and equality** • Understand that gender roles are not based on biology, but on cultural and social ideas. These roles can change over time and are different in different communities. • **Gender does not define interests or abilities**: anyone can be a leader, scientist, artist, athlete or caregiver. Everyone has unique skills and talents. **Key gender concepts** • **Differentiate between sex, identity and** expression. Learn the difference between biological sex, the physical traits (like being male or female) that are assigned at birth; gender identity – how a person feels and identifies, whether as a boy, girl, both, or neither; and gender expression – how a person shows their gender through clothing, behaviour or interests. **Equality and fairness** • Learn that equality means giving everyone the same rights and opportunities, no matter if they are a boy or a girl. **Real-life stories of change** • Explore stories of people who broke gender barriers. Discover inspiring stories of people like Malala Yousafzai, Wangari Maathai and Kalpana Chawla, who showed that girls and women can do amazing things and have influence in the world. **Recognising gender inequality** • Understand that girls sometimes miss out on education, and there are fewer women in science, politics and other important jobs. Learn how this affects communities and stops progress. • Identify gender inequality in school or community: recognise situations where gender inequality happens in your school or community, such as unfair treatment or the roles people expect boys and girls to play. **Fairness and gender-neutral tasks** • Understand the difference between gender-based unfairness and gender-neutral tasks based on gender (such as saying only boys can play certain sports or only girls can care for others) and gender-neutral tasks (where all can lead, clean, organise and care for others).	**Participating in fair responsibilities** • Take equal responsibility in classroom tasks (like cleaning, organising and leading group work) and help share household chores and responsibilities with others. **Discussing and reflecting on gender roles** • Participate in discussions about gender roles at school and in the media, questioning stereotypes seen in books, games or advertisements. Think about how these stereotypes can be changed. **Analyse gender in interactions and opportunities** • Look at how gender affects interactions and opportunities (like who gets chosen as team captain or who volunteers to tidy up) and think of ways to ensure fairness for everyone. **Working together to solve problems** • Collaborate to create inclusive environments and suggest ways to make activities, teams or classroom tasks more inclusive (such as rotating leadership roles so everyone gets a turn). **Exploring media and gender representation** • Identify gender stereotypes in stories, cartoons and films, and think of ways to show more inclusive and equal representations of all genders. **Promoting equality through art and projects** • Make posters, artwork or presentations that spread messages of equality, showing that everyone, regardless of gender, has the same potential and abilities. • Look at simple stories or case studies from different countries and cultures to understand how gender equality is practised in other places. **Practising equal participation in group work** • Use group projects to practise equal participation, co-operation and inclusive communication, making sure everyone shares ideas and makes decisions together. • Share ideas with classmates or school leaders on how to make your school a more inclusive place for everyone (for example, through class assemblies or a suggestion box). • Think critically about gender stereotypes in jobs, sports and the family, and think about ways to challenge and break down these limiting ideas.	**Respecting all individuals** • Value everyone equally regardless of gender, as having equal worth, potential and the right to participate in every part of life and learning. **Creating a safe and inclusive environment** • Stand up for a school environment where everyone feels respected and safe, regardless of their gender. Support a space free from harassment and exclusion. **Speaking up against gender discrimination** • Act against bullying and unfair treatment based on gender, whether it is in school, during games or in stories. It is important to challenge these behaviours and make things right. **Encouraging fairness and equal responsibility** • Encourage equal involvement of everyone in classroom chores, leadership roles and activities. Make sure that both girls and boys share the responsibilities and opportunities. • Work with others to create inclusive teams, where everyone's ideas and contributions are valued, regardless of gender. **Supporting equal participation** • Support equal participation in all activities and make sure that everyone, regardless of gender, gets the chance to participate in all school activities like arts, sports, science and leadership. Believe that anyone can excel in any area. **Recognising cultural sensitivity** • Respect diverse traditions, different cultures and different views on gender roles. Be respectful and open to learning about those traditions while promoting fairness and equality for all. **Believing in fairness and opportunity** • Believe in fairness and opportunity for all. See gender equality as a shared value that everyone should embrace, not just a rule or policy. • Show leadership by standing up for fairness and inclusion. Challenge unfair practices respectfully and offer positive alternatives that promote equality.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Fundamentals of gender equality** • Gender equality as a fundamental human right and a core element of building fair, just, and sustainable societies. • Distinctions between biological sex, gender identity, gender expression, and sexual orientation. Appreciate the spectrum of gender diversity and the social construction of gender shaped by cultural norms across societies and history. **Gender inequality and its root causes** • Root causes of gender inequality, including systemic issues, cultural . norms, gender pay gaps, occupational segregation (e.g., under-representation in STEM), unequal caregiving responsibilities, and disparities in access to land, education, healthcare, transport, housing, and leadership. • Forms of gender-based violence (GBV) – psychological, physical, sexual, economic – and their impact on individuals, families, and communities. • Harmful practices such as child marriage, female genital mutilation (FGM), and son preference, and their long-term effects on girls and women. **Global frameworks and legal protections** • Key agreements and frameworks: CEDAW, SDG5 (Gender Equality), and interlinkages with SDG1, SDG3, SDG4, and SDG8. • International and local laws addressing GBV and promoting women's rights, and their role in advancing gender equality. **Intersectionality and discrimination** • Interaction of gender with race, class, ability, and sexual orientation, shaping experiences of inequality. • Influence of cultural norms and expectations on gender roles in professions, households, and sports, and strategies for challenging these norms. **Education and empowerment** • Role of education in empowering women and girls, particularly in Commonwealth contexts. • How women's education contributes to broader societal benefits; identification of barriers and solutions to improve access and success.	**Mitigating gender-based violence (GBV)** • Develop and implement strategies to mitigate gender-based violence (GBV) through initiatives such as peer mediation, educational campaigns and community outreach programmes. • Critically assess national and international laws and policies aimed at protecting individuals from GBV and gender-based discrimination. Propose improvements based on gaps identified in these frameworks. **Promoting gender equality** • Design and lead awareness campaigns, school events or peer programmes that promote gender equality, challenge harmful gender stereotypes and encourage inclusivity. • Produce and distribute content (for example, videos, posters, blogs, social media) that challenges harmful gender stereotypes and promotes inclusive values, encouraging others to rethink societal norms. • Assess gender dynamics in schools and local communities, proposing inclusive solutions such as creating mixed-gender clubs, ensuring equal access to leadership roles and promoting gender-neutral policies. **Implement intersectional strategies** • Apply intersectional approaches in project design and leadership to ensure inclusivity, equitable representation and support for diverse gender identities, including race, class and ability. **Collaboration and advocacy** • Collaborate with peers, educators and community members to design and implement initiatives that promote equal opportunities in education and career pathways for all genders. • Study gender inequalities across global and cultural contexts, identifying discriminatory practices and proposing strategies to improve gender equity in various societies. • Develop counter-narratives versus a contemporary landscape marked by a resurgence of anti-feminist and misogynistic narratives, amplified through online platforms and social media influencers.	**Promoting respect, equality and inclusion** • Demonstrate respect for all individuals regardless of gender identity, expression or roles and uphold gender equality as a fundamental human right. • Advocate for inclusive school environments where diversity is valued and all learners feel safe, respected and represented. • Encourage peers to explore activities and careers traditionally dominated by the opposite gender, supporting freedom of choice and personal expression. • Actively challenge stereotypes and discriminatory attitudes in classroom interactions, media content and social settings. • Promote emotional literacy by supporting the expression of diverse emotions across all genders and dismantling stereotypes about how boys and girls should behave or feel. **Challenging gender-based violence and discrimination** • Show commitment to ending gender-based violence (GBV) by promoting non-violence, equality and safe relationships. • Design and lead education campaigns, peer mediation programmes or community outreach initiatives to raise awareness of GBV and offer support to those affected. • Critically assess and advocate for the improvement of laws and policies protecting individuals from GBV and gender discrimination at the local, national and global levels. • Respect and support the enforcement of regional and global agreements such as the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW).

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education (ctd)	**Representation and leadership** • Importance of equal representation in political, economic, and community leadership. • Impact of gender imbalances on decision-making, progress, and inclusive governance. **Gender inequality in the workforce** • Gender pay gap, under-representation in STEM fields, and unequal caregiving responsibilities. • Barriers limiting women's workforce participation and career progression. **Human rights and gender justice** • Gender inequality as a violation of human rights. • Gendered disparities in access to housing, transport, land, water, and natural resources. • Strategies for promoting inclusivity, challenging stereotypes, and advocating against discriminatory practices. • Case studies of GBV (including technology-facilitated), political participation disparities, and workforce inequities. • Combining theoretical understanding with practical approaches to address gender challenges in communities, education, and the workforce. **Global and local solutions** • Examination of successful initiatives globally and locally that have advanced gender equality across sectors. • Development of actionable strategies to apply lessons from these solutions in students' communities and future careers.	**Monitoring and adapting gender equality actions** • Monitor and evaluate the impact of gender equality initiatives, adapting strategies based on ongoing reflection, feedback and lessons learned from each project or programme. • Lead or participate in school or community projects addressing gender inequality and advocate for positive change. **Leadership, empowerment and responsibility** • Lead and participate in gender equality initiatives, such as mixed-gender clubs or student councils that promote equal representation and participation. • Promote and model gender-sensitive leadership, decision-making and conflict resolution. • Propose and implement school-wide or community-based solutions, such as equal access to leadership roles, fair classroom responsibilities, or equitable participation in sports and STEM. • Monitor the effectiveness of gender equality projects and use feedback to improve future actions, promoting a cycle of reflection, learning and action.	**Critical reflection and collective action** • Recognise and speak out against unjust gender norms and cultural practices, such as child marriage or unequal educational opportunities, especially when they harm girls and women. • Value and promote diverse gender perspectives by collaborating on school and community initiatives that celebrate and protect gender rights. • Develop media literacy by examining how stereotypes and gender roles are constructed across platforms and create content (for example, podcasts, posters, blogs) that challenge biases and promote fairness. • Acknowledge how intersectionality (race, class, disability, sexual orientation) shapes gendered experiences and actively support inclusive, anti-discriminatory practices. **Global solidarity and cultural sensitivity** • Understand and respect cultural diversity while promoting universal values of fairness and equality. • Engage with stories and experiences from different parts of the world to understand how gender inequality is experienced and addressed globally, especially in Commonwealth countries. • Promote inclusive global citizenship by supporting international efforts to uphold women's and girls' rights and by participating in cross-cultural dialogues on gender justice. • Be an engaged global citizen by advocating for gender equality and working towards solutions that ensure equality worldwide. • Promote the importance of SDG5 and encourage others to participate in initiatives that support global gender equality.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Gender equality and economic development** • Gender equality as a fundamental human right and its role in promoting inclusive economic growth, innovation, and sustainable development. • Contribution of gender equality to productivity, workforce creativity, and competitiveness across technical and vocational sectors. **Barriers to access and representation** • Systemic challenges in TVET, including discrimination, unconscious bias, stereotypes, and limited opportunities for women and gender minorities, particularly in STEM and leadership roles. • Influence of traditional gender roles and socialisation on career choices, representation, and progression. • Impacts of gender bias on recruitment, mentorship, pay equity, and decision-making roles. **Intersectionality and career opportunities** • Intersections of gender with race, disability, socio-economic status, and age, shaping access to vocational training and employment. • Influence of these intersecting identities on opportunities in male-dominated sectors. **Global and national legal frameworks** • National and international frameworks promoting gender equality, including equal pay, anti-discrimination laws, and parental leave policies. • Alignment of TVET programmes with legal commitments to ensure equitable workforce participation. **Gender-responsive TVET programmes** • Designing curricula and teaching methods that are inclusive, challenge stereotypes, and promote equal access for all genders. • Empowering women and marginalised groups with skills for sustainable employment and long-term career growth. **Benefits of gender diversity in workplaces** • Enhanced profitability, creativity, innovation, inclusiveness, and organisational culture through gender-diverse teams.	**Promoting gender equality in TVET** • Identify and address gender disparities in TVET programmes and design targeted strategies to increase the participation of under-represented groups, particularly women and gender minorities, in technical education and training. • Use inclusive curriculum development and teaching methods that cater to the needs of all genders, ensuring that the learning environment is accessible, non-discriminatory and promotes equal opportunities for all students. • Integrate gender considerations into TVET programme planning, budgeting and resource allocation, ensuring that gender equality is embedded into the design and implementation of training programmes. **Data analysis and evaluation** • Use data analysis to identify gender gaps in participation, progression and employment outcomes in TVET programmes. Evaluate the effectiveness of gender equality interventions and make data-driven recommendations for improvement. • Monitor and evaluate the impact of gender-inclusive policies and initiatives in TVET institutions and workplaces, using metrics to assess progress and inform decision-making processes. **Awareness and advocacy** • Design and implement awareness campaigns, mentorship networks and school-based initiatives that promote gender equality in technical education, encouraging all students to pursue diverse career paths. • Provide gender-sensitive career guidance to challenge existing stereotypes and broaden vocational aspirations, ensuring that both male and female students feel empowered to pursue careers in diverse technical fields.	**Promoting equity, inclusion and respect** • Demonstrate empathy and understanding of the barriers faced by women and gender minorities in education and employment. • Advocate for inclusive policies that ensure equal access to training, mentorship and job opportunities. • Support flexible and family-friendly workplace arrangements that accommodate diverse needs. • Encourage enrolment of girls and women in non-traditional fields and promote gender-neutral career guidance. • Acknowledge and challenge personal and institutional biases that impact gender equity. **Leadership, empowerment and accountability** • Lead or contribute to initiatives that improve gender representation in technical sectors. • Support peer mentoring, leadership training and advocacy networks for women in TVET and the workforce. • Encourage inclusive leadership practices and fair decision-making processes in educational and workplace settings. • Take personal responsibility for addressing gender-based discrimination and supporting those affected. • Promote emotional literacy and supportive environments that allow all individuals to express themselves without fear of judgment. **Awareness, advocacy and global citizenship** • Stay informed about gender equality trends, laws and best practices in the workplace and education. • Engage in dialogue and action that promote awareness of SDG5 and the importance of gender equality for sustainable development. • Promote the value of diverse teams and inclusive workplaces as a foundation for innovation and growth. • Be an active agent of change, advocating for gender equality policies in your institution, community or industry. • Communicate the role of gender equality in achieving broader societal goals and speak out against inequality and discrimination.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET (ctd)	**Policy integration and gender mainstreaming** • Embedding gender equality in TVET policies, budgeting, and development planning to address barriers and create equitable learning environments. **Monitoring, evaluation, and advocacy** • Methods to monitor and evaluate gender equality initiatives, ensuring progress, lessons learned, and effective strategies. • Advocacy for gender equality to influence workplace culture, institutional practices, and community attitudes. • Identifying actionable steps for students and professionals to advance SDG5 locally and globally. **Addressing gender equality in stem and technical fields** • Specific barriers for women, including mentorship gaps, hiring and promotion biases, and under-representation in leadership. • Interventions through mentorship, training, and policies to ensure equal opportunities in STEM and technical industries. • Partnerships and strategies that support the sustainable advancement of gender equality in the sector.	**Targeted interventions and support** • Identify and address systemic barriers that hinder women's participation in STEM and leadership roles within technical fields. Develop and implement targeted interventions, such as mentorship programmes, skills training and leadership development opportunities. • Train and support women in entrepreneurship, ICT and business management, equipping them with the skills and knowledge to increase their economic participation and lead in tech-driven industries. **Leveraging digital tools** • Leverage digital tools and online learning platforms to enhance access to education and bridge gender gaps in technology-driven industries, ensuring that women and gender minorities have equal opportunities to gain skills in emerging fields like ICT and digital services. **Creating inclusive environments** • Propose solutions to create inclusive and respectful environments in TVET institutions and workplaces that respect diverse gender identities, promote safety, flexibility and equality, and accommodate the diverse needs of learners and workers.	**Systemic change and sustainability** • Champion reforms that remove systemic obstacles to gender equality in education and the labour market. • Collaborate with others to create scalable, sustainable solutions to gender inequality in technical and vocational sectors. • Recognise that gender equality is an evolving goal requiring continuous learning, reflection and adaptation. • Navigate diversity effectively within potentially hostile environments. • Commit to equipping educators and learners with context-specific strategies to counter discrimination, harassment and gender-based hostility in professional and civic spaces. • Develop and apply approaches that address harmful masculinities and promote respectful, inclusive forms of identity and leadership. • Collaborate with various stakeholders, including educators, policymakers, employers and advocacy groups, to strengthen gender-responsive practices and ensure that gender equality is a core component of TVET systems.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Foundations of gender equality** • Gender equality as a universal human right and foundation for social justice, democracy, and sustainable development. • Cultural norms, systemic discrimination, gender roles, and hidden curricula reinforcing inequality and limiting access to education and economic opportunities. • Intersections of gender with race, class, disability, and sexuality, compounding experiences of exclusion. • Influence of media, cultural practices, and institutional structures on attitudes and behaviours, and approaches to reshaping harmful gender norms. • Transformative role of education in challenging harmful masculinities and promoting equitable gender norms. **Impact of gender-based violence and legal frameworks** • Effects of gender-based violence (GBV) on education access, retention, and wellbeing, with prevention and survivor support strategies. • Transformative role of education in challenging harmful masculinities and reshaping gender norms. • Legal and policy frameworks promoting gender equality, including CEDAW, SDG5, national gender policies, and sexual and reproductive rights laws, and evaluation of their effectiveness. **Gender-responsive budgeting and economic empowerment** • Principles and practices of gender-responsive budgeting in education, health, and labour sectors. • Tools to track public spending and assess the impact of financial policies on gender equality initiatives. • Strategies to empower women economically, addressing systemic barriers such as unequal pay and limited access to credit. **Intersectionality and marginalised groups** • Societal, cultural, and structural barriers limiting women's access to education and economic opportunities. • Intersectional analysis considering how race, class, disability, and other identities shape experiences of gender inequality. • Tailored approaches to education and policy to address these intersecting inequalities.	**Gender-responsive education and advocacy** • Facilitate inclusive sexual and reproductive health (SRH) education programmes tailored to adults, particularly in underserved and rural areas. • Design and advocate for gender-neutral curricula and teaching practices that promote equality in learning environments. • Provide equal attention and opportunities to both boys and girls in educational settings for an inclusive and balanced approach. • Apply participatory tools, such as the 24-hour time chart, to spark dialogue on redistributing unpaid care and domestic work and its impact on gender equality. • Design interventions aimed at increasing women's equitable access to land, water and economic resources, considering gender dynamics. • Develop and implement strategies to prevent and respond to gender-based violence within educational and community settings. • Educate communities on harmful practices affecting women's health and rights and mobilise efforts for legal and cultural change. • Create mentorship programmes that support girls in overcoming barriers to education and career opportunities, especially in male-dominated fields. **Community engagement and empowerment** • Work with governments, NGOs and community groups to drive systemic change in education and tackle the root causes of gender inequality. • Review international, national and local policies to ensure equal access to sexual and reproductive health services and informed decision-making rights. • Promote inclusive leadership and engage men and boys in challenging patriarchal norms and supporting gender equality. • Empower women in sustainable agriculture, climate adaptation, and natural resource management through gender-responsive environmental strategies.	**Equity, justice and empathy** • Value gender equality as central to human rights, democracy and inclusive development. • Show empathy and allyship by recognising the lived experiences of those affected by gender-based exclusion and violence. • Commit to challenging patriarchal norms, sexism and discrimination in both academic and community settings. **Leadership and responsibility** • Take personal and professional responsibility for promoting inclusive, respectful learning and working environments. • Demonstrate ethical leadership by advocating for gender-equitable policies, curricula and institutional reforms. • Encourage accountability within institutions for achieving gender equality commitments. **Intersectionality and inclusiveness** • Recognise and respond to the unique challenges faced by women and gender minorities at the intersection of race, class, disability and sexual orientation. • Value diversity and promote inclusive practices that respect the rights and dignity of all learners. **Global frameworks and standards** • Evaluate and apply international gender standards and frameworks (for example, CEDAW, SDG5) to local contexts, ensuring that educational policies are aligned with global commitments to gender equality. • Analyse and apply solutions to overcome barriers to gender equality, including policy changes, community initiatives and international frameworks. • Recognise the importance of creating and implementing strategies that encourage gender equality through education, lifelong learning and leadership. • Emphasise the role of individuals in contributing to a more equitable and inclusive society through advocacy, education and direct action.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education (ctd)	**Gender equality in education systems** • Raising awareness of the hidden curriculum and strategies for gender-neutral teaching. • Inclusive education approaches supporting girls' participation and creating safe, empowering environments. • Teacher training in gender-sensitive pedagogy and mentorship. • Challenging stereotypes shaped by media and cultural practices from an early age. **Men and boys as allies** • Involving men and boys in gender equality initiatives and reshaping societal expectations of gender roles. • Integrating gender equality education into male-dominated spaces and fostering allyship. • Educating boys to respect women's rights and challenge harmful masculinity norms. **Technological and digital gender equality** • Role of digital technologies and online learning in bridging or widening gender gaps. • Strategies to promote equitable access to digital education tools and address the gender digital divide. **Monitoring and advocacy for gender equality** • Importance of gender-disaggregated data for tracking progress on SDG5 and informing policies. • Using data for advocacy to ensure gender equality policies are targeted and accountable. • Analysing global and local frameworks to identify opportunities for reform and policy action. **Empowerment and advocacy** • Understanding how education can promote gender equality and eliminate gender-based barriers across sectors. • Using knowledge of laws, cultural norms, economic structures, and education systems to advocate for women's rights and equal opportunities.	**Leadership and gender equality in institutions** • Promote gender-sensitive leadership within educational institutions to support gender equality across all levels of administration and teaching. • Provide leadership training for women to increase their participation in decision-making spaces. • Encourage peer education models that involve men and boys in promoting gender equity and transforming masculinities. • Advocate for systemic change through grassroots campaigns, digital media advocacy and policy lobbying, mobilising community action around gender equality. • Support the design and implementation of inclusive policies that address gender disparities in educational systems and ensure equal access to resources and opportunities. • Recognise the importance of creating and implementing strategies that encourage gender equality through education, lifelong learning and leadership. • Emphasise the role of individuals in contributing to a more equitable and inclusive society through advocacy, education and direct action. **Data, policy and programme evaluation** • Use gender-responsive data collection methods and analysis to ensure gender-disaggregated data inform decisions and strategies. • Monitor and evaluate gender equality programmes to identify successes, barriers and opportunities for further learning and development. • Critically analyse societal norms, gender stereotypes and discriminatory laws, and assess how these impact women's education and career prospects. • Scrutinise financial allocations to gender equality programmes, ensuring that resources are spent equitably and align with gender-responsive goals. • Track public spending and assess its impact on gender equality, ensuring resource allocation aligns with gender-responsive goals.	**Advocacy and global citizenship** • Engage in advocacy, research and policy reform initiatives that contribute to SDG5. • Advocate for and design programmes and policies that support marginalised girls and women, ensuring they have access to education and opportunities. • Commit to developing gender-sensitive, culturally relevant pedagogy that meets the diverse needs of female learners, providing mentorship, role models and safe spaces for girls. • Support the participation of men and boys in gender equality efforts, promoting shared responsibility and transformative masculinities. • Encourage men and boys to engage in discussions about the impact of patriarchal social relations and their role in challenging gender-based inequalities. • Promote an understanding of intersectionality, recognising how gender inequality interacts with other forms of discrimination such as race, class, disability and individual identity. • Internalise the idea that education can break cycles of poverty, violence and discrimination. • Cultivate the attitude that gender equality is not just a women's issue but a shared societal responsibility. Encourage students to believe in the importance of involving men and boys in the fight for gender equality. • Promote inclusive communication that challenges stereotypes and uplifts marginalised voices. • Stay informed and responsive to global gender equality trends, data and frameworks. **Transformative change and accountability** • Believe in education as a transformative tool to dismantle cycles of discrimination and empower all genders. • Embrace lifelong learning and reflection to evolve strategies that advance gender equality. • Cultivate a personal commitment to building just, inclusive and equitable academic and professional spaces.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Legal and policy frameworks** • Legal and policy instruments promoting gender equality, including CEDAW, SDG5, national gender policies, and sexual and reproductive rights laws. • Gender-disaggregated data for monitoring progress and informing responsive education and development policies. • Assessment of gendered implications of policy actions and strategies for equitable reforms. **Leadership, participation, and representation** • Gender-responsive leadership and increasing representation of women in decision-making at all levels. • Involvement of men and boys in promoting gender equality, especially in male-dominated contexts. • Inclusive leadership approaches supporting participation from under-represented gender groups and communities. **Economic empowerment and financial inclusion** • Gender-responsive budgeting and equitable allocation of resources in education, health, and labour sectors. • Gender-sensitive financial literacy and systemic barriers to economic participation, including unequal pay and limited access to credit. • Role of micro-finance programmes and gender-sensitive curricula in empowering women, reducing domestic violence, and enhancing community wellbeing. • Addressing gender disparities in informal economies through policy and community strategies. **Inclusive health and wellbeing** • Sexual and reproductive health (SRH) rights, contraception, maternal health, and prevention of gender-based violence. • Impact of gender-based violence on education access, retention, and wellbeing, with prevention and support strategies. • Barriers for women in rural areas or with disabilities in accessing health education and services, and inclusive solutions.	**• Analytical and policy skills** • Use gender analysis tools (for example, the 24-hour time chart) to evaluate the impact of laws, policies and programmes on men and women. • Apply gender mainstreaming strategies to policy development and adult education programmes to promote gender-equitable service delivery. • Conduct gender audits and integrate intersectional perspectives into programme design and evaluation. • Track the progress of gender-focused initiatives and use evidence to inform advocacy and share best practices. **• Education, curriculum and advocacy** • Critically analyse educational content and pedagogical approaches to identify and address gender bias and stereotypes. • Design and advocate for gender-inclusive curricula, learning environments and institutional practices. • Educate adults and communities on women's rights, including addressing harmful practices such as child marriage, FGM and trafficking. • Develop inclusive SRH education programmes that address reproductive rights, maternal health, contraception, informed consent and prevention of GBV. • Create and assess school- and community-based interventions to prevent and respond to gender-based violence. **• Community-based solutions and empowerment** • Develop strategies that promote women's equal access to land, water, ICT and other critical resources. • Design community-based solutions to address gender inequalities in the informal economy and natural resource management. • Establish support systems and leadership pathways for women in marginalised and rural communities. • Promote equitable digital inclusion and expand online learning access for women and girls.	**Equity, justice and empathy** • Value gender equality as central to human rights, democracy and inclusive development. • Show empathy and allyship by recognising the lived experiences of those affected by gender-based exclusion and violence. • Commit to challenging patriarchal norms, sexism and discrimination in both academic and community settings. **Leadership and responsibility** • Take personal and professional responsibility for promoting inclusive, respectful learning and working environments. • Demonstrate ethical leadership by advocating for gender-equitable policies, curricula and institutional reforms. • Monitor accountability within institutions for achieving gender equality commitments. **Intersectionality and inclusiveness** • Recognise and respond to the unique challenges faced by women and gender minorities at the intersection of race, class, disability and sexual orientation. • Value diversity and promote inclusive practices that respect the rights and dignity of all learners. • Promote education and leadership pathways that reflect intersectional and community-based perspectives. **Advocacy and global citizenship** • Engage in advocacy, research and policy reform initiatives that contribute to SDG5. • Support the participation of men and boys in gender equality efforts, promoting shared responsibility and transformative masculinities. • Promote inclusive communication that challenges stereotypes and uplifts marginalised voices. • Stay informed and responsive to global gender equality trends, data and frameworks.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education (ctd)	**Education, vocational training, and digital access** • Gender-responsive vocational education supporting women in non-traditional sectors such as STEM and technology. • Gender disparities in ICT access and implications for education and employment opportunities. • Strategies for equitable digital access and online learning, particularly for women in rural or marginalised communities. **Access to resources and sustainable development** • Gendered dimensions of access to land, water, and natural resources limiting women's economic agency. • Women's roles in climate change adaptation, mitigation, sustainable agriculture, and water resource management. • Policy, educational, and community strategies addressing gender disparities in resource access. • Gender analysis supporting community-led advocacy for reforms in health.	**Financial, vocational and digital inclusion** • Integrate gender-sensitive financial literacy and micro-finance strategies to promote women's independence and community health. • Support gender-responsive vocational education in non-traditional sectors such as STEM and technology. • Advocate for policies that ensure equitable digital infrastructure and access. • Develop sustainable strategies to implement gender equality initiatives with measurable, inclusive outcomes. **Leadership and campaign development** • Promote inclusive leadership practices and gender-equitable governance structures. • Create peer education, awareness campaigns and digital media content to advance gender equality. • Collaborate across disciplines and sectors to address root causes of inequality. • Use digital platforms to amplify marginalised voices and drive advocacy for systemic change.	**Transformative change and accountability** • Believe in education as a transformative tool to dismantle cycles of discrimination and empower all genders. • Embrace lifelong learning and reflection to evolve strategies that advance gender equality. • Cultivate a personal commitment to building just, inclusive and equitable academic and professional spaces. • Value lifelong learning and financial independence in promoting gender equality. **Community engagement, monitoring and gender mainstreaming** • Commitment to promoting gender equality as a shared community responsibility. • Appreciation of inclusive community spaces where women and marginalised groups can voice concerns, share experiences and support one another. • Respect for transparency and accountability in monitoring gender progress and learning from both successes and challenges. • Belief in continuous improvement through reflection, feedback and collective action toward gender justice.

8. Goal 6 – Clean Water and Sanitation

Ensure availability and sustainable management of water and sanitation for all

Global context and urgency

Although water covers 71 per cent of Earth's surface, only 0.6 per cent is accessible freshwater suitable for human use. The vast majority is either saline (in oceans) or frozen in glaciers and ice caps. This limited supply must meet the growing demands of agriculture, industry, and domestic use. Population growth, pollution, and unsustainable practices have placed immense pressure on this finite resource, contributing to a global water crisis (ECOSOC 2016).

Sustainable Development Goal 6 (SDG6) seeks to ensure universal access to clean water and sanitation. Yet mid-term assessments by UN-Water and UNEP reveal significant gaps in progress (UN-Water 2024). Over 2.3 billion people – 26 per cent of the global population – live in water-stressed countries, a figure expected to rise due to climate change and unsustainable water use (UN/UN-Water 2024). Urban water scarcity is projected to double by 2050, affecting up to 2.4 billion people (UN 2023).

Water scarcity is not only an environmental issue – it is a driver of conflict, migration, and food insecurity (World Resources Institute 2025). Freshwater ecosystems are increasingly degraded, with declining river flows in over 400 basins and shrinking surface water bodies in more than 360 (UNEP 2024). Alarmingly, over 80 per cent of wastewater is discharged untreated, exacerbating environmental and public health risks (Cimene and Otterpohl 2024). The global financing need for water infrastructure is estimated at US$6.7 trillion by 2030 and US$22.6 trillion by 2050 (Khemka *et al.* 2023).

Education: a catalyst for water sustainability

Education is a powerful enabler of SDG6. It builds human capacity, equips individuals to adopt sustainable practices, and strengthens water governance at local, national, and global levels. Water education – when integrated across disciplines – can transform how societies understand and manage water resources.

Water literacy encompasses the knowledge, skills, and values needed to understand water's role in ecosystems, manage its use sustainably, and address challenges such as pollution, scarcity, and disaster risk. It includes scientific understanding (e.g. the hydrological cycle), cultural perspectives, and practical skills like integrated water resources management (IWRM).

For example, in Ghana, installing boreholes reduced water collection time and increased girls' school attendance by 8–12 per cent (Nauges and Strand 2013). In Rajasthan, India, traditional systems like *johads* (rainwater tanks) and *bawris* (step wells) have long supported sustainable water use (Shah 2007; World Bank 2013). *The Hyogo Framework for Action 2005–2015* (UNISDR 2005) called for training and educational opportunities, particularly for socially vulnerable populations, including women. Programmes that train women in water budgeting and rainwater harvesting not only improve access but also empower women as leaders in climate adaptation (SEWA Bharat and UN Women 2022). Women water stewards have engaged in data collection and water monitoring at the grassroots level (UN Women India 2021).

Equity and inclusion in water education

Despite their significant role in water collection, women and marginalised groups are often excluded from water governance. Gender, race, and rurality intersect to deepen exclusion (Shah and Kulkarni 2020). Addressing these inequities requires targeted outreach, inclusive curricula, and recognition of local knowledge systems.

Water education must be accessible to all – especially those in water-stressed regions. Yet many curricula remain fragmented, isolating scientific concepts from their social and environmental contexts. This limits learners' ability to connect water management with broader sustainability goals.

Towards holistic and interdisciplinary water education

To be effective, water education must:

- Integrate scientific, cultural, and policy dimensions.
- Promote interdisciplinary teaching across geography, biology, environmental science, and civics.
- Equip educators with tools to embed sustainability principles in their practice.
- Leverage digital platforms to reach underserved communities.
- Encourage citizen science and community engagement in water monitoring and advocacy.

For instance, schools can use water consumption indicators to identify high usage and develop targeted conservation strategies (Nunes *et al.* 2019). In Multan, Pakistan, lack of awareness and affordability hindered adoption of water-saving technologies – there is need for education that is both practical and context-sensitive (Akram *et al.* 2022). Educators require resources to integrate sustainability principles into their teaching (Schönstein and Budke 2024).

Innovation and collaboration through education

Education is a powerful driver of innovation in water management. By aligning learning with labour market needs and emerging technologies, education develops the skills required for sustainable water solutions. Strategic collaboration between industries, technical and vocational education and training (TVET) institutions, universities, and communities ensures that skills development remains relevant and responsive.

For example, micro-credit programmes enable low-income households to invest in water infrastructure, improving access to clean water (UN-Water 2025).

However, infrastructure alone is not enough – community-level training and engagement are essential to maximise impact and ensure long-term sustainability.

The Freshwater Challenge (FWC) exemplifies innovation in action. This voluntary, country-led partnership aims to restore 300,000 kilometres of degraded rivers and 350 million hectares of wetlands by 2030. It prioritises biodiversity, ecosystem services, and inclusive approaches – particularly for marginalised communities (UNEP 2023; FWC 2025).

FWC promotes peer learning, case study exchange, and best practice sharing to strengthen implementation capacity. It encourages whole-of-government collaboration and ensures that historically excluded populations are actively involved in water governance.

Water-related disaster risk reduction (DRR) education

As climate change intensifies the frequency and severity of water-related disasters, education becomes a critical tool for resilience. DRR education equips individuals and communities with the knowledge and skills to prepare for, respond to, and recover from water-related emergencies.

Effective DRR education requires collaboration between TVET institutions, higher education institutions (HEIs), and the water industry. Updated employment projections can guide curriculum development, ensuring that training programmes support clean energy and water initiatives aligned with sustainable development.

South–South and North–South partnerships between universities facilitate the transfer of innovative technologies and skills to regions with the greatest need. Business incubators and accelerators further support knowledge sharing and capacity development, especially in middle- and low-income countries. These initiatives yield locally adaptable, economically viable, and socially inclusive solutions.

Citizen science also plays a vital role. By engaging communities in water monitoring and advocacy, education enables grassroots participation and strengthens sustainable water management.

Bridging community practice and global policy

The adoption of innovative water technologies – such as filtration, distribution, and treatment systems – depends on collaboration between industry, educators, and entrepreneurs. Investments in household-level water infrastructure must be supported by tailored financial products, such as micro-credits, which can also attract impact investors. Training communities in financial literacy and micro-credit management enhances local ownership and sustainability (UN 2023b).

Education bridges the gap between local practices and global policy, catalysing transformative learning experiences that connect personal action with systemic change.

As global water demand rises, tools like the Water Footprint offer valuable insights into resource use. This metric evaluates both direct and indirect water consumption and pollution across products, companies, and sectors – from growing rice to manufacturing jeans (OTTER Project 2025).

Reducing water footprints requires more than technical knowledge – it demands critical thinking and systems-based understanding. Education must go beyond factual learning to cultivate ecological literacy and ethical decision-making. Aligning curricula with SDG6 can accelerate progress in water stewardship and sustainability.

Addressing corruption and promoting transparent governance

Corruption in the water sector undermines equity, efficiency, and public trust. It leads to project delays, inflated costs, and reduced access to safe drinking water. Tackling corruption is essential for achieving SDG6 and upholding the human right to water (UNDP 2011; IDB 2020).

Public integrity education is key. Yet integrity remains underrepresented in academic curricula. Embedding it into education systems can raise awareness, ensure accountability, and drive systemic change.

Public–private partnerships (PPPs) are more effective when supported by clear, stable legislative frameworks. These frameworks enable long-term investment while balancing public interests with private sector returns. Education and institutional reform are critical to ensuring that water management is fair, transparent, and inclusive.

Strengthening the nexus between governance, data, and education is vital for addressing global water challenges. Reliable data supports evidence-based policymaking, while education equips individuals with the skills to engage in transparent governance.

Collaborative approaches that integrate water management, integrity, and resource stewardship into education can support a culture of accountability and sustainability across all levels of society.

Bridging education and policy

Achieving SDG6 requires more than infrastructure – it demands a strategic focus on human capacity. The UN-Water 2020 report indicates that previous output-based approaches have overlooked the critical role of education, training, and workforce development in delivering water and sanitation services. To meet SDG6 targets, countries must invest in building the skills and knowledge needed across all levels of society.

Capacity development is essential for:

- Improving service delivery and infrastructure maintenance.
- Creating jobs in the water and sanitation sector.
- Enhancing monitoring and evaluation, especially at the community level.

Water education must be embedded across all levels of learning – from early childhood to tertiary and adult education – to cultivate a holistic understanding of water-related challenges. This includes technical and scientific disciplines, as well as policy, law, governance, finance, information technology, environmental studies, gender equity, and stakeholder engagement.

Strengthening the capacity of local governments and service providers is particularly important. These actors are on the front lines of water and sanitation delivery and must be equipped with the tools and training to manage systems effectively and equitably.

Integrating education into water governance frameworks ensures a cohesive and sustainable approach to water management. The UN-Water Global Acceleration Framework calls for scaling up capacity-building partnerships to meet SDG6 targets at scale. This includes:

- Cross-sector collaboration between education institutions, government agencies, and civil society.
- Inclusive training programmes that reflect local contexts and needs.
- Support for lifelong learning and professional development in water-related fields.

Education plays a bridging role – connecting science, policy, and community practice. It cultivates water stewardship, empowers individuals to adopt sustainable behaviours, and enables informed decision-making at all levels.

Conclusion

A future where clean water and sanitation are accessible to all is attainable – but only if education, governance, and innovation are aligned. By investing in human capacity and embedding water education into policy frameworks, countries can accelerate progress toward SDG6 and build resilient, inclusive water systems for generations to come.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Importance of clean water** • Clean water as essential for health, preventing illness, and maintaining hygiene. • Uses of water in daily life, including drinking, washing hands, brushing teeth, and cleaning. **Basic water use in daily life** • Water used in daily tasks, such as filling a glass, washing hands, watering plants, or flushing a toilet. • Importance of using water wisely and avoiding waste. **Water sources and their importance** • Water coming from taps, wells, rain, and other sources. • Necessity of keeping water sources clean to ensure safe water for everyone. **Hygiene and water** • Washing hands with soap and water to remove germs and prevent sickness. • Connection between water use and hygiene practices in maintaining health.	**Handwashing skills** • Practise and learn the steps of washing hands with soap and water, including scrubbing palms, between fingers and rinsing thoroughly. • Encourage children to make hand-washing a regular habit, particularly before eating or after using the bathroom. **Water play and exploration** • Engage in water play activities such as sponge relay races, pouring water into different containers and simple water-saving games. • Use jars, cups or buckets to visualise and understand how much water is consumed in everyday tasks (for example, washing hands, filling a glass). **Tracking water use at home** • Create a simple chart for children to track water usage at home (for example, how much water used to wash hands, brush teeth or water plants). • Children learn to recognise activities that waste water; encourage them to make minor changes at home to save water. **Setting up a hand-washing station** • Set up and keep a classroom hand-washing station where children can practise washing their hands regularly. • Use the hand-washing station to educate children about the importance of hygiene and its relationship to health.	**Respect for water** • Instil respect for water as a precious, shared resource that is essential for life and health. • Encourage children to take care of water sources by not polluting them and ensuring that water is clean and safe for all. **Responsibility for hygiene** • Encourage a sense of responsibility to take care of personal hygiene, especially in relation to water use (washing hands, brushing teeth, etc.). • Model good hygiene habits for others, such as teaching peers or toys about washing hands properly. **Commitment to water conservation** • Adopt habits like turning off taps when not in use, using water wisely during play, and understanding that every drop counts. • Help children recognise the amount of water used in simple tasks, making them aware of the impact of water waste. • Take simple actions to save water, such as limiting how long the tap is running or using small containers for activities like watering plants. **Care for the environment** • Explore the role of water in the environment, particularly in ecosystems like rivers, lakes and oceans, and how using water responsibly helps protect these places. • Develop an understanding of how caring for water resources benefits both people and the environment, encouraging children to be future caretakers of the planet.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**The water cycle** • Evaporation, condensation, and precipitation as key processes of the water cycle. • Movement of water through the environment and the influence of climate change on these processes. **Water's importance to ecosystems** • Clean water as essential for the survival of all living things and healthy ecosystems. • Pollution effects on water quality and the organisms depending on it. **Water in daily life** • Uses of water in hygiene, cooking, cleaning, and drinking. • Differences between water abundance and scarcity in communities. **Safe water practices** • Role of clean water in maintaining health. • Importance of sanitation and hygiene in disease prevention, such as handwashing before meals. **Water and culture** • Links between water and cultural practices, local traditions, and folklore. • Value of water in different societies and ways of life. **Water footprint** • Concept of a water footprint: the direct and indirect water used in producing food, clothing, and energy. • Global impact of water consumption patterns. **Sanitation and hygiene** • Consequences of poor sanitation, including disease spread and food insecurity. • Role of safe waste disposal and clean water in preventing illness. **Water conservation** • Basic water-saving practices, such as turning off taps and using water efficiently. • Importance of reducing water waste to protect finite freshwater resources.	**Practical water activities** • Practise handwashing with soap and water as a routine. • Engage in water-saving exercises like measuring water use in daily activities. **Experiments and observations** • Conduct simple experiments (for example, observing evaporation and condensation). • Use visual aids (for example, maps, infographics) to explore water usage and pollution. **Water-related games** • Participate in fun games that teach water conservation, like sponge relays or water-saving challenges. • Role play to practise hygiene and sanitation routines. **Community engagement** • Take part in community projects like water conservation drives or local water body clean-ups.	**Respect for water** • Cultivate respect for water as a shared and precious resource. • Understand that everyone has a role in keeping water clean and saving it for future generations. **Healthy habits** • Appreciate the importance of handwashing and safe hygiene for health. • Value cleanliness and the impact of clean water on overall wellbeing. **Responsibility and action** • Take responsibility for saving water in daily life (for example, turning off taps when not in use). • Develop empathy for those who lack access to clean water and sanitation. **Cultural awareness** • Respect water-related cultural practices and traditions. • Share and appreciate local stories and traditional water conservation methods.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Water footprints: green, blue, and grey** • Green water: volume of rainwater used in agriculture, horticulture, and forestry products. • Blue water: freshwater used in irrigation, industry, and domestic consumption, with its impacts on local resources. • Grey water: freshwater required to dilute pollutants to safe levels, particularly in industrial and agricultural processes. • Real-world case studies (e.g., cotton farming, energy production) illustrate the significance of green, blue, and grey water footprints in global water management. **Virtual water and global trade** • Concept of virtual (embedded) water in imported goods and its role in global water distribution. • Water footprints of products (e.g., food, clothing) influence trade patterns and global water resource allocation. **Water infrastructure** • Human-engineered systems for collection, distribution, and treatment, such as reservoirs, pipelines, and treatment plants. • Role of infrastructure in sustainable water management and challenges of ageing systems in urban and rural areas. **Water cycles and human interventions** • Natural water cycle and its dynamics, influenced by climate and human activities. • Effects of dams, reservoirs, irrigation, and wastewater treatment on water availability and quality. • Importance of healthy watersheds and ecosystems in maintaining water quality and biodiversity. **Connection between water, energy, health, and sanitation** • Energy–water nexus: water use in energy production and its environmental implications. • Role of clean water in sanitation and public health; water scarcity as a driver of health challenges.	**Personal and community water footprints:** • Calculate and interpret the water footprint of personal and community activities (for example, food consumption, water use at home). • Compare local water footprints with global averages, gaining a deeper understanding of the global disparities in water use. • Create informative posters illustrating the water footprint of common products (for example, cotton, meat, electronics), focusing on green, blue and grey water footprints. • Use the posters to raise awareness about how consumer choices affect global water resources. **Evaluate water use** • Analyse consumption patterns of water in domestic, industrial and agricultural settings. • Analyse trends and how consumption patterns correlate with local water availability and global sustainability goals. **Policy analysis** • Use integrated thinking to analyse and evaluate water policies and infrastructure challenges, and how social, environmental and economic factors influence water management. • Suggest changes or improvements to existing water policies based on integrated analysis. **Climate change adaptation** • Adjust water use practices when facing challenges like water shortages or changes in the hydrologic cycle due to climate change. • Apply strategies to build resilience against water supply disruptions.	**Personal responsibility in water use** • Encourage a sense of individual responsibility by helping students understand their direct and indirect water use and how it affects local and global water resources. • Encourage conscious daily decisions to reduce personal water footprints – turning off taps, reusing water, choosing low-water-consumption products, and managing online activity responsibly (for example, limiting unnecessary screen time due to digital water costs). **Appreciation of water as a shared, finite resource** • Learn to appreciate water's scarcity in many regions and the ethical importance of preserving water reserves, particularly under conditions of drought, food insecurity and urban expansion. • Encourage empathy with communities facing water challenges, reinforcing the idea that water access is a human right and a global justice issue. **Understanding the water footprint** • Develop a mindset that sees water not only as what flows from taps, but as embedded in the food we eat, clothes we wear and things we use – promoting conscious consumption. • Motivate students to reduce footprints: act – changing diets, reducing waste and advocating for sustainable production – to shrink their own water footprint. **Protection of water quality for all life** • Emphasise the link between human behaviour and the wellbeing of aquatic life and ecosystems, nurturing a respect for water's role in sustaining biodiversity. • Encourage active engagement in protecting water sources from pollution and degradation, encouraging participation in conservation activities like clean-ups or awareness campaigns.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education (ctd)	**Biodiversity and water conservation** • Link between water quality and aquatic ecosystem health. • Contribution of water conservation efforts to sustainable ecosystems and global biodiversity goals. **Water pollution and aquatic life** • Impacts of pollution (industrial, agricultural runoff) on aquatic life and ecosystems. • Case studies of water pollution (e.g., Aral Sea, industrial contamination) and effects on biodiversity. **Systems thinking and water challenges** • Water challenges require systemic solutions integrating scientific, societal, and environmental perspectives. • STSE (science, technology, society, environment) approach for examining water issues and sustainable solutions. **Case studies and global water issues** • Healthy watersheds: examples like the Amazon and Colorado river basins illustrate their role in water quality and availability. • Global water issues: droughts, water conflicts, and pollution, with socio-economic and environmental consequences. **Interdisciplinary projects and real-world strategies** • Design projects addressing water scarcity, pollution, or management, with innovative solutions for treatment, conservation, and efficient use. • Study successful water management strategies: conservation programs, watershed restoration, and sustainable practices. **Strategies for mitigating extreme weather events** • Impact of extreme weather events (for example, floods, droughts) on water systems and propose strategies to mitigate their effects on water resources and infrastructure. • Adaptation strategies that improve the resilience of local water systems to climate-related challenges.	**Evaluate water issues locally and globally** • Cultivate the ability to analyse water challenges from both local and global perspectives, understanding the interconnectedness of water systems. • Use digital tools, such as mobile apps and online platforms, to collect, analyse and interpret water-related data for understanding and promoting evidence-based solutions to local water challenges. • Use locally appropriate tools – such as paper-based surveys, basic mobile phones or community mapping – to gather and interpret information about water use, access and challenges, and explore how simple data can support local water solutions. • **Global water management**: explore the challenges and solutions to water access in different countries, focusing on issues like water scarcity, pollution and water governance. **Develop critical thinking and problem-solving skills** • Visit water resource locations: engage in field visits to locations illustrating water resource challenges, equitable distribution and water management strategies, especially under extreme weather events. • Develop essential problem-solving skills by engaging in critical thinking activities such as role-playing water-related scenarios, simulating water conflicts and proposing solutions. **Install rainwater harvesting systems** • Learn how to install rainwater harvesting systems, understanding the importance of sustainable water sourcing. • Propose and implement rainwater harvesting systems in schools or communities as part of water conservation efforts.	**Recognition of competing demands and need for equity** • Explore ethical decision-making: thoughtful consideration of how to balance competing demands for water – agriculture, industry, urban populations, wildlife – while prioritising equity and sustainability. • Recognise that vulnerable communities often bear the greatest burden from poor water management or scarcity. **Water as interconnected with environment and society** • Appreciate that water systems are deeply connected to energy, food, ecosystems and human health – reinforcing a holistic, interdisciplinary perspective. • Understand informed decision-making: examine water challenges through environmental, technological, social and economic lenses, developing mature attitudes toward sustainable solutions. **Value for interdisciplinary and collective approaches** • Appreciate working across disciplines (for example, science, social studies, technology, arts) to co-create practical and inclusive water solutions. **Ethical computing and hidden water use** • Develop awareness of digital water costs: cultivate mindfulness that even virtual activities – like streaming, gaming or long screen use – consume water through energy use. • Encourage responsible digital use: powering down unused devices or tabs, as part of a broader ethos of sustainability. **Global citizenship and collective action** • Appreciate that responsible water use, and advocacy are part of global citizenship, where everyone's actions contribute to systemic change. • Engage in a values-based belief that youth can influence water conservation, policy development and climate resilience in their communities and beyond.Top of Form • Bottom of Form **Link social, technological and scientific aspects** • Connect ethical dilemmas to broader societal, technological and scientific issues surrounding water use. • Engage in debates on water allocation policies, balancing human needs with environmental protection. • Discuss issues like water rights, conservation efforts and industrial water use.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Water supply systems and technologies** • Principles of water supply technologies, including water sourcing, purification, distribution, and infrastructure. • Structure and functioning of machines and plants used in water production and supply. • Maintenance protocols and monitoring practices that ensure safe and efficient operation of water systems. **Wastewater and sanitation technologies** • Wastewater treatment processes and their significance for public and environmental health. • Sewage systems, canal systems, and treatment plant operations. • Sanitation and hygiene infrastructure and their role in disease prevention. **Recycling and waste management** • Processes of waste collection, sorting, reuse, and environmentally sound disposal. • Infrastructure requirements for effective recycling and sanitation systems. • Environmental and economic benefits of recycling and waste minimisation. **Sustainable energy integration** • Relationship between water and energy (the water–energy nexus). • Role of renewable energy sources (solar, wind, hydro, geothermal) in water management systems. • Energy-saving practices in water treatment and recycling operations. **Health, environment, and societal impact** • Interconnections between water quality, health, biodiversity, and climate resilience. • Role of infrastructure in ensuring equitable access to clean water. • Environmental legislation, standards, and regulations for water and waste systems. • Contribution of greening TVET initiatives to sustainable development.	**Technical and maintenance skills** • Operate, monitor and maintain water production plants and treatment facilities. • Route, lay and repair water and wastewater pipes. • Clean and support industrial and public water infrastructure such as tanks, canals and pipelines. • Apply digital and field-based tools – such as mobile data collection apps, geographic information system (GIS) software and water quality testing kits – in plumbing, environmental technology and water systems management to assess local water infrastructure, monitor usage and pollution levels, and contribute to the design, maintenance and improvement of sustainable, evidence-based water solutions. **Diagnostic and monitoring abilities** • Use diagnostic tools to assess the condition of water systems and identify faults. • Conduct regular inspections and quality control checks on water and wastewater facilities. • Troubleshoot operational problems in water supply and treatment systems. **Design and project implementation** • Develop efficient workflows for water and waste management. • Participate in designing systems for water reuse and energy-efficient sanitation solutions. • Plan and implement sustainable recycling operations. **Renewable energy and efficiency** • Apply basic principles of solar, wind or hydro energy in water system applications. • Assess water and energy use in treatment systems for sustainability improvements. **Community and institutional engagement** • Conduct awareness-raising activities in TVET institutions about water conservation and hygiene. • Contribute to institutional greening efforts (for example, waste segregation, water-saving fixtures). • Participate in field visits to water plants, recycling centres and infrastructure sites to observe best practices.	**Responsibility and ethics** • Take personal and professional responsibility for water conservation and infrastructure integrity. • Develop a commitment to environmental protection and responsible waste disposal. • Cultivate a sense of urgency and care in ensuring safe drinking water and sanitation for all. **Sustainability and stewardship** • Value water as a limited, shared and vital resource. • Embrace a sustainability mindset in all technical and operational decisions. • Promote the use of renewable energy and efficient systems in the water and sanitation sectors. **Professional contribution and leadership** • Be motivated to make meaningful contributions to a more sustainable society through one's trade. • Demonstrate leadership in keeping hygiene and sustainability practices in workplaces. • Advocate for environmentally sound business practices within the water and sanitation industry. **Innovation and lifelong learning** • Stay informed about emerging technologies and practices in water management. • Appreciate the interdisciplinary nature of water challenges and solutions. • Engage with continuous professional development and technological updates. **Equity and social good** • Recognise the role of skilled workers in ensuring water justice and reducing water inequality. • Support inclusive access to clean water and sanitation in all settings – rural, urban, public and private. • Encourage community participation and empowerment in water management initiatives. **Crisis response and problem solving** • Respond effectively to emergencies such as pipe bursts, contamination or system failure. • Propose context-specific solutions to water access and sanitation challenges.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Integrated and sustainable water resource management** • Principles of integrated water resources management (IWRM), including ecosystem-based approaches, climate adaptation, and equitable allocation across sectors. • Water infrastructure resilience, water governance systems, and adaptive management in response to climate variability and demographic change. • Water security frameworks in regions experiencing scarcity, inequality, or rapid development. **Innovation, technology, and modelling** • Innovative technologies in water treatment (membrane filtration, nanotechnology, desalination) and sanitation solutions. • Environmental modelling techniques to simulate water flow, contamination risks, and resource availability, with applications in urban planning and climate resilience. • Space-based technologies (satellite data, remote sensing) for global monitoring of water resources, including snow and glacier coverage, groundwater levels, and flood forecasting. **Water, soil, and ecosystem conservation** • Soil and water management practices for sustainable agriculture, including rainwater harvesting, water retention systems, and smart irrigation techniques. • Role of green works (vegetative buffers, community-led restoration projects) in protecting water and soil resources at the local level. • Wetland rehabilitation and ecohydrology as nature-based solutions for restoring water quality, enhancing biodiversity, and recharging groundwater. **Governance, rights, and policy dimensions** • Water governance systems, including regulatory frameworks, public–private partnerships, and participatory decision-making processes. • Complexities of transboundary water management, conflict resolution, and international water law. • Ethical dimensions of water access, affordability, and equity, including water rights versus commodification. • Role of governance in mitigating water-related conflict, informed by tools like the Water, Peace, and Security (WPS) global early warning tool.	**Technical and engineering competencies** • Operate, monitor and maintain machines and systems used in water production and wastewater treatment plants. • Conduct water audits for households, communities and institutions to measure usage patterns and promote conservation. • Implement and manage low-cost, scalable technologies for water harvesting, groundwater recharge and greywater reuse. • Develop and apply household or community-level FEW (food-energy-water) nexus models to assess the impact of environmental, social and technological drivers. • Design and maintain water distribution systems, including hydraulic modelling and leak detection strategies. **Innovation and applied research** • Engage in applied, interdisciplinary research to address water scarcity, especially in under-resourced and climate-vulnerable contexts such as small island developing states (SIDS). • Prototype and test financially sustainable water models, integrating tariffs, subsidies and demand-side management. • Use earth observation (EO) tools, GIS and remote sensing to monitor surface water, groundwater and watershed changes. • Innovate in climate adaptation strategies linked to water (for example, resilient infrastructure, early warning systems for floods and droughts). • Apply WPS (water, peace and security) tools to conduct conflict-sensitive assessments and design proactive water security interventions. **Governance and policy analysis** • Apply governance frameworks to analyse water rights, access equity and explore the implications of commodification versus public provision. • Use ICT tools and open-access platforms to enhance transparency and accountability in water service delivery. • Conduct policy simulations and stakeholder analyses to evaluate trade-offs in water allocation across domestic, agricultural, industrial and ecological uses. • Design legal and institutional strategies for effective transboundary water management and compliance with international water laws.	**Ethical and environmental responsibility** • Value water and sanitation as fundamental human rights, with a strong ethical stance against exclusion and inequity in access. • Commit to reducing ecological footprints by promoting environmentally responsible behaviours in water use, energy management, waste reduction and emissions control. • Respect freshwater ecosystems as essential for biodiversity, climate resilience and intergenerational sustainability. **Social commitment and professional integrity** • Demonstrate professional responsibility in keeping high standards of water and wastewater infrastructure, ensuring safety, reliability and environmental compliance. • Actively contribute to societal transformation by applying knowledge to address water insecurity and sanitation challenges, particularly for vulnerable populations. • Support governments and communities in building capacity to reduce the risks of water-related conflict and improve governance and peacebuilding. **Equity and justice orientation** • Cultivate a solution-minded and justice-oriented approach to managing competing water demands across agriculture, industry, domestic use and ecosystems. • Promote awareness and advocacy on the global water crisis, and the need for equitable water governance rooted in local realities and global co-operation. • Recognise and address inequalities in water access and exposure to water-related risks, particularly in marginalised or underserved communities. **Sustainability and innovation mindset** • Embrace a sustainability ethos that prioritises innovation in water efficiency, circular economy practices and ecosystem restoration. • Show readiness to scale up sustainable solutions through creativity, entrepreneurship and the generation of decent, green jobs. • Commit to responsible water use and effluent reduction across the personal, institutional and professional spheres.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education (ctd)	**Global and socio-economic contexts** • Global disparities in water access, quality, and infrastructure, particularly in fragile contexts such as small island developing states (SIDS). • Linkages between water, poverty, conflict, and economic development, including the exacerbation of social inequalities and migration due to water insecurity. • Impacts of pollution and industrial contamination on low-income and marginalised communities. **Data, research, and monitoring** • Generation and use of data-driven insights for water quality monitoring, policy design, and early-warning systems for drought or contamination. • Use of GIS, big data analytics, and participatory mapping to inform sustainable water planning. • Research methods in transdisciplinary water studies, including co-production of knowledge across science, policy, and community levels. **Clean water and sanitation in the sdg framework** • SDG 6 targets and indicators and their interconnections with health, education, food security, climate action, and peace. • Global case studies and innovations in clean water and sanitation. • Comparative analysis of national and regional strategies for water security and sanitation access.	**Data and decision-making** • Collect, clean and interpret large water-related datasets, including disaggregated spatial and demographic data, to inform evidence-based decisions. • Use data science techniques to model water demand, identify high-risk zones and simulate infrastructure stress under different climate scenarios. • Develop indicators and dashboards for water monitoring systems, integrating biophysical, social and economic parameters. • Apply spatial analysis to guide integrated urban and land-use planning for sustainable infrastructure development. **Strategic and entrepreneurial skills** • Conceptualise and implement entrepreneurial projects that introduce innovative water technologies or sanitation solutions to underserved communities. • Organise and manage recycling and waste management workflows, ensuring adherence to environmental and safety standards. • Develop climate-smart infrastructure projects, integrating renewable energy and circular economy principles into water systems. • Prepare business plans and grant proposals for water innovation projects with measurable social and environmental impact. **Transdisciplinary and collaborative practice** • Facilitate collaborative transdisciplinary research teams combining technical, ecological and social sciences. • Use participatory methods for stakeholder engagement in water governance, especially in conflict-prone or marginalised areas. • Engage in scenario-building and risk assessment exercises to explore water-related vulnerabilities and solutions at various scales. • Integrate water security knowledge into disaster response planning and development programming across sectors.	**Systems thinking and collaboration** • Adopt a holistic and integrated understanding of water challenges, recognising links with health, food, energy, climate, economy and peace. • Promote interdisciplinary and transdisciplinary collaboration, recognising that effective water solutions emerge from co-operation across science, policy and community practice. • Engage in responsible decision-making that balances scientific evidence, ethical considerations and socio-political realities in water-related issues. **Leadership and advocacy** • Develop as ethical leaders and advocates for water justice, conservation and sustainable development at the local, national and global levels. • Actively participate in shaping policy and planning processes that prioritise sustainable and inclusive water and sanitation infrastructure. • Promote community engagement and behaviour change, using knowledge and tools to shift public attitudes and support sustainable water practices.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Water, health and hygiene** • Importance of clean water sources in preventing waterborne diseases and promoting family and community health. • Common health problems caused by polluted or untreated water, including diarrhoea, cholera, typhoid, and parasitic infections. • WASH (water, sanitation, and hygiene) practices at household and community levels, including handwashing, safe water storage, and sanitation habits. • Linkages between hygiene practices and health outcomes, especially for children, the elderly, and immunocompromised individuals. **Sustainable water use and conservation** • Freshwater management and conservation techniques, including local and traditional methods. • Soil and water resource management, including rainwater harvesting, small-scale irrigation, and erosion control to support water access and food production. • Watershed management for protecting water quality and quantity at the community level. • Community-led conservation efforts and the impact of local actions on long-term water sustainability.	**Personal and community hygiene and behavioural change** • Practise and promote behavioural changes that optimise the benefits of clean water, such as handwashing, safe water storage and regular cleaning of sanitation facilities. • Educate community members about the health benefits of using clean water and maintaining hygiene, reducing the spread of waterborne diseases. • Teach sustainable water use habits, especially to younger generations, embedding water conservation as a lifelong value. **Community organisation and leadership** • Form and participate in village WASH (water, sanitation and hygiene) committees that promote inclusive decision-making with balanced gender representation. • Organise and lead community awareness campaigns, such as small watershed conservation initiatives, tree planting for water catchment protection or water-saving demonstrations. • Facilitate joint monitoring and training sessions to promote information sharing and build trust across community members and local institutions.	**Environmental stewardship and sustainability** • Appreciate the intrinsic value of water and cultivate a deep respect for the health of watersheds and local water bodies. • Express a sense of responsibility and stewardship towards protecting clean water sources and improving sanitation facilities. • Encourage self-reflection on individual and collective roles in water usage, conservation and the promotion of sustainable practices. • Promote values of environmental care, ensuring water and soil practices contribute to ecological balance and resilience. **Community engagement and collective action** • Support active community participation in managing water sustainably, recognising the importance of local co-operation and shared responsibility. • Cultivate a community-oriented mindset and collective action to conserve water, maintain hygiene standards and manage shared resources. • Encourage conflict resolution skills around shared water sources, encouraging co-operation, mutual respect and shared benefit. • Promote resilience-building attitudes, particularly in communities vulnerable to climate change, by valuing long-term water security. • Support community-based innovations that link water sustainability with economic empowerment and environmental stewardship.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education (ctd)	**Climate resilience and water security** • Effects of climate change on water resources, including droughts, floods, and declining groundwater levels. • Water management strategies for climate resilience, such as rainwater collection, seasonal storage, and flood mitigation. • Transboundary water management and regional cooperation for climate adaptation and shared governance. • Role of human ecology and community resilience in adapting to environmental changes through sustainable water use. **Livelihoods, gender, and community empowerment** • Links between access to clean water and sanitation, improved livelihoods, productivity, and reduced time spent collecting water, especially for women and children. • Micro-credit and local enterprise initiatives supporting water and hygiene services, including latrine installation and maintenance. • Gender-responsive water management and equitable participation in water-related decisions. • Interconnections between water access, food security, and economic wellbeing in urban and rural communities. **Practical infrastructure and local innovation** • Construction and maintenance of simple, low-cost latrines using local materials. • Community water infrastructure maintenance, including pipe repair, source protection, and routine inspections. • Integration of traditional knowledge and modern practices to improve household and community water systems. • Community-driven innovations promoting sustainable water use, improved sanitation, and public health.	**Water efficiency and conservation** • Apply practical skills in WASH, such as constructing and maintaining latrines, managing waste safely, and treating household water through simple filtration or boiling. • Use and teach low-cost technologies for improving water efficiency in homes and farms, such as drip irrigation, mulching and rainwater harvesting systems. • Implement agricultural water-saving techniques and practices that avoid contamination of waterways from chemical runoff or livestock waste. **Watershed and resource management** • Apply watershed management techniques to conserve local water sources, including erosion control, catchment protection and reforestation. • Soil and water resource management, including water harvesting, storage and reuse for household or farming use. • Apply freshwater conservation practices and contribute to local projects that restore and protect community water bodies. **Climate resilience** • Apply human ecology and environmental resilience to create sustainable water use strategies that adapt to climate-related water scarcity or floods. • Develop and support community water management systems for local resilience to climate change impacts. • Participate in or support transboundary and regional water co-operation efforts, using shared tools and frameworks for joint water monitoring, risk management and dialogue. **Livelihoods, health and innovation** • Integrate clean water and sanitation practices with community health and livelihood improvement strategies to enhance overall wellbeing and productivity. • Support or initiate micro-credit projects that fund water-related enterprises, such as water kiosks, community taps or hygiene product distribution.	**Equity, inclusion and social justice** • Promote the principle of water as a human right, ensuring inclusive access to clean water and sanitation for all, especially vulnerable populations. • Value the role of women, indigenous peoples and tribal communities in water management and decision-making. • Support social equity by advocating for fair access, encouraging participation, and reducing disparities in water availability and quality. • Strengthen civil society engagement, embracing transparency, accountability and inclusive governance through community oversight and digital tools. **Cultural wisdom and local knowledge** • Leverage and respect local knowledge and traditional ecological practices in water conservation and management. • Value and honour indigenous approaches to water, recognising their contributions to sustainable and culturally rooted water stewardship. • Encourage innovation and resourcefulness, especially in using local, affordable materials for developing water and sanitation infrastructure. **Health, hygiene and human dignity** • Promote a strong ethic of care for public health, grounded in the importance of clean water and sanitation for disease prevention and wellbeing. • Encourage an initiative-taking attitude in supporting hygiene awareness, household water treatment and behavioural change across communities. • Instil a sense of mutual support, where communities collaborate and uplift one another in efforts to manage water effectively and equitably.

9. Goal 7 – Affordable and Clean Energy

Ensure access to affordable, reliable, sustainable and modern energy for all

The global energy imperative

Access to clean, reliable energy is essential for sustainable development. As industrialisation, technological advancement and population growth drive up global energy demand, the need for inclusive and environmentally responsible energy systems becomes increasingly urgent. Sustainable energy includes both current sources that meet immediate needs and transitional or alternative options that are cleaner, more resilient and future-ready (Vasant and Voropai 2016).

Status and challenges

Global electricity access has improved – from 83 per cent in 2010 to 92 per cent in 2025 (World Bank 2025) – yet 666 million people, primarily in sub-Saharan Africa, still lack access. Meanwhile, 2.3 billion people continue to rely on polluting fuels such as wood and coal for cooking, contributing to over 3.2 million premature deaths annually due to indoor air pollution (WHO 2022). Electricity production remains the largest source of greenhouse gas emissions, accounting for 40 per cent of global CO_2 emissions in 2022 (IEA 2023).

Although energy efficiency has improved, the pace of change must accelerate to meet SDG7 targets. Economic expansion and population growth in energy-intensive sectors further complicate the transition, while vulnerable communities face affordability barriers and limited access to modern energy services.

Transforming energy systems for equity and sustainability

Achieving SDG7 requires a systemic transformation in how energy is produced, distributed and consumed. This transformation must prioritise reduced carbon intensity, inclusive growth and social justice. Structural barriers – including policy gaps, historical inequities and unaffordability – continue to marginalise low-income and rural populations (Sokołowski and Heffron 2022; IEA 2024).

A just energy transition depends on public understanding of energy systems and their environmental and social impacts. It also requires practical, inclusive pathways that empower communities to participate in shaping energy futures.

The role of education in energy transformation

Education is a critical enabler of clean energy transitions. It supports awareness, skill development, innovation and behavioural change. Energy literacy – embedded across subjects and levels of learning – equips individuals to understand the environmental, economic and social dimensions of energy systems. As UNESCO (2017) affirms, energy education promotes critical thinking and responsible energy use, empowering learners to contribute meaningfully to sustainable development.

Formal and informal education both play vital roles. Off-grid communities benefit from training in solar and other clean technologies, while tertiary institutions offer specialised programmes in sustainable energy systems. Leadership education prepares policymakers and industry leaders to expand decentralised energy solutions and climate finance – particularly in underserved areas such as refugee camps, where energy access improves health, safety and livelihoods.

Skills for the green economy

Closing the green skills gap is essential for supporting clean energy transitions. This requires coordinated investment in technical and vocational education and training (TVET), lifelong learning and

industry-aligned curricula. Reskilling and upskilling in areas such as renewable energy, energy efficiency and sustainable infrastructure are critical. TVET systems must adapt rapidly to meet this demand, while digital and mobile learning platforms can help learners assess local energy challenges, propose solutions and gain practical skills for low-carbon economies.

Initiatives such as the Transforming Energy Access – Learning Partnership (TEA-LP) exemplify education's transformative potential. TEA-LP collaborates with universities in Africa, South Asia and the Indo-Pacific to deliver postgraduate and professional development programmes tailored to local needs and gender equity priorities.

Community learning and behavioural change

Community-based education and behavioural campaigns are equally important. Teaching households about clean cooking, energy-efficient appliances and conservation practices can yield significant savings. Capacity building for frontline workers – such as educators, healthcare professionals and social workers – enhances outreach to populations facing energy poverty.

Education also plays a central role in climate change mitigation. The Intergovernmental Panel on Climate Change (IPCC 2022) states that education empowers individuals to understand and act on the connections between energy use, carbon emissions and climate resilience. Embedding these connections across curricula helps mobilise youth and communities in support of net-zero targets and sustainable futures.

Addressing energy poverty and gender inequality

Energy poverty undermines educational equity, particularly in rural and underserved areas. Limited access to electricity restricts children's ability to study after dark, impairs learning outcomes and widens the digital divide. Addressing energy poverty through targeted investments in education and infrastructure is essential to closing these gaps and ensuring inclusive, lifelong learning for all.

Women and girls are disproportionately affected by energy poverty, which limits their time for education, restricts economic participation and increases exposure to health risks. Gender-responsive education and energy policies are vital for improving school attendance, supporting women-led energy enterprises and promoting inclusive leadership in the energy sector.

Aligning education with just transitions

Education is not just an enabler – it is a driver of clean energy transitions. By integrating energy literacy into curricula, strengthening TVET and higher education, promoting inclusive learning and aligning education policy with just transition frameworks, societies can accelerate progress toward SDG7.

Clean energy is not only about technology – it is about people. Investing in inclusive, lifelong energy education empowers individuals and communities to shape a future that is sustainable, equitable and powered for all.

Education as a response to energy poverty and failure

Energy poverty continues to undermine educational equity, particularly in rural and underserved communities. Limited access to electricity restricts children's ability to study after dark, impairs learning outcomes, and reinforces cycles of poverty and exclusion. It also limits the use of digital tools and information and communication technology (ICT), widening the digital divide. As the UN Department of Economic and Social Affairs (UNDESA 2021) notes, 'The lack of electricity access negatively impacts children's ability to study after dark and reduces the time available for learning, particularly in rural communities.' Addressing energy poverty through targeted investments in education and infrastructure is essential to closing the rural–urban gap and ensuring inclusive, lifelong learning for all.

Clean energy access is also deeply interconnected with gender equality. Women and girls are disproportionately affected by energy poverty, which limits their time for education, restricts participation in income-generating activities, and increases exposure to health risks. UN Women (2014) finds that 'lack of access to clean energy services disproportionately affects women and girls, limiting their education, economic opportunities, and time for personal development.' Research by ENERGIA and the UK Department for International Development (ENERGIA and DFID 2019) further

shows that access to clean energy improves school attendance among girls and enhances women's economic participation.

Advancing gender-responsive energy policies and education initiatives is therefore essential for inclusive development and for realising SDG5 and SDG7 in tandem. Gender-responsive education can help address the under-representation of women and marginalised groups in the energy sector, particularly in leadership and policy-making roles, while promoting equitable participation in clean energy transitions.

Education is a powerful tool to tackle both energy poverty and policy failure. It develops critical understanding of energy systems, their socio-environmental impacts and the importance of equitable access. It also empowers communities to demand and co-create solutions.

Addressing policy gaps and promoting just transitions

Energy failure often stems from inadequate, exclusionary or poorly implemented policies. While recent international frameworks – such as the Paris Agreement and the 26th Conference of the Parties (COP26) – have foregrounded justice and net-zero goals, technological solutions alone are insufficient. A just transition demands policy reform, education and capacity building to ensure equity, community engagement and resilience. Community leaders, educators and health workers must be equipped to advocate for and support inclusive energy policies (Boemi *et al.* 2024).

For education to drive real change, it must be integrated into broader strategies for energy access, climate resilience and social development. Aligning education policy with infrastructure investment and social protection systems ensures that energy transitions leave no one behind.

Energy efficiency and environmental sustainability

Improving energy efficiency is a cornerstone of sustainable development. It reduces emissions and resource use while supporting climate goals (IPCC 2023). Educational initiatives and supportive policies are essential to shift societies toward low-emission technologies and behaviours. Context-specific approaches – such as participatory learning, storytelling and citizen science – help build local ownership of energy solutions and support climate adaptation.

Pathways for action

The energy transition demands coordinated, multisectoral efforts that bridge education, policy and practice. Expanding energy education across all levels is critical, with curricula integrating principles of sustainability, equity and innovation to prepare learners for the challenges and opportunities of a low-carbon future.

Strengthening technical and vocational education and training (TVET), alongside higher education, is essential to develop a skilled workforce ready for emerging clean energy careers and technologies. Community learning initiatives and behaviour change campaigns also play a vital role in driving household-level adoption of clean energy solutions. These grassroots efforts help translate knowledge into practical action, developing energy-saving habits and demand for sustainable energy services.

Building capacity through the training of multiplier agents – individuals equipped to identify and address energy poverty within health, education and social service sectors – is another key strategy. These agents can bridge gaps between policy and community needs, ensuring inclusive access to clean energy (Llewellyn *et al.* 2025).

Promoting gender-inclusive curricula and leadership pathways in the energy sector is crucial for encouraging diverse perspectives and equitable participation. This inclusivity not only advances social justice but also enhances innovation and resilience within energy systems.

Finally, aligning education policies with just transition frameworks and clean energy investments ensures that learning systems support broader sustainability goals. Education is not merely an enabler – it is a proactive driver of sustainable energy futures. By embedding inclusive and locally relevant energy education into national and regional development strategies, societies can accelerate the energy transition and fulfil the transformative promise of SDG7.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**What is energy?** • Recognise that energy powers everyday things like lights, heaters, and fans. • Identify the sun as a natural source of warmth and light. • Understand that energy helps us do things like cook, play, and stay warm. • Learn basic safety around energy (e.g. do not touch plugs or hot surfaces). **Energy around us** • Energy makes things move, light up, and work (e.g. the sun gives warmth, batteries make toys move). • Everyday energy use: lights, fans, and appliances use energy, and that turning them off saves energy. • Natural vs. man-made energy: energy that comes from nature (sun, wind, water) and from machines (cars, stoves). • Weather and energy: how the weather (sunny, windy, rainy) affects our energy use (e.g., using sunlight instead of lamps).	**Exploring energy through play** • Explore energy through play (e.g. using flashlights, feeling warmth from sunlight). • Identify energy-using items at home and school. • Practise turning off lights and devices when not in use. • Follow simple energy safety rules in the classroom. • Identify simple sources of energy – the sun, wind, and water – through stories and pictures. • Observe and draw things that use energy at home or in school (lights, fans, solar panels, bicycles). • Role-play "Energy Helpers" who remind others to save electricity or recycle materials. • Go on short walks to find examples of natural energy (shadows from the sun, moving leaves in wind, water wheels).	**Responsibility** • Develop responsibility for using energy wisely. • Appreciate how energy helps us and why it should not be wasted. • Show care and caution around energy-related objects. • Begin to connect saving energy with caring for the planet. **Sharing and cooperation** • Work together on classroom "energy saver" projects or clean-up activities. • Learn that small actions — like using less light — help protect the planet. • Cultivate gratitude for natural resources and understand that they should not be wasted. • Empathy and understanding that not all children around the world have electricity or clean energy, encouraging kindness and fairness.
Primary education	**Understanding energy use** • How energy is used in daily life (lighting, cooking, transport). • Distinguish between renewable (solar, wind, hydro) and non-renewable (coal, oil) energy sources. • Recognise the environmental impact of energy choices. • How geography influences energy availability and use. **Our world of energy** • Different sources of energy such as the sun, wind, water, fire, and electricity. • Renewable and non-renewable energy: Learn that some energy (like solar or wind) never runs out, while others (like coal or oil) can disappear over time. • Understand that sunlight can heat water, charge batteries, and give plants the energy to grow. • How using too much dirty energy can harm the Earth, while clean energy helps keep our air and water healthy. • How weather affects energy – for example, wind makes turbines spin and sunny days charge solar panels.	**Energy awareness in daily life** • Identify energy use in home, school, and community settings. • Monitor and reduce energy use in the classroom. • Build simple models (e.g. solar ovens) and conduct basic experiments. • Create posters or campaigns promoting energy-saving habits. **Young energy heroes in action** • Sort pictures or objects into two baskets — renewable energy (sun, wind, water) and non-renewable energy (coal, oil, gas). • Build a paper windmill, use a magnifying glass to see how sunlight warms objects, or make a mini greenhouse to explore how heat is trapped. • Draw or colour a map showing where energy is used at home or school – in the kitchen, playground, or classroom. • Use recycled materials to make simple models of solar houses, wind turbines, or waterwheels. • Keep a class chart to track energy use and compete to see who can save the most energy in a week. • Record sunny, windy, or rainy days and discuss which type of weather helps create different kinds of clean energy.	**Respect and responsibility** • Take responsibility for conserving energy. • Value clean energy to protect the environment. • Show curiosity about how energy works and how it can be used sustainably. • Promote fairness by recognising that not everyone has equal access to energy. **Caring for our planet with energy wisdom** • Reuse bags, bottles, and paper to reduce waste and care for the Earth's energy and materials. • Appreciate the power that helps learn, play, and stay warm, and use it wisely. • Respect for Nature, noticing how sunlight, wind, and water give life to plants, animals, and people, and protect them by choosing clean energy.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Energy systems and production** • How various energy systems function: solar panels, wind turbines, geothermal plants, hydropower stations, fossil fuel combustion. • Energy production cycle for diverse sources and suitability for environments and communities. **Global energy landscapes** • Global energy access and usage patterns; explore regional disparities in energy affordability, reliability and development outcomes. • How unequal access to energy impacts poverty, health, education and gender equity. **Environmental and social impacts** • Environmental consequences of energy production, including carbon emissions, habitat disruption and pollution. • Ecological accounting concepts, including ecological footprints and carbon footprints, linked to energy use. **Emerging energy technologies** • Solar cookers, community micro-grids, biofuels and hydrogen energy. • Local and global examples of clean energy transitions and their challenges. **Energy and climate change** • Role of energy in climate change and global warming. • Link energy use with ecosystem degradation and long-term sustainability risks.	**Critical thinking and data analysis** • Calculate ecological footprints to evaluate the impact of personal and collective energy choices. • Compare efficiency, affordability and sustainability of energy systems using real-world data and case studies. **Inquiry and research** • Create diagrams or models illustrating how specific energy systems (wind turbines, geothermal plants) work. • Research renewable energy solutions suited to local or regional needs and propose adaptations. **Problem solving and innovation** • Design and prototype alternative energy solutions (solar cookers, energy-saving school designs). • Conduct school or home energy audits to identify inefficiencies and recommend improvements. **Communication and collaboration** • Plan and deliver presentations or campaigns to raise awareness about sustainable energy practices. • Debate the trade-offs involved in different energy choices (for example, environmental impact versus economic viability). **Civic engagement and action** • Develop a community-based energy conservation plan supported by audit data and local context. • Collaborate on designing peer-led projects that promote clean energy use and responsible consumption. **Global learning** • Compare per capita energy use across countries and analyse how political, economic and technological factors influence energy access. • Study national case studies of renewable energy transitions to identify transferable strategies.	**Responsibility and environmental stewardship** • Acknowledge the human role in climate change and commit to personal accountability in energy use. • Promote conscious decision-making that reduces reliance on non-renewable energy sources. **Equity and empathy** • Develop empathy toward communities without reliable energy access. • Advocate for universal access to clean, safe and affordable energy. **Ethical awareness** • Reflect on implications of energy systems – in terms of environmental degradation and their impacts on marginalised groups and future generations. • Embrace energy justice as a core component of sustainable development. **Commitment to action** • Personal pledges to reduce electricity use, travel emissions and unnecessary consumption. • Inspire others through school-based campaigns or digital media projects on clean energy awareness. **Curiosity and innovation** • Stay open to exploring innovative technologies and creative solutions to energy challenges. • Value learning from local and indigenous knowledge systems in promoting sustainable energy use. **Collaboration and leadership** • Promote teamwork and shared responsibility in energy-saving initiatives. • Take leadership roles in educating others and modelling energy-conscious behaviours.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Energy systems and sources** • Differences between renewable (for example, solar, wind, hydropower, geothermal, bioenergy) and non-renewable energy (for example, coal, oil, gas). • Components and functions of energy systems used in various settings (for example, residential, industrial, agricultural). **Energy efficiency and system optimisation** • Principles of energy conservation, load management and system efficiency. • Energy consumption reduction through system design, insulation and smart technology. **Climate change and environmental impact** • Fossil fuel-based energy systems contribute to greenhouse gas emissions and climate change. • Strategies for mitigating emissions and adapting energy systems to climate risks (for example, extreme weather). **Green economy and renewable energy markets** • Trade opportunities in green energy sectors and market trends for renewable energy technologies and services. • Trade policies, tax incentives and regulatory frameworks supporting energy transition. **Case studies and global practices** • Real-world examples of renewable energy deployment, including off-grid solar solutions, rural electrification and disaster relief applications. • Data and simulations to examine relationships between energy production, carbon emissions and global warming.	**Technical skills development** • Install, operate and maintain renewable energy systems, including solar panels, wind turbines, micro-hydro units and energy storage technologies. • Troubleshoot and repair energy systems to maintain efficiency and ensure safety. **Design and innovation** • Design and implement small-scale, community-based renewable energy projects tailored to local environmental, economic and social needs. • Integrate clean energy technologies into existing industrial or agricultural processes to enhance productivity and reduce emissions. **Energy auditing and efficiency analysis** • Conduct energy audits in homes, public buildings or enterprises to identify inefficiencies and recommend upgrades. • Use basic tools and software to calculate energy loads, cost-effectiveness and system performance. **Business and project planning** • Develop business plans for clean energy ventures, considering local market dynamics, consumer demand and government policies. • Assess the environmental and economic viability of energy projects and prepare professional feasibility reports. **Community engagement and social innovation** • Lead or support clean energy projects for underserved or displaced populations, improving access and reducing reliance on polluting fuels. • Organise training sessions or awareness campaigns on energy conservation and renewable energy benefits.	**Professional ethics and accountability** • Embrace ethical responsibility in energy production and consumption, with accountability for environmental, health and social impacts. • Recognise the long-term consequences of technical decisions and prioritise sustainability in professional practice. **Commitment to sustainability** • Value renewable energy as a key driver for sustainable development and climate resilience. • Support environmentally responsible practices in both work environments and communities. **Equity and empathy** • Advocate for fair and equitable energy access, especially for marginalised, remote and displaced populations. • Promote energy justice and address disparities in energy availability and affordability. **Innovation and curiosity** • Stay informed and open to emerging technologies, methods and best practices in the energy sector. • Engage in lifelong learning and continuous improvement to meet evolving sustainability challenges. **Collaboration and leadership** • Value teamwork across disciplines to solve energy problems and implement clean energy solutions. • Show leadership in green energy initiatives and cultivate collaboration within and beyond the workplace. **Global awareness and advocacy** • Recognise the global dimension of energy challenges and advocate for clean energy as a human right and development priority. • Participate in discussions and campaigns that support climate action and clean energy transitions.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Global and regional energy systems** • Complex structures of global and regional energy systems, including energy flows, distribution networks, and the mix of renewable and non-renewable sources. • Linkages between energy production, infrastructure and consumption patterns across various socio-economic contexts. **Political economy and environmental justice** • Political, social and economic dimensions of energy transitions, including stakeholder conflicts, power dynamics and the rights of indigenous peoples. • Energy policies through the lens of environmental justice and equitable development. **Energy and climate policy intersections** • International and national policies such as carbon pricing, fossil fuel subsidies and trade agreements that affect energy production and consumption. • How climate change mitigation strategies (Nationally Determined Contributions (NDCs), net-zero targets) relate to energy planning and governance. **Sustainable energy models and green economy** • Sustainable and inclusive energy models, including community-based energy systems, green economy frameworks and pro-poor energy solutions. • Economic, environmental and social implications of energy transitions, including job creation and market competitiveness. **Governance, policy and institutions** • Governance structures, stakeholder roles and institutional arrangements that support or hinder sustainable energy transitions. • Role of multilateral organisations, private sector actors and civil society in shaping energy policy.	**Advanced research and innovation** • Conduct original research on sustainable energy technologies, infrastructure and socio-economic impacts using interdisciplinary approaches. • Develop and test prototypes or system designs such as wind mapping models, heat storage systems or micro-grid configurations. **Policy analysis and development** • Design policy instruments and frameworks that balance environmental sustainability, energy equity and economic growth. • Evaluate real-world case studies and apply theoretical frameworks to assess policy effectiveness and trade-offs. **Data analysis and modelling** • Use analytical tools and software for climate-energy modelling, lifecycle analysis, environmental impact assessments and pro-poor energy planning. • Interpret datasets to inform decision-making on energy efficiency, access and technological deployment. **Technology transfer and international collaboration** • Facilitate the exchange of knowledge and technology between countries and regions, including best practices for clean energy implementation. • Design collaborative projects or joint ventures to support innovation and capacity building in sustainable energy. **Stakeholder engagement and communication** • Communicate technical and policy research effectively to diverse stakeholders, including government bodies, industry professionals, local communities and the media. • Organise stakeholder dialogues, roundtables or academic-policy forums for inclusive discussions on energy transitions. **Green trade and economic strategy** • Analyse opportunities for green trade, sustainable energy exports and the development of local renewable energy markets. • Develop investment strategies and economic models that support clean energy innovation and entrepreneurship.	**Ethical and justice-oriented mindset** • Cultivate an ethical perspective on energy systems, acknowledging the historical and current injustices affecting indigenous, marginalised and vulnerable populations. • Promote energy transitions that uphold human rights, environmental integrity and intergenerational justice. **Global citizenship and advocacy** • Advocate for clean and equitable energy access as a global public good and a development imperative. • Actively support and influence policy and cultural shifts towards sustainable energy practices. **Leadership and initiative** • Take initiative in driving green innovation and energy reform across academic, professional and community settings. • Lead interdisciplinary teams and collaborative efforts to solve complex energy challenges. **Commitment to lifelong learning** • Stay updated on emerging energy technologies, global energy trends and evolving policy landscapes. • Embrace continuous learning as a professional and civic responsibility in the face of climate and energy crises. **Collaboration and collective action** • Value co-operation, co-creation and co-design with multiple stakeholders, recognising the interconnected nature of energy systems. • Engage in participatory research and community engagement to support locally relevant solutions. **Effective communication and outreach** • Communicate complex concepts and research findings clearly and responsibly to influence public discourse and decision-making. • Translate academic insights into practical recommendations for policy, practice and innovation.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Energy basics and practical applications** • Difference between renewable (for example, solar, wind, bioenergy) and non-renewable (for example, coal, gas, oil) energy sources. • How energy is produced, distributed and used in homes, businesses and communities. **Impacts of energy use** • How energy use affects the environment (carbon emissions, pollution), economy (household costs) and society (access and equity). • Links between energy consumption, climate change and community wellbeing. **Energy conservation and efficiency** • Common household energy uses and where energy is often wasted. • Benefits of energy-saving behaviours and energy-efficient appliances. **Introduction to renewable energy technologies** • Solar panels, wind turbines, solar cookers and bioenergy systems suitable for local and rural settings. • How these technologies can be used at home or in community settings. **Energy access and equity** • Energy challenges faced by marginalised or low-income communities. • Importance of fair access to clean energy for improving health, livelihoods and education. **Community-based solutions and opportunities** • Green economy opportunities and income-generating ideas using renewable energy. • Local and regional examples of successful clean energy projects.	**Practical energy decision-making** • Assess the appropriateness of different energy sources for cooking, lighting and heating in local contexts. • Make informed choices about efficient appliances and sustainable energy solutions. **Energy auditing and conservation** • Conduct basic energy checks in homes, shops or community centres to spot inefficiencies. • Suggest low-cost, energy-saving improvements (for example insulation, LED lighting, efficient cookstoves). **Installation and maintenance of small-scale systems** • Install, operate, maintain small solar systems, solar cookers or solar water heaters. • Troubleshoot common issues in household and community energy systems. **Community mobilisation and project implementation** • Organise and lead small-scale community projects (for example, shared solar lighting, energy-efficient public buildings). • Form groups to assess local energy needs and co-develop practical solutions. **Education and advocacy** • Facilitate workshops or demonstrations to raise awareness of clean energy and conservation. • Mobilise neighbours and local leaders to support clean energy programmes and fair energy policies. **Green entrepreneurship and economic benefits** • Identify ways to use renewable energy for income generation (for example, solar-powered tools, clean cooking businesses). • Develop and pitch small-scale project ideas that benefit both the community and environment.	**Environmental stewardship** • Recognise the importance of energy conservation in protecting natural resources and supporting climate resilience. • Embrace personal and shared responsibility for reducing energy waste and promoting sustainability. **Empowerment and community responsibility** • Develop the confidence to initiate change and motivate others toward sustainable energy practices. • Value collective action to improve living conditions through clean energy access. **Equity and justice** • Advocate for fair access to energy services, especially in underserved or remote areas. • Support inclusion and recognise the role of energy in reducing poverty and improving health and education. **Adaptability and lifelong learning** • Stay open to new energy-saving ideas and clean energy technologies. • Commit to ongoing learning to keep up with changing needs and local opportunities. **Civic engagement and advocacy** • Encourage participation in decision-making about local energy plans and policies. • Lead or support campaigns that promote renewable energy, energy justice and sustainable living. **Innovation and future thinking** • Value innovation and encourage creative local solutions to energy challenges. • Promote the role of young people, women and elders in creating and sustaining clean energy initiatives.

10. Goal 8 – Decent Work and Economic Growth

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Education for inclusive growth

Achieving Sustainable Development Goal 8 (SDG8) requires targeted investment in education, vocational training and lifelong learning. Education is a key driver of economic growth, workforce readiness and social inclusion. It equips individuals with foundational and transferable skills – literacy, numeracy, technical expertise, digital literacy, financial capability and ethical leadership – essential for building resilient economies.

Strategic investment in science, technology, engineering and mathematics (STEM) and technical and vocational education and training (TVET) helps bridge skills gaps and prepare learners for emerging sectors, including green jobs. The Curriculum Framework supports this by promoting competencies across the life course, enabling learners to adapt to changing labour markets and contribute meaningfully to sustainable development.

Youth employment and skills gaps

Youth unemployment remains a global challenge. Over 20 per cent of young people are not in education, employment or training (NEET), limiting their economic prospects and increasing vulnerability to poverty. In 2024, youth unemployment stood at 12.6 per cent – more than double the global average (ILO 2025). Low-income countries have seen a rise in NEET rates among young men, increasing the risk of long-term exclusion from the labour market.

Without urgent action, young people will enter the workforce unprepared. Education systems must respond by embedding employability skills, entrepreneurship and career guidance into curricula, particularly through TVET and secondary education.

Gender inequality in work and education

In 2024, the ILO estimated that 402.4 million jobs were missing globally, including 79 million lost to caregiving responsibilities (ILO 2025). Women face systemic barriers to education and employment, spending up to ten times more time on unpaid care work than men (Ferrant *et al*. 2014). Vyas (2021) states that attributing women's limited labour market progress to education or job suitability is outdated. Despite qualifications, many women are relegated to insecure jobs due to caregiving duties and social norms.

The gender wage gap continues to affect women's economic standing and household influence (Toczek *et al*. 2021). SDG8.5 – calling for equal pay and decent work for all – remains unmet. Gender-responsive education, mentorship programmes and advocacy for equal pay are essential. Women must be empowered to understand and exercise their rights (Tabassum 2019).

Child labour and education access

Child labour remains a pressing issue. As of 2020, over 160 million children – 63 million girls and 97 million boys – were engaged in work harmful to their health and education (ILO 2025). SDG8.7 calls for its elimination by 2025, yet progress is slow, particularly in sub-Saharan Africa.

Between 2016 and 2020, child labour increased by over 8 million globally, with younger children (aged 5–11) most affected. The COVID-19 pandemic exacerbated this crisis, pushing more children into labour due to rising poverty and school closures. Hazardous child labour persists in mining, cocoa farming and armed conflict, with over 75,000 cases of child recruitment documented (UN 2023; Pirkle *et al*. 2024).

Education is a critical tool for eradicating child labour. Many children and young workers in supply chains lack access to formal education

and vocational training, limiting their ability to transition into safer, more sustainable employment (Pankhurst *et al.* 2015). The Framework promotes inclusive, flexible learning pathways – including second-chance education and community-based programmes – to reach vulnerable children and reduce reliance on child work.

Technology and decent work

Technological innovation offers new tools to address child labour and promote decent work. Artificial intelligence (AI), blockchain and mobile-enabled reporting systems can enhance supply chain transparency, protect whistleblowers and ensure fair wages for smallholder producers.

Artificial intelligence (AI) and big data analytics help identify high-risk suppliers, while blockchain improves supply chain transparency beyond Tier-1 suppliers. These tools support ethical sourcing and proactive interventions.

However, the technological sector itself raises ethical concerns. Many children work in hazardous conditions to mine minerals used in electronic components or in exploitative manufacturing environments (World Vision 2012). Addressing these risks requires stronger regulation, ethical design, and inclusive education that promotes digital literacy and supply chain awareness.

Challenges such as cost, data privacy and the digital divide must also be addressed to ensure technology benefits all communities. Education systems can play a role by embedding digital literacy, ethical technology use and supply chain awareness into curricula – particularly in tertiary and adult education.

Monitoring and data for action

Accurate data collection is essential to understanding the root causes of child labour and designing effective interventions. Governments and organisations must invest in monitoring systems to track trends and evaluate policy impact. Transparent reporting and collaboration among stakeholders can improve decision-making and ensure that education reaches the most vulnerable children.

Technology offers promising solutions, but success depends on responsible implementation, adequate funding and bridging the digital divide. Companies must invest in capacity-building to ensure that workers and communities can use digital tools effectively. Governments and international bodies must establish safeguards to prevent misuse, such as surveillance or data exploitation.

AI, blockchain, mobile platforms and Augmented Reality (AR) can support efforts to eliminate child labour. However, these tools must complement – not replace – systemic reforms. Free, quality education, back-to-school campaigns and remedial learning are essential for reintegrating child labourers. Investments in rural infrastructure, agriculture and local economies can offer alternative livelihoods and reduce reliance on child labour.

Addressing skills gaps and labour market needs

The global unemployment rate remained steady at 5 per cent in 2024, reflecting persistent skills mismatches (ILO 2025). Rapid technological change demands digital and technical competencies that many education systems are not yet equipped to deliver. Stronger links between education and industry – through TVET, apprenticeships and public–private partnerships – are essential to align curricula with evolving job requirements and improve youth employment outcomes.

Transitioning to a green economy – low carbon, resource efficient and socially inclusive – requires systemic change. Unsustainable production and consumption patterns threaten economic growth through pollution, emissions and biodiversity loss. Education can empower learners to adopt sustainable practices, use accountability tools (e.g. sustainability reporting) and innovate across supply chains. Green skills through TVET, tertiary and adult education, prepare learners to contribute to sustainable consumption and production (SCP).

Informal employment and vulnerability

Informal employment affects over 2 billion workers globally, with 90 per cent of workers in sub-Saharan Africa and South Asia lacking social protection (UNStats 2025). These workers face insecure income, low productivity and poor working conditions. Women, youth and refugees are disproportionately affected, often working in unsafe environments without basic facilities or protections (Chigbu and Nekhwevha 2023; McKay and Romm 2007).

Child begging and street vending are forms of exploitative labour. While some children retain access to schooling, economic vulnerability can lead to permanent exclusion. Education provides alternative pathways for income generation and personal development, helping children resist coercive pressures. Timely intervention by schools and social services is critical to prevent deeper marginalisation.

Lifelong and life-wide learning

Achieving decent work for all requires lifelong and life-wide learning, especially for those with limited foundational skills or in informal employment. Many young people and adults leave school without basic literacy and face barriers to re-entry. Low educational attainment correlates with poor job quality and long-term unemployment (Cieslik *et al.* 2022).

Flexible programmes – delivered at informal worksites, markets or online – can support skills development and employability. Smartphones, widely adopted, offer a platform for reaching informal workers, provided zero-rated access ensures affordability (Hanemann and McKay 2015).

The ILO-led PROSPECTS (ILO n.d) initiative promotes the transition to formal employment, especially in refugee-hosting and fragile contexts. It supports legal reform, rights awareness and worker organisation through unions and cooperatives. Legal literacy and access to micro-credit empower informal workers, particularly women, to claim their rights and improve livelihoods.

Formalisation must be seen not just as legal compliance, but as a pathway to dignity and security. PROSPECTS' integrated approach – combining governance, empowerment and incentives – aims to build resilient labour markets and advance SDG8.

Skills for a changing labour market

The African Union's Continental Education Strategy for Africa (CESA) (African Union 2025) reinforces the need to equip learners with skills relevant to evolving labour markets. This includes a focus on TVET, STEM and ICT, preparing youth and adults for the Fourth Industrial Revolution. CESA also promotes lifelong learning and harmonisation of education systems to improve mobility, recognition of qualifications and regional employability.

Education enables individuals to access decent work and contribute to inclusive, sustainable economic growth. By investing in quality education, vocational training, digital literacy and lifelong learning, societies can bridge skills gaps and prepare workers for emerging sectors. Education also empowers marginalised communities, enhances entrepreneurial capacity and develops financial literacy and ethical leadership.

To ensure inclusive and sustainable growth, education must support structural transitions in the labour market – preparing individuals for green jobs, promoting sustainable production and aligning progress with climate action.

Career guidance and early exposure

Early exposure to career pathways is essential, especially for learners from marginalised communities who may lack access to career-related information. Disparities in career guidance services perpetuate inequality. Targeted interventions, enriched counselling and expanded networks are needed to broaden aspirations and improve transitions from school to work. Learners from marginalised communities often perceive certain career paths as inaccessible and have limited career choices and aspirations due to a lack of workplace-related knowledge and skills that wealthier peers get through schools and informal social networks (OECD 2024).

The World Economic Forum's *Future of Jobs Report* (2025) estimates that 39 per cent of workers' core skills will need to change by 2030. Growth areas include technology, green economy, care work and education.

Modern services such as ICT and business services drive economic growth and require a well-educated workforce and strong public infrastructure. Addressing spatial inequalities in access to education and employment is essential to ensure that all regions benefit from economic development.

A call for comprehensive policies

While global working poverty has declined, it remains a major challenge in low-income countries, where 240 million workers – 7 per cent of the global workforce – still face extreme poverty (ILO 2025). Addressing this requires comprehensive,

cross-sectoral policies that link economic growth with employment creation, financial inclusion and social justice.

Equitable access to education, sustainable business practices and proactive labour market reforms are essential to achieving SDG8. These efforts must be supported by inclusive governance, investment in lifelong learning, and targeted support for vulnerable groups. Only through integrated and inclusive strategies can economic growth translate into decent work and improved livelihoods for all.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**What is work?** • Understand that adults do various kinds of jobs (for example, teacher, farmer, doctor). • Understand where people work (for example, schools, markets, farms). • Learn that some work is paid, while other work – like chores or helping at home – is unpaid but still important. **Jobs in our daily lives** • Learners explore the people who help them at school and in the community, such as cooks, cleaners, shopkeepers and health workers. • **How** each job contributes to daily life and community wellbeing. **Helping and caring jobs** • Learn to appreciate those who take care of others, including caregivers, nurses and police officers. • Value of helping and caring at home and in school. • Importance of helping others, even at home, like caring for family members. **Why do people work?** • Through stories and play, learners explore the idea that people work to earn money, support their families and contribute to society. • Learners see work as something that helps make the world run smoothly. **Working for a better world** • Introduce simple ideas about businesses that care for people and nature. • Learn the difference between having a job, being unemployed and starting your own business. • Understand how people create businesses or work for themselves.	**Developing basic teamwork and co-operation** • Participate in group activities that encourage sharing and collaboration. • Role-play community settings (e.g. classroom bakery, post office) to explore teamwork. • Conduct simple group tasks (e.g. cleaning up, organising toys) to practise responsibility. **Understanding fairness and inclusivity** • Play turn-taking and co-operative games to promote fairness. • Engage in circle time to reflect on kind and fair behaviour. • Listen to stories about diverse characters and discuss inclusive behaviour. **Recognising work in the community** • Use pretend play to act out community roles (e.g. doctor, farmer). • Match pictures of jobs to their settings (e.g. school, home, shops). • Take local walks or visits to observe people working in the community. **Exploring work through discovery and play** • Explore work settings through outdoor walks (e.g. construction site, garden). • Build structures with blocks to simulate teamwork and problem solving. • Engage in sensory activities (e.g. planting seeds) to learn about hands-on work. **Building a sense of contribution** • Participate in 'helper' tasks (e.g. handing out materials, tidying up). • Collaborate on classroom art projects about work and teamwork. • Share ideas during group time about how helping improves the classroom. **Developing curiosity and interest in work** • Participate in show-and-tell sessions with items related to different jobs. • Explore themed pretend play centres (e.g. clinic, grocery shop). • Try simple discovery tasks that involve problem solving or planning.	**Appreciation for different forms of work** • Engage in stories and songs about people in different jobs (e.g. farmers, nurses, builders). • Explore and appreciate different work roles through role play (e.g. post office, hospital). • Participate in guided conversations about how various jobs help the community. **Empathy and fairness** • Use stories featuring characters facing challenges (e.g. losing a job or being treated unfairly) to prompt emotional discussion. • Practise fairness through class rules about sharing, turn-taking and kindness. • Draw or talk about how they would help someone in need. **Sense of responsibility** • Take turns with 'helper' tasks (e.g. handing out materials, watering plants). • Use visual charts to reinforce personal and shared duties. • Discuss the importance of looking after toys, materials and one another. **Inclusivity and co-operation** • Engage in mixed-ability group play to promote collaboration and respect. • Share experiences and ideas during circle time to foster fairness and inclusion. • Create collaborative artwork that reflects teamwork and belonging. **Curiosity and willingness to solve problems** • Solve puzzles and simple challenges that encourage persistence and creativity. • Participate in group storytelling to help solve a character's problem. • Ask 'what if...?' questions and explore pretend scenarios. **Valuing all types of work** • Create thank-you cards or posters for community workers. • Read storybooks and watch puppet shows about unpaid care work and helping at home. • Role play voluntary, creative and household roles. • Discuss helping family members and the joy of creating.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**Classifying work and work environments** • Identify a broad range of jobs and group them into categories (e.g. professional, skilled, unskilled, manual). • Compare different work settings (e.g. offices, farms, factories, hospitals). • Distinguish between paid and unpaid work, including volunteering and caregiving. **Understanding work in school, community and society** • Explore how distinct roles support school life, local communities and national services. • Recognise that all work, when valued and fair, contributes to community wellbeing. **Caring work and the care economy** • Understand care work as both paid (e.g. nurses, social workers) and unpaid (e.g. family caregiving). • Recognise the importance of emotional labour and how societies rely on care systems. **Why people work** • Examine the purposes of work: earning income, building identity, learning skills and contributing to society. • Understand how fair and decent work brings dignity and meaning. **Employment, unemployment and enterprise** • Explore the concepts of employment, unemployment and self-employment. • Learn about different work types (e.g. full-time, part-time, informal, seasonal). • Consider how people search for work and the challenges they may face. **Social enterprise and ethical business** • Learn about businesses that aim to solve social or environmental problems. • Study examples of social enterprises and explore fair trade, workers' rights and ethical consumption. **Decent Work and SDG 8** • The concept of decent work. • Recognise safe working conditions, fair pay and equal opportunities. • Connect economic growth with justice, sustainability and equity. • How discrimination (e.g. gender, disability, class, ethnicity) affects access to work. • Importance of equal pay, workplace rights and anti-discrimination policies.	**Strengthening teamwork and communication** • Take part in group projects that require negotiation, planning and shared responsibility. • Practise communication and leadership through structured role play and classroom activities. • Present group ideas and give constructive feedback in classroom discussions. **Building financial awareness** • Learn basic concepts of earning, saving, spending and sharing money. • Take part in budgeting exercises (e.g. planning a class trip or event). • Use reward or classroom currency systems to practise decision-making. **Engaging in small enterprise and creativity** • Organise small fundraising or social enterprise activities (e.g. crafts, bake sale). • Simulate running a small business with roles such as buyer, seller and manager. • Design and evaluate simple products or services as a class project. **Understanding careers and workplaces** • Interact with community guests to learn about diverse careers. • Research and present a "day in the life" of a professional of choice. • Join visits or virtual tours to workplaces to explore job environments and skills. **Respect for all forms of work** • Interview or profile people engaged in unpaid care, creative work or community service. • Discuss how societies rely on both visible and invisible forms of work. • Explore work–life balance and shared responsibilities at home and in society through class projects.	**Appreciation for diverse work contributions** • Discuss the value of jobs across sectors, including care, creative and voluntary work. • Reflect on guest visits or job-shadowing experiences by asking, "How does this person help society?" • Explore different jobs through comparative projects that link work to human needs. **Empathy toward employment challenges** • Engage in story-based lessons that address unemployment, underemployment or unfair labour practices. • Participate in guided debates on workers' rights, fair wages and ethical workplaces. • Support local charities or food banks through class projects that promote solidarity. **Developing responsibility and accountability** • Rotate class duties (e.g. eco-monitors, tech helpers) and reflect on contributions. • Use peer feedback to evaluate participation in group work and community projects. • Keep journals to reflect on how students contribute at school or at home. **Commitment to fairness and inclusivity** • Plan group projects with equitable roles and inclusive decision-making. • Reflect on fairness in school experiences (e.g. resolving playground disputes). • Join student-led campaigns that promote kindness and inclusion. **Global and environmental awareness** • Explore global work issues such as climate-related job changes or fair trade. • Connect nature and work through projects (e.g. farmers and ecosystems). • Take part in school gardening, recycling or clean-up initiatives. **Appreciation of services and resources** • Map essential community services and infrastructure. • Discuss resource scarcity and conservation habits in class. • Lead campaigns that promote water or energy saving

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Easing the school-to-work transition** • Pathways into employment: vocational training, apprenticeships, higher education. • Essential employability skills: communication, problem-solving, teamwork, adaptability. • Work experience through internships, volunteering, and job shadowing. • Financial literacy: budgeting and responsible money management. **Labour market trends, conditions and salaries** • Local, national and global employment trends, including sectoral shifts in industries. • Wage structures, minimum wage policies factors influencing salaries. • Employment conditions: job security, contracts and workers' rights. **Types of employment** • Forms of work: full-time, part-time, freelance, gig economy, remote, and informal. • Benefits and challenges of each type. • Workers' rights, social protections, and fair labour practices. **Jobs in various parts of the world** • Employment opportunities and labour market demands locally and globally. • Labour migration: economic drivers and associated challenges. • Global inequalities in opportunities, conditions and income. **Productivity and crisis response** • Productivity as a driver of economic growth, jobs and wealth. • Impact of economic shocks, pandemics and disasters on labour markets. • Policies and strategies for resilient economies that safeguard workers in crises.	**Risk analysis and decision-making** • Evaluate economic and social risks through case studies and simulations. • Debate global challenges requiring informed judgement and ethical reasoning. **Problem solving and innovation** • Tackle real-world problems through project-based learning and innovation labs. • Prototype creative solutions and reflect on ethical dilemmas from multiple perspectives. **Understanding and addressing inequality** • Investigate historical and current inequalities related to gender, race and income. • Present research findings and engage in service-learning projects to promote inclusion. **Promoting equity through informed choices** • Compare global economic models and their impact on income distribution. • Role-play ethical consumption and analyse successful policies that reduce inequality. **Entrepreneurship and co-operative enterprise** • Create and manage student-led businesses (e.g. fair-trade tuck shop). • Develop business plans and pitch ideas to practise financial literacy and teamwork. **Career readiness** • Build professional CVs and practise interview skills through workshops and mock interviews. • Participate in internships or mentorships to gain real-world experience. **Financial literacy** • Simulate budgeting, saving and investment scenarios. • Compare personal finance strategies across different economic contexts.	**Commitment to lifelong learning and self-improvement** • Develop a growth mindset and recognise the importance of learning beyond school. • Set personal goals that include learning and career aspirations. • Support and learn with peers to build confidence and shared progress. **Resilience in the face of change and economic challenges** • Approach career exploration and new opportunities with adaptability and optimism. • Build responsible habits around money, savings and planning for the future. • Draw strength from real-life examples of individuals who have overcome economic difficulties. **Sense of responsibility for community wellbeing** • Understand the value of social enterprises and co-operative initiatives. • Participate in local service projects that support economic inclusion. • Learn from mentors and role models who contribute positively to their communities. **Awareness of sustainable and inclusive economic choices** • Demonstrate care for the environment and fairness in everyday economic decisions. • Engage in discussions about ethical consumption and responsible work practices. • Act in support of fair wages and decent work in local and global contexts. **Appreciation of diversity and commitment to social inclusion** • Value diverse backgrounds, abilities and identities in school and work settings. • Stand up against bias and promote equal opportunities for all. • Listen to and share stories that reflect diverse experiences and resilience.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education(ctd)	**History of the co-operative movement** • Origins and evolution of co-operatives responses to inequality. • Principles of co-operation, mutual benefit and democratic workplace management. • Case studies of successful co-operatives and their community impact. **Co-operatives, trade, enterprise and social justice** • Co-operatives in sectors, such as agriculture, finance, retail and housing. • Roles in advancing workers' rights, fair wages and community development. • Contributions to fair trade, ethical business practices and sustainable development. • Global co-operative networks in poverty reduction and economic stability. **The future of work** • Effects of automation, artificial intelligence and technological change. • Growth of emerging industries: green jobs, blue economy, sustainable work. • Adapting the workforce while ensuring social and environmental responsibility. **Sustainable tourism** • Impacts of tourism on the environment, culture and local economies. • Principles: local benefit, conservation and respect for cultural heritage. **Financial inclusion** • Role of money, savings and banks. • How financial services help families and communities meet needs and manage risks.	**Digital literacy and future work** • Explore online job markets, remote work and automation trends. • Develop job-related digital skills (e.g. coding, content creation, e-commerce). • Learn safe digital practices through cybersecurity and data privacy lessons. **Sustainable tourism** • Identify responsible tourist behaviours and design eco-friendly guides or posters. **Financial inclusion** • Practise budgeting and compare value in everyday purchases to build financial awareness.	**Recognition of unpaid work and time inequality, especially for women** • Understand how unpaid care work impacts time, education and career choices. • Support shared responsibilities in home and school life. • Advocate for greater recognition of the value of caregiving and domestic work. **Belief in civic voice and participatory decision-making** • Gain confidence to express concerns and influence decisions affecting their lives. • Practise respectful public speaking and collaborative problem solving. • Participate in youth forums and school councils to promote change. **Commitment to gender equality and fair opportunities for all** • Respect everyone's right to learn, lead and work without discrimination. • Promote equal opportunities for girls and boys in education and future careers. • Support initiatives that empower young women and marginalised groups.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**The economy's contribution to wellbeing** • Economic growth impacts employment, income levels and quality of life, including shifts in job opportunities due to economic transitions. • Relationship between economic policies and social wellbeing, with a focus on healthcare, education, infrastructure and sustainable job creation. • How inequality, unemployment and informal labour affect sustainable development and economic stability. **Contribution of an economy to the wellbeing of people** • How economic growth influences employment rates, income levels and overall quality of life, including social wellbeing indicators such as access to healthcare and education. • Role of different sectors (for example, manufacturing, technology, green energy) in providing opportunities to improve people's lives and lift communities out of poverty. • Sustainable tourism policies and certifications (for example, eco-labels). **Understanding financial systems and their influence on economic development** • Deepen learners' understanding of investment, credit, interest rates, inflation and the stock exchange and how these financial mechanisms contribute to economic growth. • Importance of financial literacy for both individuals and businesses, enabling them to make informed decisions that align with economic development goals. • Role of micro-finance and digital financial services in supporting entrepreneurship, especially in rural and underserved communities. **Formalised on-the-job training and vocational education** • Enhance the TVET curriculum with structured, industry-linked training that allows learners to develop practical skills in real-world environments.	**Addressing child labour and promoting educational access** • Design outreach strategies to support children affected by child labour. • Collaborate with child protection organisations to deliver awareness campaigns. • Analyse case studies to identify practical solutions for reducing child labour in specific sectors. **Improving working conditions and social protection** • Conduct workplace evaluations using health, safety and labour rights checklists. • Identify hazards in simulated work environments and propose protective measures. • Develop policy proposals to strengthen social protection in target industries. **Community audits and needs assessments** • Conduct surveys, interviews or focus groups to assess local employment and education needs. • Use digital tools to analyse labour market data and inform training strategies. • Create intervention plans based on audit findings, including proposals for sustainable tourism. **Ensuring decent work in supply chains** • Assess supply chain practices for compliance with labour and ethical standards. • Produce audit reports using recognised frameworks. • Partner with fair trade or social enterprises to gain experience in ethical sourcing. **Establishing and managing co-operatives** • Launch and manage learner-led co-operatives, handling transactions and governance. • Apply budgeting, team management and decision-making skills. • Participate in networking and mentorship programmes for co-operative development. **Entrepreneurship and micro-finance** • Prepare micro-finance applications with business plans and financial projections. • Manage small-scale projects with a focus on sustainability and financial responsibility. • Engage with financial institutions to build investor relations and receive feedback.	**Professionalism and work ethic** • Value punctuality, collaboration and integrity in all professional settings. • Respect workplace ethics, responsibilities and the rights of all workers. **Commitment to quality and innovation** • Take pride in continuous improvement and technical excellence. • Embrace creativity and innovation as tools for progress and social good. • Uphold high standards across all forms of work and craftsmanship. **Environmental and social responsibility** • Commit to sustainability and care for the environment in work practices. • Support ethical labour and social justice as part of responsible citizenship. • Value collective action to promote fair and equitable working conditions. **Lifelong learning and adaptability** • Maintain a positive attitude toward learning, flexibility and self-improvement. • Recognise the need to adapt to evolving labour markets and technologies. **Opposition to exploitation** • Condemn forced labour and human trafficking in all forms. • Advocate for the dignity and protection of vulnerable workers. **Resilience and wellbeing** • Appreciate emotional resilience and wellbeing as key to success. • Value preparedness and financial responsibility in managing adversity. **Health, safety and workplace wellbeing** • Commit to creating and maintaining safe, healthy work environments. • Respect the importance of both physical and mental health at work. **Entrepreneurial mindset** • Value initiative, responsibility and innovation in enterprise. • See entrepreneurship as a pathway to empowerment and problem solving.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET (ctd)	**Financial systems and economic development** • Roles of investment, credit, interest rates, inflation and the stock exchange in driving economic growth and encouraging entrepreneurship. • Banking systems, micro-finance and digital financial services, especially for supporting entrepreneurship and small and medium-sized enterprises (SMEs). • How financial literacy empowers individuals and businesses to make informed decisions for long-term sustainability and financial health. **On-the-job training and vocational education** • Structured vocational training programmes that bridge the gap between education and industry, particularly in sectors with emerging demand, such as green technologies. • Hands-on, practical skills through apprenticeships, internships and workplace learning experiences aligned with market demands, including green jobs. **Small and medium-sized enterprise (SME) business training** • Entrepreneurship fundamentals, including business planning, digital marketing and financial management for SMEs. • Strategies for launching and sustaining small businesses, particularly in developing economies, while considering environmental sustainability. • Digital tools, e-commerce and innovation in business models to stay competitive in the modern economy and encourage eco-friendly business practices. **Role of co-operatives in the global economy** • How co-operatives promote fair trade, workers' rights and community-based economic growth, focusing on sustainable and ethical practices. • Co-operative business models in agriculture, finance, services and renewable energy. • Global co-operative networks and their contributions to sustainable development, economic stability and poverty alleviation.	**Gender-responsive systems** • Develop inclusive workplace policies informed by gender and diversity audits. • Identify barriers to gender equity and apply mitigation strategies. • Facilitate training to build leadership and technical skills among under-represented groups. **Employment access and job readiness** • Complete internships or apprenticeships and document transferable skills. • Participate in mock recruitment processes, including CV writing and interview simulations. **Industry training and workplace preparation** • Attend technical workshops aligned with occupational standards. • Earn certifications through practical assessments and competency evaluations. • Practise teamwork and communication through peer-led workplace simulations. **Business development and innovation** • Create and pitch business ideas through incubator programmes. • Develop marketing plans, budgets and sales strategies using real data. • Launch pilot digital businesses using e-commerce platforms and CRM tools. **Technological literacy and digital skills** • Build proficiency in workplace technologies, including coding and smart machinery. • Apply cybersecurity protocols in practical exercises. • Explore applications of AI, blockchain and cloud services through mini projects. **Leadership and community development** • Lead simulated work teams to practise planning and supervision. • Design and implement small-scale community impact projects. • Facilitate peer workshops on communication, mediation and inclusive leadership.	**Fair and just work conditions** • Support decent work, fair treatment and protection of labour rights. • Recognise the role of legal frameworks and collective voice in safeguarding workers. **Gender equality in the workforce** • Believe in equal opportunities and representation for all genders. Challenge discrimination and stereotypes in employment. **Agency and social contribution** • Recognise your capacity to improve workplaces and communities. • Take responsibility for promoting equity, inclusion and shared progress. **Solidarity with marginalised groups** • Uphold the rights and dignity of excluded or disadvantaged workers. • Advocate for inclusive policies that amplify under-represented voices. **Recognition of rural women's work** • Value the contributions of rural women as workers, farmers and leaders. • Support gender-responsive development in agriculture and rural economies. **Inclusive and gender-responsive TVET and enterprise development** • Ensure TVET systems and business training are accessible to women, youth and marginalised groups, with a focus on promoting equity in skills development. • Address gender disparities in vocational education and workforce participation, encouraging more women to enter non-traditional industries. • Promote initiatives to support inclusivity and gender-responsive enterprise development.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET (ctd)	**Adapting TVET content to job market requirements** • Align technical training with evolving labour market demands, particularly in emerging industries like renewable energy, climate-smart agriculture and green construction. • Enhance skills-based education across sectors such as manufacturing, ICT, green technologies and service industries. • Integrate soft skills development (for example, communication, problem solving and teamwork) to ensure holistic employability in various industries. **Education and training for green skills and green jobs** • Sustainability principles across industries, with a focus on integrating green skills into vocational training programmes. • Gain practical skills in renewable energy, energy efficiency, sustainable construction, waste management and climate-smart agriculture. • Adapt training programmes to meet the growing demand for low-carbon, environmentally friendly jobs in line with global climate goals and green economy policies.	**Training for rural entrepreneurs, women and youth** • Promote entrepreneurship and self-employment opportunities in rural areas, with emphasis on sustainability and green business practices. • Provide targeted support for women and young entrepreneurs to overcome barriers such as limited access to resources and networks. • Strengthen rural economies through digital tools, mentorship, financial resources and localised market access. **Training for labour inspectors** • Labour laws, workplace safety regulations and workers' rights, with a focus on ensuring fair treatment and safe working conditions. • Enforcement skills to monitor labour standards, ensuring compliance with wage protections, health standards and environmental regulations in industries like renewable energy. • Compliance monitoring to address issues like child labour, forced labour and workplace discrimination, and ensure fair working conditions in emerging sectors.	**Local leadership to improve services** • Enhanced leadership skills for local community-based economic development, focusing on sustainable practices and improving service delivery. • Strengthen local governance and service delivery through knowledge sharing, participatory decision-making and best practices for community resilience. • Encourage local leaders to support inclusive growth through effective economic planning and responding to emerging challenges, including the transition to a green economy.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary Education	**The changing role of technology in employment** • Impact of automation, artificial intelligence and digitalisation on job markets. • Opportunities and challenges posed by technological advancements in various industries. • The digital divide and its implications for equitable access to employment. **Matching skills to jobs in a changing environment** • Shift in labour market demands due to economic, technological and social transformations. • Lifelong learning and upskilling as critical strategies for employment stability. • Policies that promote workforce adaptability and skills development. **Labour market requirements and changing educational expectations** • Evolving expectations for higher education institutions in preparing graduates for the workforce. • Role of universities in innovation, entrepreneurship and employability. • Disconnect between academic curricula and labour market needs. **Principles of Business and Economic Growth** • Entrepreneurship, financial management and sustainable business practices. • Relationship between start-ups, SMEs and large corporations in economic development. • Business ethics and corporate social responsibility in the context of decent work. **Formal and informal labour rights** • International labour laws and frameworks (ILO conventions, human rights treaties). • Challenges of informal labour markets, including lack of social protections. • Strategies for transitioning informal workers into formal employment structures.	**Sustainable resource use and economic planning** • Conduct applied research on resource efficiency and sustainable growth. • Analyse case studies to reduce waste and improve productivity in public and private sectors. • Develop policy proposals for sustainable resource management across industries. **Labour market analysis and employment strategy** • Design studies to identify employment trends and opportunities at local, national and global levels. • Apply economic models to assess job quality, wage dynamics and employment rates. • Recommend strategic interventions to improve employment outcomes through skills development and planning. **Researching inequality and social exclusion** • Investigate income inequality and its socio-economic impacts through data analysis and comparative studies. • Communicate findings via academic publications, policy briefs and conferences. **Inclusive labour market policy** • Assess systemic barriers to employment, including discrimination and wage disparities. • Develop recommendations to promote equal opportunities and inclusive labour systems. **Evaluating economic models and ethical business** • Compare traditional profit-driven models with socially responsible approaches. • Assess corporate responsibility in relation to employment, wages and social impact. • Design business strategies that balance profitability with ethical and inclusive goals. **Labour migration and wage equity** • Analyse the integration and economic contribution of migrant workers. • Evaluate wage gaps and propose policy reforms to ensure fair treatment and protection.	**Commitment to equity and inclusion in labour systems** • Value fairness and justice as core principles in shaping labour laws and policies. • Believe in the right of all individuals to decent work, regardless of background or identity. • Show empathy and solidarity with those facing discrimination or exclusion in the workforce. **Ethical responsibility in economic choices** • Uphold integrity, transparency and accountability in economic decisions. • Recognise the moral implications of financial practices on people and the planet. • Show a strong personal commitment to fairness in business and investment. **Belief in gender equality and economic justice** • Value gender equity as essential to a just and prosperous society. • Believe in dismantling structural barriers to women's full economic participation. • Respect the dignity of every worker and reject all forms of economic marginalisation. **Appreciation of innovation for sustainability** • Value innovation not only for profit, but for environmental and social good. • Believe that economic growth should be pursued with ecological integrity. • Show openness to new, inclusive and sustainable ways of thinking and working. **Responsibility for shaping a just economic future** • Feel a deep sense of responsibility for contributing to fairer, more resilient economies. • Believe that young people have a role in reimagining economic systems. • Value collective wellbeing over individual gain.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education (ctd)	**Psychological and social effects of unemployment** • Impact of long-term unemployment on mental health, identity and wellbeing. • Social exclusion, economic insecurity and the rise of precarious work. • Policies and support systems to mitigate unemployment-related stress. **Nature and conditions of work** • Decent work standards, occupational safety and fair wages. • Different employment types (full-time, part-time, contract, gig work) and their implications. • Workplace discrimination, harassment and other barriers to equitable employment. **Economic decision-making and its impact on business, manufacturing and employment** • How government policies, fiscal measures and international trade agreements influence employment. • Effects of economic crises, recessions and inflation on businesses and workers. • How sustainable business models can drive job creation. **Youth employment and economic planning** • How national and global economic policies impact youth employment opportunities. • Structural barriers that limit youth participation in the labour market. • Policies and strategies that promote youth entrepreneurship and workforce integration. **Theoretical assumptions, models and indicators of economic growth** • Economic indicators such as GDP, the Gini Index, the Human Development Index (HDI) and employment rates. • Strengths and limitations of different economic growth models. • Economic inequality and its implications for social stability and sustainable development. **Gender, labour and economic development** • Impact of patriarchal norms, values and discrimination on women's economic participation. • Role of women as key economic players and their contributions to GDP. • Gender-responsive policies that promote equal economic opportunities.	**Gender equality and time-use analysis** • Use time-use data to assess the distribution of paid and unpaid labour by gender. • Examine the impact of unpaid care work on women's economic participation. • Advocate for gender-sensitive policies that support work–life balance and inclusion. **Addressing structural labour inequality** • Map socio-economic barriers affecting youth, women and marginalised groups. • Collaborate with stakeholders to design interventions that expand access to decent work. **Poverty, exclusion and employment risk** • Assess how poverty and exclusion affect labour force participation. • Evaluate youth unemployment and propose inclusive economic models that support vulnerable populations. **Adapting to social and technological change** • Study the impact of digitalisation, climate change and other transformations on labour systems. • Design adaptive strategies for skill-building in emerging industries. • Participate in experiential learning with institutions addressing labour and social policy. **Labour policy analysis and advocacy** • Investigate trends such as automation and gig work. • Evaluate labour laws for their impact on equity and worker rights. • Lead or support advocacy for policy reform and employment justice. **Entrepreneurship and social innovation** • Apply entrepreneurial thinking to address employment and social challenges. • Develop business plans aligned with inclusive and sustainable development goals. • Analyse successful social enterprises to inform economic empowerment strategies.	**Global solidarity and citizenship** • Embrace interdependence and shared responsibility across nations and peoples. • Respect diverse cultures, practices and voices in addressing global challenges. • Feel motivated to act in ways that support justice, peace and sustainability worldwide. **Active engagement in civic and economic life** • Believe in the power of civic participation to drive systemic change. • Value inclusive governance and the role of citizens in shaping public policy. • Show a commitment to community engagement and public dialogue. **Resilience and a positive outlook** • Demonstrate inner strength and perseverance in the face of hardship. • Value personal growth through adversity and continuous self-improvement. • Cultivate optimism, adaptability and hope for the future. **Respect for collaboration and shared learning** • Appreciate the value of teamwork and diverse perspectives. • Believe in co-learning as a path to deeper understanding and creativity. • Show humility and willingness to listen and learn from others. **Awareness of global dynamics and their impact** • Understand that labour markets and economic opportunities are shaped by global forces. • Value informed decision-making rooted in awareness of geopolitical contexts. • Respect differing national policies while advocating for universal rights and standards. **Strategic problem solving in economic development** • Value strategic and forward-looking approaches to economic challenges. • Promote fairness and inclusion in responses to automation and informal labour. • Commit to sustainable, equitable solutions that reduce poverty and inequality.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Continuous learning and adaptability** • Importance of lifelong learning in a rapidly changing world. • Develop problem-solving, critical thinking and digital literacy skills. • Encourage participation in workshops, training programmes and self-directed learning. **Continuing professional education** • Upskill and reskill for career advancement and job security. • Explore vocational training, certification programmes and higher education opportunities. • Role of professional networks and mentorship in career growth. **Exploring and developing new skills** • Identify transferable skills applicable across industries. • Emphasise the importance of entrepreneurship and self-employment as viable career paths. • Provide training in financial literacy, business management and digital skills. **Community empowerment and social inclusion** • Encourage civic engagement and leadership in local communities. • Understand the role of co-operatives, social enterprises and grassroots movements. • Promote inclusive economic participation, particularly for marginalised groups. **Understanding geopolitical and socio-economic force** • How global events, trade policies and technological shifts impact employment. • Economic cycles, inflation and international labour market trends. • Recognise the effects of migration, climate change and global conflicts on work opportunities. **Work opportunities and required skills** • Research available job opportunities and emerging fields. • Identify key skills in demand, including digital competencies, sustainable practices and technical expertise. • Learn how to navigate job searches, applications and career transitions.	**Applying practical skills for career transitions** • Practise hands-on techniques in renewable energy, digital technology or basic healthcare through guided workshops. • Map personal learning pathways using career planning tools and certification frameworks. • Complete applied tasks such as building a solar panel, designing a website or conducting first-aid simulations. **Managing personal and community finances** • Create household budgets, savings plans and debt management strategies using real-life financial tools. • Draft local resilience plans addressing co-operative savings, emergency funds or small enterprise growth. • Design and present small business models incorporating budgeting, sustainability and risk planning. **Leadership and advocacy for local development** • Lead group discussions and action planning on community priorities. • Design and deliver advocacy campaigns using posters, petitions, forums or digital platforms. • Coordinate or participate in community-led projects focused on issues like clean water, housing or education. **Using digital tools for work and enterprise** • Operate productivity software through project-based digital skills training. • Develop digital business tools such as social media pages, online shops or promotional content. • Launch trial e-commerce sites or portfolios and practise online transactions, customer engagement and bookkeeping. **Adapting to changing work environments** • Identify transferable skills and align them to new roles through skills audits. • Participate in mock interviews, role plays and change management simulations. • Develop personal resilience plans with learning goals and strategies for navigating uncertainty.	**Lifelong learning and self-empowerment** • Embrace continuous personal and professional growth through upskilling and reskilling. • Cultivate goal-setting habits through individualised learning and career planning. • Express a collaborative mindset through mutual support in peer learning environments. **Resilience and adaptability in economic life** • Value flexible thinking and courage in navigating job transitions or self-employment. • Develop prudent financial habits and a sense of economic agency. • Draw inspiration from lived experiences of overcoming professional and financial adversity. **Community engagement and collective contribution** • Nurture a co-operative spirit through involvement in local enterprises and initiatives. • Practise civic responsibility by contributing to community wellbeing and economic inclusion. • Strengthen intergenerational and interprofessional ties through mentorship and shared learning. **Shared responsibility for a fair and sustainable economy** • Embed ethical principles in everyday economic choices and local business practices. • Encourage critical dialogue on sustainability, equity and decent work. • Stand in solidarity through collective action for fair wages and just economic systems. **Inclusivity and social solidarity** • Value cultural diversity as a strength in community and economic life. • Commit to fairness and equality in employment and representation. • Build empathy and mutual respect through shared stories of resilience and belonging.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education (ctd)	**Formalising informal work through practical planning** • Map informal work in the local area and identify practical steps for formalisation, such as business registration or accessing micro-loans. • Prepare basic business plans and social protection checklists tailored to informal workers' needs. • Role play advisory sessions to support informal workers in navigating legal, financial and administrative systems.	**Analysing inequality through lived experience** • Create timelines or maps to visualise inequality across life stages and community histories. • Conduct surveys, interviews or photo essays to document economic and social disparities. • Present findings using storytelling, digital media or visual displays. **Ethical decision-making with global awareness** • Explore global inequality scenarios and practise ethical decision-making using real-life dilemmas. • Design local actions that connect to global challenges (e.g. campaigns against child labour, initiatives promoting women's rights). • Participate in policy-making simulations to propose inclusive economic solutions. **Workers' rights and collective bargaining** • Practise negotiation and representation through role-play exercises. • Draft workplace charters or collective agreements based on real or imagined scenarios. • Analyse labour movements to draw lessons for local action.	**Gender equity and recognition of unpaid work** • Promote balanced lifestyles and value time as a shared community resource. • Support collective caregiving solutions to ease burdens on women and families. • Advocate for the visibility and value of unpaid care work in economic systems. **Empowerment through civic participation** • Value active citizenship through informed advocacy and organising. • Build confidence in public expression and engagement with community issues. • Commit to democratic participation in shaping local economic and social policies. **Commitment to equality and justice for all** • Promote equal rights and fair treatment across genders in economic life. • Support inclusive entrepreneurship and economic empowerment for all. • Maintain inclusive networks that uplift marginalised voices and bridge opportunity gaps.

11. Goal 9 – Industry, Innovation and Infrastructure

Building resilient infrastructure, promoting inclusive and sustainable industrialisation and innovation

Infrastructure, industrialisation and innovation

SDG9 calls for the development of inclusive, sustainable and resilient infrastructure, the promotion of sustainable industrialisation, and the advancement of innovation. These three pillars are essential for addressing economic, social and environmental challenges in the 21st century (UN 2023).

As outlined by the UN Economic and Social Council (ECOSOC 2016):

- *Infrastructure* provides the physical systems that support economic and social functioning.
- *Industrialisation* drives economic growth, employment and poverty reduction.
- *Innovation* fuels technological progress and the emergence of new industries and skills.

Greening infrastructure and enhancing resilience

Retrofitting infrastructure and adopting smart, low-carbon technologies can reduce environmental impacts, improve disaster preparedness and increase resource efficiency. These investments also support climate resilience by reducing dependence on carbon-intensive systems.

For example, the renewable energy sector employed 16.2 million people globally in 2023, with projections reaching 20 million by 2030 (IRENA & ILO 2024). A skilled workforce – particularly among youth – is essential to realising this transition.

Small Island Developing States (SIDS) and Least Developed Countries (LDCs) face heightened vulnerability due to limited infrastructure and exposure to climate risks (UNCTAD 2023). Strengthening risk assessment, planning and technical capacity is critical to building resilience and aligning with global best practices (OECD 2024).

With 56 per cent of the global population currently living in urban areas – and projections reaching 70 per cent by 2050 – cities are at the forefront of infrastructure demand. One billion urban poor live in informal settlements, and over half of all forcibly displaced persons now reside in cities (UN DESA 2023).

Urban sprawl is expanding 50 per cent faster than population growth, placing pressure on land, services and ecosystems. Cities consume two-thirds of global energy and generate 70 per cent of greenhouse gas emissions. They must lead in adopting green, inclusive and resilient development strategies (World Bank 2023; UN-Habitat 2022).

Quality infrastructure enables access to clean energy, water, healthcare, education and digital connectivity. Infrastructure investment must be aligned with long-term sustainability, equity and disaster risk reduction.

Developing countries require targeted support – through financing, technical assistance and policy reform – to build integrated, climate-resilient systems that benefit marginalised populations.

Innovation and artificial intelligence

Innovation is a powerful driver of sustainable development. Artificial intelligence (AI) is already transforming sectors such as healthcare, education, agriculture and disaster response.

Generative AI is democratising access to complex tools like natural language processing, disease detection and automated translation – especially in remote or resource-constrained settings (McKinsey & Co. 2024). Applications include vaccine development, protein modelling, climate forecasting and fact-checking.

However, realising AI's potential for social good requires strong data governance, equitable access to digital tools and targeted investment in digital talent – especially for civil society and public sector actors.

Responsible AI deployment is essential to minimise unintended harm and ensure that technological innovation is inclusive, ethical and aligned with the SDGs.

Expanding information and communications technology (ICT) infrastructure is essential for inclusive growth, innovation and access to services. Yet over four billion people – 90 per cent from developing regions – remain offline (UNDP 2024; ITU and UNESCO 2015).

Bridging the connectivity gap is essential to accelerate learning, knowledge sharing and entrepreneurship. It requires affordable and accessible internet, digital literacy programmes and investment in ICT infrastructure to ensure that no one is left behind in the digital age (UNESCO 2023a).

Cybersecurity: a foundation for digital resilience

As digital transformation accelerates, cybersecurity is vital to economic stability and trust in emerging technologies. The World Economic Forum (2020) warns that growing technological complexity and interdependence may outpace existing defences. Yet the global cybersecurity workforce – estimated at 4.7 million – faces a shortfall of 3.4 million professionals (ISC2 2022).

The COVID-19 pandemic, AI advancements and geopolitical tensions have intensified cyber threats – especially in low- and middle-income countries with limited capacity. Addressing this challenge requires co-ordinated investment in education systems and strategic alignment with the 2030 Agenda for Sustainable Development (ITU and OAS 2024).

Embedding cybersecurity into national education strategies strengthens digital readiness and supports SDG4 (Quality Education). Foundational concepts should be introduced at primary and secondary levels, with interdisciplinary curricula that combine technical training with digital literacy, ethics, governance, law and international relations. This ensures learners understand both the socio-economic and technical dimensions of cybersecurity, making the content applicable across multiple sectors.

Higher education and industry partnerships

Universities play a pivotal role in closing the cybersecurity skills gap. By embedding cybersecurity into IT programmes, offering specialised degrees and creating apprenticeship pathways, higher education can directly address workforce needs.

Collaboration with industry ensures that training is aligned with labour market demands and emerging technologies. These collaborations also support practical learning, combining theoretical foundations with firsthand experience. Educational institutions – civilian and military – serve as training hubs, equipping learners with the theory, tools and practical skills needed to strengthen national cybersecurity capabilities. By integrating theory, methodology, tools and practical application, they serve as incubators for future talent, optimising campus-wide resources to build a multidisciplinary, skilled workforce (Commonwealth Secretariat *et al*. 2021).

Promoting gender diversity in cybersecurity and STEM

Gender inclusion is essential to expanding the cybersecurity workforce and ensuring equitable access to digital careers. Despite being more likely than men to hold advanced degrees, women remain under-represented in cybersecurity (ISC2 2022). Targeted programmes that encourage girls and women to pursue STEM education and careers are vital to bridging the talent gap and advancing SDG5 (Gender Equality).

In OECD countries, one relevant SDG9 indicator is the proportion of female graduates in tertiary STEM programmes. Although the long-term goal is gender parity, women continue to be under-represented – often due to early educational choices and systemic barriers (Encinas-Martin and Cherian 2023). Expanding vocational and higher education opportunities for women in STEM is therefore critical to inclusive growth and sustainable innovation.

Equipping learners with 21st-century skills

Technological disruption – driven by artificial intelligence, automation and digitisation – is reshaping industries and global labour markets. This transformation is intensifying demand for 21st-century skills such as critical thinking, creativity, digital literacy and collaboration (UNESCO 2023b).

Education systems must respond by adopting holistic, future-oriented approaches across all levels. This includes:

- Promoting systems thinking and interdisciplinary learning
- Integrating technical knowledge with soft skills
- Strengthening teacher capacity in STEM, sustainability topics and innovation methodologies.

Universities and research institutions serve as key innovation hubs, generating context-relevant solutions and developing collaboration with the private sector. Policy frameworks that integrate education with economic planning ensure that graduates emerge with the skills and adaptability required for low-carbon industrialisation, inclusive economic diversification and sustainable growth.

Building strategic education–industry partnerships

Bridging the skills gap requires collaboration between schools, TVET institutions, universities and industry. These partnerships enable:

- Real-world learning and responsive curriculum design
- Resource sharing and knowledge exchange
- Alignment with evolving labour market needs

Vocational and higher education institutions should tailor programmes to support priority sectors such as manufacturing, agriculture, digital services and renewable energy. Curricula that incorporate advanced technologies, circular economy principles and resource management can drive productivity while supporting climate resilience and sustainability (UNESCO-UNEVOC 2022).

Universities and research institutions play a key role in generating context-relevant solutions and collaboration with the private sector. When education is integrated with economic planning, graduates emerge with the skills and adaptability needed for low-carbon industrialisation, inclusive economic diversification and sustainable growth.

Promoting equitable growth through education and entrepreneurship

Education is foundational to inclusive economic development – especially in low-income and developing contexts. By equipping youth, women and marginalised groups with entrepreneurial and financial literacy skills, education enables pro-poor development strategies that build self-reliance and opportunity.

Support for micro, small and medium-sized enterprises (MSMEs) – often the backbone of local innovation – can be strengthened through targeted vocational training, business development services and access to digital tools and platforms.

These efforts help communities build resilience, adapt to market shifts and contribute to national competitiveness. Advancing gender inclusion, 21st-century skills and entrepreneurship through education is essential to achieving SDG9 and SDG5. When education systems are inclusive, responsive and aligned with sectoral priorities, they empower individuals to become drivers of innovation, equity and sustainable development.

Achieving SDG9 requires integrated strategies that connect infrastructure development, innovation, digital inclusion and education. By investing in green infrastructure, responsible innovation, and inclusive digital and cybersecurity education, countries can build resilient economies and societies equipped for the challenges of the 21st century.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Understanding infrastructure and its purpose** • Introduce children to familiar forms of infrastructure such as roads, bridges, schools and parks using pictures, models, toys and short videos. • Help children recognise how these structures help people in daily life, for example: – roads allow buses to take children to school. – bridges help people cross rivers safely; and – schools are places where learning and sharing happen. **Recognising transport and movement** • Learn to identify different forms of transport (buses, bicycles, trains, cars). • Understand that transport and infrastructure are connected – for example, bikes need smooth roads and trains need tracks. **Early concepts of innovation** • Introduce the idea that innovation means finding better ways to do things. • Use simple historical examples: 'Long ago, people used horses, now we have cars.' • Encourage children to think about improvements: 'What would make this toy road better?' **Introduction to sustainability** • Use nature-friendly stories and images to show how building can protect animals, rivers and trees. • Explain simply that we can build and still care for the planet, for example, leaving space for animals or planting trees near roads. **Caring, Creative Citizens** • Appreciate that building and innovation can protect rivers, trees, and animals. • Learn that working with others can create safer, smarter, and more fun spaces. • Celebrate trying new ideas, experimenting, and finding solutions, even if they don't work perfectly the first time. • Recognise that inventions and new ideas can make life easier, safer, and more fun for everyone.	**Building and creating** • Use first hand, play-based activities to develop fine motor and design thinking skills: Build bridges or roads with blocks, sand, clay or recycled materials. Create cities or villages using everyday craft items and natural materials. **Observing and investigating** • Encourage children to observe nearby infrastructure: pavements, fences, traffic lights, water taps, playground structures. • Discuss what makes a structure 'good' (for example, roads without holes are safer for bikes). **Imaginative problem solving** • Use storytelling to pose challenges: 'A boy cannot get to school because of a river. What can we build to help him?' • Let children suggest and design creative solutions using drawings, blocks or crafts. **Role play and creative expression** • Engage in imaginative play involving machines or builders who help their communities. • Encourage storytelling involving technology and invention: 'Let's invent something that helps people carry water safely!' **Collaboration and teamwork** • Develop co-operative skills through group building activities: create a shared block city or bridge, taking turns and making group decisions. **Young Builders and Innovators** • Use blocks, LEGO, or craft materials to build roads, bridges, schools, or playgrounds. Notice how each piece helps people move, play, or learn. • Think about ways to improve buildings, bridges, or roads. Ask questions like: "How could we make this road safer?" or "How could this bridge hold more weight?" • Create simple inventions with craft supplies — toy cars, pulleys, ramps, or water wheels — to explore how movement and machines work.. • Green builders: plant small trees or flowers near model roads and buildings. Discuss how nature and buildings can live together.	**Appreciation and awareness** • Develop a sense of curiosity and wonder about how things are made and how they help us. • Encourage children to notice and appreciate their surroundings: roads, water pipes, lights and trees. **Fairness and inclusion** • Discuss ideas of fairness and accessibility: 'How do we make sure everyone can use this school?' • Include examples like building ramps for people using wheelchairs. **Empathy and community care** • Build empathy by encouraging children to imagine helping others: 'What would you do if your friend couldn't get to school?' • Talk about how innovation can make life easier or safer for others. **Environmental respect** • Promote early environmental awareness: 'How can we build a road and still keep the birds happy?' • Include activities like planting around pretend roads or adding trees to play scenes. **Positive attitudes toward innovation** • Encourage excitement about innovative ideas and respect for technology: 'Machines can help farmers grow food;' 'Solar panels can give light to homes without electricity.' **Building for people and planet** • Discover that good building means caring for both people and nature. • Use stories, songs, or puppets to show how builders can protect rivers, trees, and animal homes. • Explore simple examples of green innovation — like planting trees near roads, recycling materials, or using sunlight to power lights. • Introduce the idea that we can build a fair, safe, and green world together.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**Types and roles of infrastructure** • Learn the difference between hard infrastructure (for example, roads, bridges, buildings) and soft infrastructure (for example, schools, hospitals, financial systems), and how they support daily life, including for persons with special needs. • Explore how transport systems, water supply, energy grids and the internet are essential for people's wellbeing and community functioning. **Purpose and impact** • Understand how well-designed, inclusive and sustainable infrastructure improves access to education, healthcare, jobs and clean water. • Recognise the economic, environmental and social impact of infrastructure on people and the planet. **Introduction to industry and economic development** • Understand that industries make products, provide services, contribute to economic development, and job creation. • Discuss how industries can both help and harm the environment and explore sustainable practices in manufacturing and energy use. **Understanding innovation** • Define innovation as finding new and better ways to solve problems. • Explore real-life innovations: from early wired phones to mobile devices, from fossil fuels to solar panels and wind turbines, and how these support clean energy and reduce pollution. **Energy and digital awareness** • Explore diverse sources of energy (for example, solar, wind, electricity, fuel) and understand which are renewable and which are not. • Develop a basic understanding of digital infrastructure, such as the internet and communication systems. • Introduce computer literacy, including safe internet practices, and understanding how technology is part of infrastructure. **Introduction to SDG9** • Learn what SDG9 means – promoting inclusive and sustainable industrialisation, supporting innovation and building resilient infrastructure. • Understand the role of communities, governments and partnerships in achieving this goal.	**Observation and critical thinking** • Observe and describe the infrastructure in children's own communities: roads, schools, water taps, transport systems and internet availability. • Analyse benefits and drawbacks of local infrastructure, such as broken roads or lack of clean water. **Problem solving and creativity** • Engage in activities that encourage creative thinking to solve infrastructure-related challenges. • Use case scenarios: 'How can we bring clean water to a village?' or 'How can we make a school safe for all children?' • Participate in poster-making or model-building with themes such as ***'inventions for the future'*** or ***'smart cities'***. **Digital fluency and technology use** • Develop basic computer skills: typing, using simple educational software, conducting guided research. • Introduce basic coding using age-appropriate games or 'unplugged' coding activities when digital tools are limited. **Collaborative learning and project-based activities** • Participate in team projects, such as designing and building a model city with roads, homes, bridges, schools and hospitals using recycled or craft materials. • Engage in role play or debates on topics like 'Should our city have more buses or more cars?' or 'How do we protect nature while building new homes?' **Communication and information sharing** • Present children's ideas to peers, parents or teachers using visuals, posters and simple presentations. • Practise explaining the function of diverse types of infrastructure and why they are important. • Develop 21st-century skills through inquiry-based learning, such as firsthand experiments and problem-solving activities to stimulate curiosity.	**Curiosity and responsibility** • Show curiosity about how things work, how they are made and how they affect communities. • Demonstrate responsibility by practising eco-friendly habits, such as saving electricity or recycling. **Inclusivity and fairness** • Recognise that infrastructure should serve everyone, including children, older people and those with disabilities. • Appreciate that rural and remote communities also deserve internet, schools, hospitals and clean energy. **Environmental awareness** • Understand the importance of balancing development and environmental protection. • Value infrastructure that preserves nature, like roads with wildlife crossings or buildings that use solar energy. **Co-operation and shared responsibility** • Understand that building and supporting infrastructure requires teamwork among governments, engineers, communities and individuals. • Appreciate children's own role in improving surroundings through care, innovation and teamwork. **Empathy and equity** • Show empathy towards those lacking basic services. • Discuss the idea that everyone deserves clean water, good schools and safe roads, no matter where they live. **Openness and adaptability** • Be open to innovative ideas and solutions, even when they are unfamiliar. • Embrace change as part of progress, understanding that innovative technologies and ideas can improve lives and protect the planet.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Industrialisation and historical context** • The Industrial Revolution and its lasting impacts on society, the economy, and the environment. • Global disparities in industrial development and their implications for economic opportunities and social equity. **Infrastructure and economic growth** • Types of infrastructure – including transport, energy, ICT, and water – and their roles in economic development and trade. • Resilient infrastructure and its support for sustainable and inclusive industrialisation. • Examples of infrastructure, such as bridges and railways, that enhance connectivity and economic growth. • The role of technology in designing safer roads, smarter transportation, and effective disaster management. **Innovation and sustainability** • Innovation and its role in addressing global challenges, including renewable energy, smart transport, and sustainable industrial practices. • Sustainable architecture and green technologies that reduce environmental impact. • Environmental, social, and economic consequences of industrialisation and infrastructure development. **Digital and technological context** • Digital technologies and their applications in smart infrastructure, public health, and disaster management. • Ethical considerations, including cybersecurity, privacy, and responsible use of AI. **Global and local perspectives** • The impact of underdeveloped infrastructure in rural and developing regions. • Inclusive industrialisation and its contributions to job creation, GDP growth, and quality of life. • Connections between SDG 9 and other SDGs, including SDG 1 (Poverty), SDG 3 (Health), and SDG 13 (Climate Action).	**Sustainability and responsibility** • Develop a sustainability mindset that considers long-term ecological, economic and social impacts. • Advocate for eco-friendly industrial practices and support clean energy solutions. • Practise responsible digital and environmental habits in daily life. **Equity and inclusion** • Appreciate the need for fair access to infrastructure and technology. • Understand ethical aspects of development: workers' rights, gender inclusion and support for marginalised communities. • Promote universal design and accessibility in infrastructure planning. **Empathy and global citizenship** • Show empathy for people living without access to basic infrastructure. • Understand the impact of global industrial policies on local communities and the environment. • Advocate for inclusive and sustainable development that leaves no one behind. **Innovation mindset and curiosity** • Appreciate creativity as a tool for community improvement and economic development. • Embrace innovative ideas and technological changes with an open, reflective mindset. • Value entrepreneurial thinking to address local infrastructure or environmental challenges. • Develop 21st-century skills through makerspaces in learning environments. **Interconnected thinking and SDG engagement** • Understand how infrastructure contributes to achieving other SDGs like health, education and poverty reduction. • Actively take part in sustainability efforts at school and at the community level. • Promote collaboration to develop ethical, locally relevant AI and technology applications. • Engage in extracurricular activities and clubs to focus on environmental and community problems with learners providing creative solutions for real-world problems.	**Critical thinking and analysis** • Analyse the economic, environmental and social effects of infrastructure and industrial policies. • Interpret data such as graphs and maps related to industrial growth and innovation trends. • Evaluate infrastructure choices and their long-term impacts. **Problem solving and innovation** • Develop solutions to real-world issues: design eco-friendly transport, improve internet access in remote areas, or propose sustainable infrastructure plans. • Engage in STEM activities such as building simple prototypes (for example, wind turbines, water filters or smart city models). • Apply systems thinking to explore how innovation can support sustainable development. **Digital and AI engagement** • Learn basic coding and apply it to practical projects. • Use AI tools to analyse problems and suggest solutions. • Explore generative AI and its applications for creating inclusive, community-based solutions. **Research and inquiry** • Conduct school or community audits on infrastructure and sustainability. • Investigate successful case studies (for example, Germany's green industries or China's high-speed rail) and assess their transferability. • Explore the criteria for evaluating sustainable and inclusive industrial practices. **Collaboration and communication** • Participate in group projects designing sustainable cities or infrastructure. • Create awareness posters or multimedia campaigns on innovation and sustainability. • Promote dialogue on responsible technology use and equitable access to innovation.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Foundations of sustainable industrialisation** • Sustainable industrialisation and its role in economic growth, environmental protection, and social wellbeing. • Key principles, including meeting present needs without compromising the ability of future generations. **Modern infrastructure systems** • Structure, function, and importance of infrastructure – transport, water, energy, and digital systems – in supporting sustainable development. • Challenges such as infrastructure gaps in rural and developing areas, environmental degradation, and inequitable access. **Innovation and Industry 4.0** • Industry 4.0 technologies, including automation, robotics, AI, IoT, and data analytics. • Transformations in manufacturing, construction, and agriculture that enhance efficiency and sustainability. **Circular economy and value chains** • Value chains and their role in balancing profitability with sustainability. • Circular economy models for reducing waste and maximising resource use. **Sustainable resource management** • Energy-efficient systems, renewable energy sources (solar, wind, biofuels), and waste reduction technologies. • Sustainability standards and regulations across industries to ensure responsible practices. **Global and regional perspectives** • Impacts of industrialisation at local, regional, and global levels. • Cross-border challenges, global supply chains, international trade, and technology transfer.	**Technical and practical competence** • Apply skills in sustainable construction (for example, building bridges, installing solar panels). • Operate and support renewable energy systems and water infrastructure. • Use digital tools such as computer-aided design (CAD) software, IoT monitoring systems and AI-powered design platforms. **Innovation and problem solving** • Develop prototypes and solutions addressing local infrastructure or industrial challenges. • Use AI and data analysis for predictive maintenance, supply chain optimisation and smart manufacturing. **Entrepreneurship and business development** • Explore sustainable business opportunities (for example, clean energy services, waste-to-resource enterprises). • Learn project planning, budgeting, marketing and small-scale enterprise development, including through practical training, apprenticeships and internships. • Establish partnerships with industries to ensure industry-aligned curricula that focus on areas like smart infrastructure, renewable energy and manufacturing technology. • Use sector-wide certification pathways offering micro-credentials and stackable certifications that allow learners to build interdisciplinary qualifications over time. **Design and implementation** • Plan and design resilient, green infrastructure using a systems-thinking approach. • Integrate sustainable practices into infrastructure and industrial projects (for example, energy-efficient materials, circular processes). **Collaboration and communication** • Present technical ideas to diverse audiences including peers, educators and industry stakeholders. • Work effectively in teams to develop solutions and deliver practical projects such as energy audits or prototype innovations. **Digital and AI readiness** • Build digital literacy for operating AI-enabled machinery and tools. • Adapt to evolving technological demands by integrating automation and smart technologies into practice.	**Commitment to sustainability** • Intrinsic motivation to support sustainable development through vocational practice. • Adopt responsible behaviours in trades: reduce waste, conserve energy, use sustainable materials. **Ethical and inclusive practice** • Promote fair access to infrastructure and innovation for marginalised and underserved communities. • Uphold social, environmental, and industry standards in all practices. **Equity and social responsibility** • Value inclusivity in design and implementation, ensuring accessibility (e.g., for persons with disabilities). • Appreciate the interdependence between industrial progress and community well-being. **Entrepreneurial and innovative mindset** • Demonstrate creativity and critical thinking to solve real-world problems. • Take initiative to develop eco-friendly enterprises and technical solutions tailored to local challenges. **Global awareness and cooperation** • Recognise the importance of international collaboration, knowledge sharing, and technology exchange. • Support the greening of industry through partnerships and collective innovation. **Continuous learning and adaptability** • Embrace lifelong learning to remain relevant in rapidly evolving industrial fields. • Show willingness to update skills, adopt new technologies, and meet emerging sustainability standards.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Sustainable industrialisation and infrastructure** • Theories of infrastructure development, including network economics and systems analysis. • Principles of green industrialisation, circular economy, and sustainable design. • Transport infrastructure, including smart mobility, public transport, and low-carbon solutions, and its role in climate mitigation. **Global trends, challenges, and opportunities** • Infrastructure disparities in developing regions and implications of globalisation and technology transfer. • Historical, political, and economic factors shaping industrial systems, including power dynamics and pollution outsourcing. • Links between SDG 9 and related SDGs, such as SDG 7 (Energy), SDG 8 (Decent Work and Economic Growth), and SDG 11 (Sustainable Cities and Communities). **Science, technology, and innovation for sustainability** • Innovative technologies, including AI, IoT, robotics, 5G, smart grids, and green technologies. • Technological innovation in addressing climate change, pollution, and social equity. • Innovation ecosystems and strategies for industrial diversification. **Data, research, and evidence-based analysis** • Data on infrastructure performance, industrial output, and environmental impact. • Use of geographic information systems (GIS), predictive modelling, and sustainability assessment tools. • Environmental and social impact assessments for infrastructure and industrial projects.	**Research and technological innovation** • Conduct applied research to develop sustainable technologies and systems (for example, smart buildings, clean energy models). • Design and prototype innovations addressing issues like waste, energy access or transportation efficiency. • Evaluate industrialisation strategies and develop data-driven proposals for sustainability. **Systems thinking and project management** • Plan, implement and evaluate large-scale infrastructure and industrial projects. • Use interdisciplinary approaches to tackle real-world challenges (for example, water access, urban growth, green transport). • Integrate financial modelling, risk assessment and policy frameworks into project planning. **Digital and Industry 4.0 competence** • Work with AI-driven systems for smart manufacturing, predictive maintenance, or energy optimisation. • Develop AI models for sustainability-focused applications (for example, urban planning, carbon tracking). • Employ IoT and digital tools for infrastructure design and monitoring. **Entrepreneurship and innovation leadership** • Explore business opportunities in sustainable industries such as renewable energy or eco-product development. • Develop entrepreneurial strategies that address local and global challenges through green technologies. • Lead innovation hubs or start-ups focused on social and environmental impact. **Collaboration and communication** • Collaborate in interdisciplinary and cross-sector teams (academia, industry, policy). • Communicate complex findings to diverse stakeholders, including policymakers and the public. • Participate in public debates, design challenges and policy dialogues on sustainable development.	**Sustainability and ethical responsibility** • Uphold ethical standards in the development and application of technology and infrastructure. • Commit to reducing environmental harm, promoting energy efficiency and respecting community rights. • Advocate for responsible AI development aligned with human values and sustainability. **Inclusivity and social justice** • Promote equitable access to infrastructure, jobs and innovation – especially in marginalised communities. • Recognise the global and local impacts of infrastructure choices and advocate for fair distribution of benefits. **Global citizenship and leadership** • Embrace a global perspective on sustainable development and technological equity. • Engage in international networks for policy advocacy, knowledge sharing and collaborative research and development (R&D). • Support policy reform and investment in R&D, especially for underserved regions. **Lifelong learning and adaptability** • Develop a culture of continuous learning and innovation in response to technological and societal shifts. • Be open to integrating diverse perspectives, including indigenous knowledge, in sustainable solutions. **Proactivity and visionary thinking** • Lead initiatives that integrate long-term planning with immediate action on sustainability. • Demonstrate vision in balancing technological growth with social and environmental stewardship.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Understanding local infrastructure** • Community infrastructure, including roads, housing, water supply, transport, ICT, and waste systems. • Effects of infrastructure on daily life, livelihoods, health, and the environment. • Benefits (clean water, electricity) and challenges (pollution, traffic congestion, flooding) associated with local infrastructure. **Role of industry and innovation in community development** • Small-scale industry and local markets as drivers of income generation. • Use of innovation and creativity to address local challenges and improve services. • Integration of local industries into value chains and access to financial resources. **Sustainability awareness** • Connections between infrastructure, sustainability, and climate resilience. • Environmental and social impacts of inadequate infrastructure. • Community contributions to SDG 9 and interlinkages with other SDGs, such as SDG 6 (Water), SDG 7 (Energy), SDG 8 (Decent Work), and SDG 11 (Sustainable Cities). **Digital and ICT literacy** • Applications of smartphones, computers, and the internet for information, communication, and service delivery. • Digital tools supporting local learning, entrepreneurship, and advocacy. • Use of ICT and social media to increase awareness of the SDGs.	**Community mapping and assessment** • Conduct simple audits of local infrastructure (roads, water access, sanitation, transport). • Use basic tools or digital apps (where available) to document gaps and propose improvements. • Analyse local strengths and resources to support sustainable infrastructure projects. **Entrepreneurship and local innovation** • Start or maintain small-scale, sustainable businesses. • Develop and use low-cost technologies (for example, compost pits, solar dryers, recycled materials). • Promote local industry that meets community needs while protecting the environment. • Practical projects and community action • Organise community clean-up campaigns, recycling programmes or tree-planting initiatives. • Build or improve basic infrastructure (for example, irrigation systems, compost toilets, solar lighting). • Plan and take part in local innovation projects (for example, waste-to-resource, school energy efficiency). **Advocacy and civic engagement** • Develop communication and advocacy skills to engage with local authorities, NGOs or development partners. • Learn how to take part in policy dialogue, attend community meetings and voice infrastructure needs. • Campaign for affordable internet access and improved services in marginalised areas. **Technical and teamwork competence** • Gain firsthand skills in infrastructure repair, renewable energy and basic construction. • Work in groups to identify challenges, share ideas and co-design community-based solutions. • Collaborate with local experts or government to implement sustainable development initiatives.	**Empowerment and ownership** • Take initiative in improving community infrastructure and promoting sustainability. • Develop self-confidence and see oneself as a change-maker and contributor to local development. **Equity and inclusion** • Promote the participation of women, youth and marginalised groups in infrastructure and innovation projects. • Advocate for inclusive access to basic services like clean water, energy and transport. **Environmental stewardship** • Respect and protect the natural environment by conserving resources and reducing pollution. • Encourage reuse, recycling and low-impact solutions tailored to local needs. **Community responsibility and leadership** • Support collective action and shared responsibility in maintaining infrastructure and community assets. • Mentor or inspire others in the community to take part in development and sustainability activities. **Lifelong learning and adaptability** • Embrace learning about innovative technologies and approaches that can improve everyday life. • Stay informed and open to innovation and share new knowledge within the community.

12. Goal 10 – Reduced Inequalities

Reducing inequality within and among countries

Inclusive development

Inequality remains one of the most persistent barriers to sustainable development, economic growth, and social cohesion. It undermines poverty reduction efforts and erodes individuals' sense of dignity and self-worth – factors that can contribute to increased crime, poor health outcomes, and environmental degradation.

Sustainable Development Goal 10 (SDG10) seeks to address these challenges by reducing inequalities both within and among countries. It targets disparities across income, age, gender, disability, race, ethnicity, origin, religion, and economic or other status. The goal promotes inclusive development through policies that support income growth for the bottom 40 per cent of the population, protect the rights of migrants and refugees, and support equitable global financial systems. These efforts are supported by international cooperation in areas such as trade, taxation, and official development assistance (ODA).

A catalyst for reducing inequality

Education is central to achieving SDG10. It equips individuals with the knowledge, skills, and opportunities needed to escape poverty and overcome social exclusion. However, access to quality education remains uneven, particularly for marginalised groups. Disparities in access, participation and quality perpetuate broader social and economic inequalities, often extending across generations. Although enrolment has increased in many developing countries, gaps between the richest and poorest have widened (UNESCO 2015).

Multiple factors – such as economic status, gender, disability, ethnicity, and geography – shape educational inequalities. For example, children born to mothers with no formal education in South Asia and sub-Saharan Africa are three times more likely to die before age five than those whose mothers have secondary education. Girls from the poorest households are twice as likely to marry in childhood, limiting their educational and economic prospects. In sub-Saharan Africa, 60 per cent of young adults from the poorest quintile have received fewer than four years of schooling, perpetuating cycles of disadvantage. By 2022, an estimated 350–500 million children were living in slum households – mostly in Asia and Africa – where access to water, healthcare, and education is severely limited (UNICEF 2024).

Barriers faced by marginalised groups

Children with disabilities face some of the most significant barriers to education. In many low-income countries, over 90 per cent of children with disabilities are out of school. Those who do attend often receive lower-quality education due to inaccessible infrastructure, limited teacher training, and a lack of assistive technologies. These barriers not only restrict learning but also reduce future employment and social participation.

Ethnic minorities, indigenous communities, and migrants also experience systemic educational disadvantages. Discrimination, language barriers, and financial hardship often prevent access to quality learning. Refugees and internally displaced persons are especially vulnerable. Between 2020 and 2021, only 68 per cent of refugee children were enrolled in primary school, and just 37 per cent in secondary school (UNICEF Innocenti 2023). Limited access to education increases the risk of exploitation, including child labour and trafficking. Girls in low-income regions are particularly at risk of early marriage and school dropout.

Migration, inequality and education

Migration is both a consequence and a driver of inequality. Economic hardship, conflict, and climate change have displaced millions, with over 42.7 million refugees recorded by the end of 2024 (UNHCR 2024). Women and children represent most of displaced populations and face heightened

risks of violence and exploitation. The dangers of migration are stark. Since 2014, more than 56,000 deaths have been recorded along migratory routes, with the Mediterranean Sea remaining the deadliest passage. In 2022 alone, over 3,000 people died en route to or through Europe, while fatalities in the Americas and Asia reached record highs. These figures indicate the urgent need for safe migration pathways and inclusive policies that uphold the rights of migrants and refugees (IOM 2025).

The global refugee population has grown annually for more than a decade, reaching 34.6 million by the end of 2022. Half of all refugees come from just three countries: Syria, Ukraine, and Afghanistan. Low- and middle-income countries host 76 per cent of the world's refugees, with least developed countries (LDCs) providing asylum to 20 per cent.

COVID-19: widening gaps

The COVID-19 pandemic has exacerbated existing inequalities, particularly for the poorest and most vulnerable. It has widened gaps in income, education, healthcare, and exposure to environmental risks. Global unemployment surged, and workers' incomes declined, triggering the sharpest rise in between-country inequality in three decades.

Between-country inequality increased by 4.4 per cent between 2019 and 2020 – contrary to pre-pandemic forecasts of a 0.8 per cent reduction (Mahler *et al*. 2022). While social protection programmes in high-income regions helped cushion the impact, poorer households in low-income countries experienced greater losses in jobs and income. These trends emphasise the need for targeted policies that promote inclusive recovery and resilience.

Moving forward: education for equity

Education serves both as a pathway to equity and a contributor to inequality (UNDP 2013). To reduce inequality, education systems must be inclusive, well-resourced, and responsive to the needs of marginalised populations. This includes investing in early childhood education, accessible infrastructure, teacher training, and culturally relevant curricula. Education must also challenge discriminatory norms and empower individuals to claim their rights.

Equitable access to high-quality public education is essential for reducing inequality. Yet, under-resourced schools continue to face challenges such as overcrowding, outdated materials, and shortages of trained teachers. Targeted investment in low-income communities can help close the gap between wealthy and disadvantaged areas.

One of the most effective strategies is investing in early childhood education. It builds foundational skills in literacy and numeracy and improves long-term academic outcomes. For example, South Africa has made pre-primary education compulsory and integrated early learning into its basic education system. Community-based programmes – including home visits, preschool centres, school-based health services, and enrichment activities – also provide critical support to disadvantaged families.

Beyond academic achievement, education plays a vital role in challenging discrimination and reshaping social norms. It empowers individuals to claim their rights, enhances employment opportunities, supports technological adaptation, and enables fuller participation in society and the economy (UNDP 2014; Vladimirova and Le Blanc 2015). Strengthening public understanding of global commitments and financial cooperation mechanisms can further increase accountability and support for inclusive policies.

Bridging the digital divide

Technology and ICTs offer significant potential to expand access to education for marginalised groups – including those in remote areas, those with disabilities, and those affected by displacement. However, digital inequality remains a major barrier. Unequal access to devices, internet connectivity, and digital skills limits the ability of disadvantaged learners to participate in digital learning.

Addressing this challenge requires coordinated investments in digital infrastructure, affordable connectivity, inclusive platform design, and teacher training in technology-mediated pedagogy (ITU 2023). Adaptive technologies also offer personalised learning approaches, improving outcomes for students with diverse needs.

The persistence of the digital divide – particularly in low-income countries – signals the urgency of bridging this gap. Without inclusive digital learning systems, education risks reinforcing rather than reducing inequality.

A call for coordinated action

Reducing educational inequality demands long-term, systemic action. This includes prioritising vulnerable groups – such as migrants, refugees, people with disabilities, and minority communities – and implementing policies that promote fairness and opportunity. Quality education remains one of the most effective tools for advancing SDG10.

The United Nations' 2023 SDG Progress Report identified SDG10 as one of the goals with the least progress, and that therefore needs urgent, accelerated action. Governments, policymakers, civil society, the private sector, and international organisations must work together to implement inclusive policies, expand investment in education, and ensure that economic systems reduce rather than reinforce inequality.

Progress will depend on sustained commitment, equitable resource distribution, and inclusive social systems. Key priorities include investing in education and skills development, expanding social protection, addressing discrimination, supporting marginalised groups, and strengthening international cooperation for fair trade and financial systems (UN 2023). Fair migration policies and more just global governance are also essential.

As 2030 approaches, targeted and coordinated efforts are critical to ensure that no one is left behind.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Recognising diversity** • Understand that people come from diverse cultures, speak different languages, and may look or move differently. • Learn to identify differences in abilities, preferences and experiences among peers. **Fairness and inequality** • Introduce the idea that sometimes things are not shared equally or fairly. • Use simple examples (for example, toy or sweet distribution) to explore what is fair or unfair. **Inclusion and belonging** • Understand that everyone should be able to join in play and activities, no matter who they are. • Learn that it is important to help others feel welcome and included.	**Empathy and communication** • Develop the ability to listen to others and express feelings appropriately. • Practise using kind words and positive communication with peers and adults. **Collaborative play and group activities** • Participate in group tasks that require turn-taking, sharing and teamwork. • Engage in inclusive games where every child has a role and can contribute. **Role play and storytelling** • Use stories and imaginative play to explore themes of kindness, sharing and treating others fairly. • Act out scenarios showing both fair and unfair situations and discuss how to make them better.	**Fairness and sharing** • Develop a sense of justice by practising sharing toys, materials and responsibilities. • Learn to treat others equally and kindly, regardless of their differences. **Respect and inclusion** • Show respect for diverse backgrounds, traditions and abilities. • Value each person's uniqueness and understand that everyone belongs. **Generosity and caring** • Cultivate habits of generosity through daily routines and interactions (for example, offering help, giving compliments). • Celebrate acts of kindness within the classroom or learning group.
Primary education	**Fairness, equality and human rights** • Basic concepts of fairness and equality using relatable examples from daily life (for example, games, school activities, sport). • Human rights and why it is important to treat everyone with respect and dignity. **Social and economic differences** • How income, education, health and location can affect people's lives and opportunities. • How unequal access to education can affect a person's future. **Education and opportunity** • Education as a powerful tool to overcome inequality and improve life chances. • Understand that not all children around the world have the same access to quality education. **Global and local perspectives** • Compare the lives of children in different countries and communities to understand how inequality is experienced. • How stereotypes and discrimination affect diverse groups (for example, by gender, race, disability, religion).	**Critical thinking and analysis** • Analyse real-world issues (for example, success in Olympic sports, access to healthcare or education) through lenses of fairness and opportunity. • Use simple data (for example, graphs or ratios) to compare inequalities, such as gender gaps in employment or education. **Creative and collaborative projects** • Research and present on inspirational figures who overcame inequality (for example, Malala Yousafzai, Stephen Hawking). • Participate in classroom projects that promote inclusion and equal opportunities (for example, group posters, classroom charters). **Community engagement and citizenship** • Engage in school or community service projects that support marginalised groups (for example, book drives, awareness campaigns). • Conduct mini-research projects using local data to compare differences in access to education, jobs or housing. **Reflection and communication** • Write stories, role play scenarios or lead discussions about discrimination and fairness. • Express views on issues of inequality and propose simple, child-friendly solutions for a fairer world.	**Empathy, respect and tolerance** • Develop the ability to empathise with others and appreciate the challenges people face due to unfair treatment. • Show respect for diverse cultures, abilities, beliefs and backgrounds. **Equity and inclusion** • Value education as a right for all and a pathway to fairness and opportunity. • Recognise the importance of treating others equally and advocating for inclusion. **Civic awareness and responsibility** • Show willingness to support fairness in school and the community (for example, standing up against exclusion). • Develop a sense of justice and begin to understand their role as young global citizens. **Challenging stereotypes** • Question common stereotypes related to race, gender, religion and ability. • Recognise and discuss ethical and non-ethical behaviour in how people, groups or nations treat one another.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Understanding inequality** • Explore the root causes of inequality (economic, social, political, cultural and environmental). • How inequality impacts individuals, communities and the broader economy. • Structural and historical inequalities, including colonialism, apartheid and systemic discrimination. **Global and national contexts** • Comparison of economic systems in terms of equity, justice and power distribution, focusing on differences between wealthy and poor countries. • Policies and programmes targeting inequality (for example, social protection schemes, educational access) in the national context. • The role of national and international institutions (for example, the UN, the Commonwealth, NGOs) in addressing social justice and inequality. **Indigenous peoples and cultural identity** • Indigenous worldviews, including land stewardship, reciprocal relationships and sustainability. • Challenges and resilience of indigenous communities in maintaining identity and securing rights over land and resources. • Impact of colonisation, environmental exploitation and globalisation on indigenous peoples and cultural heritage. **Representation and power** • Inequalities in political and institutional representation (for example, gender, ethnicity, indigenous status). • Migration, population shifts and multiculturalism, and their role in shaping social dynamics and inequalities.	**Critical analysis and inquiry** • Analyse living standard disparities using census and demographic data, government reports and global indices. • Investigate ethical and non-ethical practices of powerful actors towards minorities, indigenous groups and less powerful nations. • Compare historical injustices (for example, apartheid, colonisation) with current social issues to identify patterns and lessons. **Research and civic engagement** • Explore how international efforts (for example, land claims, indigenous rights, biodiversity protection) promote equity and justice. • Engage in school or community-based service-learning projects that support marginalised or vulnerable groups. • Apply classroom knowledge to suggest practical strategies for resolving issues of discrimination, marginalisation and environmental justice. **Communication and advocacy** • Articulate informed opinions on topics such as migration, multiculturalism, indigenous rights and economic exploitation. • Develop advocacy campaigns promoting inclusive policies, respect for diversity and sustainable development. • Present research or creative work (for example, debates, essays, digital media) to raise awareness about inequality and equity issues locally and globally.	**Respect, pride and cultural understanding** • Value and take pride in personal and collective cultural heritage while respecting the traditions of others. • Appreciate the importance of cultural diversity and recognise how it enriches societies. • Respect the struggles, contributions and strategies of indigenous and minority groups in shaping inclusive policies. **Empathy, equity and justice** • Demonstrate empathy towards individuals and groups facing discrimination or exclusion. • Develop a keen sense of justice and a commitment to equity in personal, school and community life. • Recognise the interconnectedness of rights, responsibilities and human dignity. **Civic responsibility and agency** • Show willingness to stand up against injustice, discrimination and unfair policies. • Engage actively as equality champions and advocates for positive change in school and the community. • Celebrate difference, promote inclusion, and help build bridges between diverse identities and communities.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Inclusive economic systems and financial access** • The role of inclusive economic policies and business models in reducing inequality. • Study the principles of fair labour practices, workplace equity and anti-discrimination policies. • How low-cost, safe and accessible remittance and mobile money technologies contribute to financial inclusion. **Digital technologies and innovation for inclusion** • How big data, mobile banking and cloud computing can enhance risk analysis and expand opportunities in underserved communities. • Use of cash remittance platforms and mobile money services in rural and low-income settings. **Policy and regulation** • How global financial systems are regulated and monitored to prevent exploitation and promote equity. • National and international frameworks that address economic inequalities, particularly those affecting vulnerable and marginalised populations.	**Technical and entrepreneurial skills** • Use digital tools (for example, data analytics platforms, mobile payment apps) to develop inclusive business models. • Apply knowledge to design low-cost solutions for infrastructure, remittance or service delivery in underserved regions. • Learn how to implement technology-driven solutions for economic inclusion, especially in rural or peri-urban areas. **Workplace equity and advocacy** • Respond to inequality in the workplace, promoting inclusive hiring, equal pay and safe working conditions. • Develop strategies to increase the access of marginalised groups to employment, vocational training and entrepreneurship opportunities. **Community engagement and financial services** • Create or support services that increase access to basic financial products (for example, savings accounts, credit, insurance) for vulnerable groups. • Propose ways to extend financial services and infrastructure to communities with limited access, focusing on practical, scalable approaches.	**Empowerment and inclusion** • Commit to fairness and inclusion in business operations and workplace practices. • Champion equal opportunity and access, particularly for women, youth, people with disabilities and other disadvantaged groups. **Active citizenship and social responsibility** • Show willingness to serve disadvantaged communities through inclusive projects and vocational outreach. • Demonstrate civic responsibility by participating in advocacy, policy dialogue and community development initiatives promoting equity. **Ethics and innovation** • Promote ethical decision-making in financial and workplace settings, guided by principles of justice and sustainability. • Embrace the role of technology not just for efficiency, but as a tool to bridge inequality and support underserved populations.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Inequality and human development** • Interconnections between poverty, early childhood development outcomes and long-term inequalities in education, health and economic participation. • How inequalities manifest across various dimensions – income, age, sex, disability, ethnicity, origin, religion and legal/economic status. **Economic and financial systems** • Innovations in financial services (for example, digital payments, savings mechanisms, micro-insurance and remittances) and their role in financial inclusion. • The influence of official development assistance (ODA), foreign direct investment (FDI) and remittances on income distribution, inequality reduction and development financing. **Global governance and institutional roles** • Responsibilities and influence of governments, international financial institutions, civil society and the private sector in addressing systemic inequalities. • The design of social protection systems and the role of inclusive economic models in promoting equitable growth.	**Research and policy analysis** • Conduct evidence-based research on global and national inequality trends, including the social and economic impacts on different population groups. • Evaluate mechanisms for the provision and monitoring of social services, including social protection coverage and budget allocation for vulnerable groups. **Financial innovation and inclusion** • Design strategies to expand access to responsible, transparent and inclusive financial services – especially for under-represented populations. • Explore the innovative use of ODA and blended finance to strengthen financial leadership and capacity in low-income countries. **Strategic planning and advocacy** • Develop frameworks to dismantle structural barriers to equality (for example, discriminatory laws or under-representation in decision-making bodies). • Conduct audits of global and national institutions to assess representativeness and accountability in positions of power.	**Equity and empowerment** • Embrace a rights-based approach to inequality, viewing all individuals – especially those in poverty or marginalised – as rights-holders with dignity, potential and agency. • Value the empowerment of girls, women and marginalised groups as key to inclusive development and long-term sustainability. **Global solidarity and justice** • Respect and advocate for the human rights and wellbeing of migrants, displaced populations and minorities. • Recognise the importance of financial flows such as remittances in supporting sustainable development and bridging economic divides. **Leadership and representation** • Promote ethical leadership and inclusive governance, ensuring that voices from the Global South and under-represented communities influence global economic and political decision-making. • Encourage inclusive mindsets that support systemic reform and equitable development at the local, national and global levels.
Adult education	**Governance and community participation** • Structure and function of local governance, decision-making processes, how to participate in community planning and resource allocation. • How civic engagement can reduce social inequalities and improve access to services for marginalised groups. **Financial awareness and inclusion** • Microcredit, micro-finance and co-operatives as tools for economic empowerment. • How to access and responsibly manage loans, savings and investment opportunities. Explore debt management.	**Civic participation and leadership** • Be able to empower children and youth by developing their confidence, goal setting and aspirations within families and communities. • Navigate financial services. • Explore skills for financial independence, digital literacy and career development. • Engage in practical training on workers' rights, financial literacy and digital inclusion, empowering disadvantaged groups. • Engage in community advocacy for equitable access to education, healthcare, housing and employment.	**Equity and empowerment** • Engage in community advocacy for equitable access to education, healthcare, housing and employment. • Advocate for the rights of migrants, refugees, informal workers, persons with disabilities and other vulnerable populations. • Promote the value of 'power through participation' – the belief that active community involvement is key to reducing inequalities. • Support women's empowerment by challenging gender norms, advocating for leadership opportunities and supporting economic inclusion. • Respect and uphold the dignity and rights of all people, regardless of background or legal status.

13. Goal 11 – Sustainable Cities and Communities

Make cities and human settlements inclusive, safe and sustainable

Population growth and urbanisation trends

The global population is projected to continue growing for the next 50–60 years, peaking at around 10.3 billion by the mid-2080s, up from 8.2 billion in 2024, before gradually declining to 10.2 billion by the century's end (UN DESA 2024). This demographic shift is linked to accelerating urbanisation: by 2030, 60 per cent of the world's population will live in cities, rising to almost 70 per cent by 2050.

Urban growth is particularly concentrated in Asia and Africa. By 2030, 66 cities are expected to have populations between 5 and 10 million, with 28 cities surpassing the 5 million mark – 13 in Asia and 10 in Africa (UN DESA, 2018). Notable changes include Delhi's population increasing by over 10 million, overtaking Tokyo, whose population is projected to decline by 900,000. Other rapidly growing urban centres include Shanghai, China, and Dhaka, Bangladesh.

Implications for sustainability and inclusion

These trends present both opportunities and challenges. Rapid urbanisation can drive economic growth, innovation and cultural exchange, but it also places immense pressure on housing, infrastructure, transport, water, sanitation and energy systems (UN-Habitat 2022). Currently, 1.1 billion people live in slums, with over 50 per cent of urban populations in sub-Saharan Africa residing in such conditions (ibid.). This figure is expected to grow to 2 billion by 2050, with 95 per cent of urban growth occurring in developing regions (UN 2023).

To meet the targets of SDG 11, cities must adopt integrated approaches that promote:

- *Inclusive urban governance* that ensures participation from all social groups, including marginalised communities.
- *Resilient infrastructure* capable of withstanding climate-related and systemic shocks.
- *Affordable housing and public services* that reduce spatial inequality and improve quality of life.
- *Sustainable transport and mobility systems* that reduce emissions and improve accessibility.
- *Green spaces and nature-based solutions* that enhance urban biodiversity and wellbeing.

The role of education in urban sustainability

Education is a key enabler of sustainable urban development. It equips individuals and communities with the knowledge, skills and agency to engage in urban planning, advocate for equitable policies, and adopt sustainable lifestyles. Urban schools and universities can serve as hubs for innovation, civic engagement and climate action, while vocational and adult education programmes can support green jobs and inclusive economic participation.

As urban populations expand, addressing educational needs is critical to achieving SDG11's vision of inclusive, safe and sustainable cities. Urban education systems will need to meet growing demand, especially in under-resourced and informal settlements where access to quality schools is often limited. Challenges include overcrowded classrooms, inadequate infrastructure and insufficient educational resources (UNICEF 2022).

Urbanisation also brings diverse migrant populations with unique educational needs, including language training, cultural integration and vocational skills. Flexible learning options, such as community-based education programmes, lifelong learning opportunities and instruction in learners' mother tongues, can empower urban residents to survive in new urban contexts.

Learning cities for inclusion and development

The UN Educational, Scientific and Cultural Organization (UNESCO 2024) advocates for 'Learning Cities' as dynamic engines for social

inclusion, economic development, cultural prosperity and environmental sustainability. A Learning City is defined as one that, 'Mobilises its resources in every sector to promote inclusive learning from basic to higher education; revitalises learning in families and communities; facilitates learning for and in the workplace; extends the use of modern learning technologies; enhances quality and excellence in learning; and fosters a culture of learning throughout life.'

With over half the world's population living in urban areas, these cities offer critical platforms for lifelong learning across all life stages, from early childhood to active ageing. Where they exist, Learning Cities contribute meaningfully to the 2030 Agenda for Sustainable Development, supporting climate resilience, improving public health and promoting civic engagement through education.

Cities – as members of the UNESCO Global Network of Learning Cities (GNLC) – collaborate to share best practices and co-create inclusive, resilient, and sustainable communities. Peer learning initiatives focus on health, sustainability, and global citizenship, and – more recently – climate action, recognising the transformative role of education in addressing urban challenges (UNESCO Institute for Lifelong Learning 2024).

Holistic urban planning

Holistic and sustainable urban planning is essential for building resilient, inclusive cities and human settlements. Integrated planning – across urban, regional and national levels – can reduce environmental impacts and improve access to essential services, such as housing, public transport, water, sanitation, energy and waste management (UN-Habitat 2024).

Education plays a complementary role by strengthening individual and community resilience. For example, disaster preparedness education equips urban populations to respond to shocks such as waterborne diseases, earthquakes, and climate-related disasters. Climate literacy and adaptation skills are increasingly vital for both urban and rural communities.

Specialist education and training in fields such as urban planning, sustainable design, disaster risk reduction, public health, and resource management are essential for developing context-specific solutions to urban issues (UNESCO 2021).

Education also shapes socially conscious citizens who are empowered to participate in decision-making processes – an essential component of sustainable urban transformation.

Leveraging subaltern knowledge and technological innovation

Inclusive urban planning benefits from integrating subaltern knowledge – that is, place-based, local expertise often excluded from traditional planning processes. Subaltern knowledge includes indigenous, traditional and community knowledge systems that offer socially and culturally legitimate solutions for climate adaptation and urban resilience (Escobar 1995; UN-Habitat 2022; Olazabal *et al*. 2023).

At the same time, technology is reshaping urban life – from digital public services to hybrid workspaces. The future of cities will be knowledge-based, driven by innovation and the digitisation of nearly all aspects of urban living. While these advances offer new opportunities, they also raise concerns around digital inequality and data privacy (Graham 2020).

Cities such as Singapore and Johannesburg demonstrate how digital literacy and skills training can bridge these gaps. Johannesburg's *Jozi Digital Ambassadors* programme trained over 400,000 residents to use free Wi-Fi for education, job applications, and accessing essential services – highlighting the transformative potential of inclusive technology (Mulyaningsih *et al*. 2020; Common Good First 2025).

In informal economies, digital literacy and basic skills training are essential for enabling participation in emerging economic opportunities, such as micro-work and digital platforms, and for accessing services like telehealth and mobile learning.

Opportunities in urban density

Despite its challenges, urban density presents opportunities to optimise resource use, enhance efficiency and encourage innovation. High-density environments can support sustainable public transit, reduce energy consumption and expand access to digital learning platforms, extending education to hard-to-reach populations. Urban innovation extends beyond technology to include social and organisational innovation, recognising the contributions of civic organisations and community groups to inclusive development. Open

and collaborative governance can further enhance the responsiveness and equity of urban systems (Sassen 2018).

By integrating sustainability education and innovative teaching methods, urban education systems can equip learners with the knowledge and skills to address pressing challenges such as climate change, waste management, and energy efficiency. These programmes empower the next generation of urban leaders to co-create sustainable solutions within their communities (UNESCO 2021).

Overview of SDG11 targets

Sustainable Development Goal 11 aims to make cities and human settlements inclusive, safe, resilient, and sustainable by 2030. Key targets include:

- Access to affordable housing and sustainable transport systems
- Inclusive and sustainable urbanisation
- Protection of the world's cultural and natural heritage
- Reduction of the adverse impacts of natural disasters
- Mitigation of environmental impacts of cities
- Access to safe, inclusive green and public spaces

Achieving these targets requires integrated urban policies that prioritise inclusivity, sustainability, and climate resilience. This includes disaster risk reduction in line with the Sendai Framework (UNISDR 2015), strengthening national and regional development planning to link urban, peri-urban, and rural areas, and supporting least developed countries through financial and technical assistance to construct resilient infrastructure using locally sourced materials.

Education ensures that urban populations are equipped with the knowledge, skills, and values needed to participate in sustainable development. Quality education enables civic engagement, supports climate resilience, and empowers communities to co-create inclusive and liveable cities.

Urban schools, universities, and community learning centres can serve as hubs for sustainability education, vocational training, and public awareness campaigns. These institutions play a vital role in shaping informed citizens who can contribute to urban planning, environmental stewardship, and social cohesion.

Monitoring progress: the case of the European Union

In the European Union (EU), SDG 11 is monitored using indicators such as air quality and urban mobility. Between 2005 and 2021, premature deaths from exposure to fine particulate matter (PM2.5) decreased by 41 per cent, with 253,305 deaths recorded in 2021 (European Environment Agency 2023). Education has contributed to this progress by raising awareness of environmental risks and promoting informed decision-making.

Despite improvements, air pollution remains the leading environmental health risk in Europe. In 2022, exposure to PM2.5, ozone, and nitrogen dioxide above WHO-recommended levels caused an estimated 239,000, 70,000, and 48,000 premature deaths, respectively. These pollutants are linked to asthma, heart disease, and stroke (European Environment Agency 2023).

Unplanned urban sprawl has significant environmental consequences. Globally, a 10 per cent increase in sprawl is associated with a 5.7 per cent rise in CO_2 emissions and a 9.6 per cent increase in hazardous pollution. In 2019, air pollution caused 4.2 million premature deaths, primarily in low- and middle-income countries, with the highest burden in South-East Asia and the Western Pacific (WHO 2024).

Education can play a transformative role in reversing these trends by promoting sustainable urban practices, encouraging behavioural change, and supporting the development of green infrastructure and technologies.

Enhancing urban quality of life

Cities with high living standards – such as Zurich, Vienna, and Vancouver – benefit from strong infrastructure, low crime rates, and robust education systems (Mercer 2024). In contrast, cities like Dhaka face challenges related to poor urban planning and socio-political instability.

Mercer's global city rankings consider factors such as housing, recreation, socio-cultural environment, purchasing power, traffic, air quality, and access to education. Cities like Auckland (5th), Singapore

(30th), and Montevideo (92nd) demonstrate how education, safety, and sustainability contribute to urban wellbeing and talent retention.

The European Commission's Atlas of the Human Planet (Ehrlich *et al*. 2024) shows the link between human activity and planetary health. It calls for policies that integrate sustainability, environmental justice, and planetary health into education systems to prepare learners for future urban challenges.

Safeguarding cultural and natural heritage

SDG Target 11.4 calls for strengthened efforts to protect the world's cultural and natural heritage. This includes monuments, sites, traditions, and practices that are vital to community identity and cohesion.

UNESCO's 2003 Convention for the Safeguarding of the Intangible Cultural Heritage identifies five key domains: 1) Oral traditions and expressions (e.g. storytelling, proverbs); 2) Performing arts (e.g. music, dance, theatre); 3) Social practices, rituals, and festive events; 4) Knowledge and practices related to nature and the universe; 5) Traditional craftsmanship (e.g. tools, clothing, decorative arts).

Integrating these domains into education can promote cultural diversity, strengthen community identity, and support decolonial and inclusive approaches to curriculum design.

Education is not just a supporting pillar – it is the foundation of sustainable cities. Embedding learning into the fabric of urban life can unlock the full potential of cities as engines of inclusion, resilience and development for all.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Nature in cities** • Explore parks, gardens, and local green spaces to see how plants, animals, and people share the city. • Use stories and play to understand that trees, flowers, and animals need safe homes, even in urban areas. • Learn to care for gardens and parks to keep cities healthy. **Healthy and inclusive spaces** • Discuss how pavements, safe parks, and traffic lights protect people. • Show that everyone, including people with disabilities, should enjoy playgrounds and schools. • Encourage kindness and respect for cultural diversity in shared spaces. **Water and waste** • Learn where water comes from and why it should not be wasted. • Use songs, games, or puppet shows to explain recycling and keeping cities clean. • Create art or simple toys from recycled materials. **Community and culture** • Highlight that cities belong to everyone, regardless of age, background, or ability. • Share stories about how people can help make neighbourhoods better. • Encourage caring for shared spaces like playgrounds, schools, and gardens. **Urban wildlife and biodiversity** • Observe birds, insects, and plants in nearby parks or schoolyards. • Support nature in the city through planting flowers, feeding birds, or making insect hotels. • Learn how cities can welcome nature with gardens, trees, and green designs. **Understanding safe and accessible spaces** • Identify features that make spaces safe, such as pavements, gates, and playground equipment. • Role-play safe navigation of public spaces. • Learn about accessibility and inclusion, including ramps and safe footpaths.	**Exploring green spaces** • Take field trips to local parks, botanical gardens, community gardens, or urban wildlife areas. • Observe different green spaces, interact with plants and animals, and explore how nature exists within cities. **Gardening and nature engagement** • Create a school garden or a nature corner in the childcare centre. • Participate in planting, watering, and caring for plants. • Experience plant growth and seasonal changes through hands-on activities. **Observation and critical thinking** • Use simple tools, such as magnifying glasses, to examine plants, leaves, and insects. • Observe natural changes, including seasons, plant growth, and animal behaviour. • Notice patterns in nature to develop attention to detail. **Spatial awareness and creative expression** • Explore urban and natural environments through walking tours. • Express observations through building blocks, drawing cityscapes, or constructing miniature green spaces. • Develop communication, problem-solving, and artistic skills. **Communication and expression** • Share thoughts, feelings, and observations about urban and natural environments through conversation, storytelling, and drawing. • Learn and use vocabulary related to sustainability, nature, and cities. • Engage in role play and storytelling about sustainable living and community participation. **Problem solving and decision-making** • Participate in hands-on activities, such as waste management, recycling, and gardening. • Solve simple real-world problems, like maintaining a school garden or reducing waste. • Repurpose materials creatively for new uses.	**Appreciation for gardening and green spaces** • Explore how gardening improves air quality, produces oxygen, and provides food for people and wildlife. • Understand plants' role in maintaining urban biodiversity and supporting ecosystems. • Develop responsibility for protecting and maintaining green spaces. **Relationship between human settlements and nature** • Recognise the interconnection between urban and natural spaces. • Understand that cities rely on natural resources and ecosystems to function sustainably. • Value the balance between human activity and nature. **Responsibility for the environment** • Build a personal connection with urban and natural environments. • Take positive actions like reducing waste, conserving water, and planting trees. • Care for nature through daily habits and sustainable practices. **Kindness and fairness toward people and nature** • Treat people, animals, and the environment with respect. • Develop empathy by recognising the impact of their actions. • Consider the needs of both humans and the natural world. **Collaborative resourcefulness** • Work together to solve environmental challenges, such as cleaning school grounds or planting trees. • Participate in shared sustainability efforts like community gardening and recycling. • Understand that teamwork is essential for environmental care. **Empathy for animals, plants, and the environment** • Learn about the living creatures in urban environments and their roles in ecosystems. • Develop a caring attitude toward all species. • Take actions that protect urban wildlife, such as avoiding littering and planting native species.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE (ctd)	**Community and citizenship** • Discuss the role of community helpers, such as teachers, police, and doctors, in improving cities. • Create a 'community tree' where children share ideas to enhance their neighbourhoods. • Learn the importance of kindness, sharing, and inclusion in a community. **Responsibility for the environment** • Understand that actions like planting trees, reducing waste, and saving water help the city and planet. • Develop care for nature through everyday choices, such as recycling and conserving resources. • Appreciate that everyone can help make cities cleaner, greener, and healthier. **Collaboration and problem-solving** • Work together on projects like school gardens, tree planting, or keeping the playground clean. • Understand that taking care of the environment requires teamwork and shared responsibility. • Learn to find creative ways to solve environmental challenges in their community.	**Urban and rural awareness** • Compare city and rural maps to understand different environments. • Observe urban features in the local area, such as buildings, roads, and public spaces. • Use picture books and storytelling to illustrate differences between urban and rural life. **Sustainable waste management** • Set up a recycling station in the classroom and sort materials. • Reuse and repurpose items through crafts with recycled materials. • Participate in local clean-up activities, such as picking up litter in parks.	**Importance of urban biodiversity** • Appreciate the variety of life in cities, including plants, insects, and animals. • Recognise that humans share their environment with other species and have a responsibility to protect them. • Cultivate curiosity about nature and engage in activities that support environmental awareness, such as composting and planting trees. **Kindness to the environment** • Demonstrate care for nature, such as planting trees, watering community gardens and caring for school pets. • Participate in eco-friendly projects under adult supervision. • Develop a sense of responsibility for protecting nature and urban green spaces. **Empathy and kindness** • Treat people, animals, and the environment with kindness and respect. • Recognise that fairness includes thinking about the needs of both humans and nature. • Develop empathy by understanding how actions can help or harm others and the environment.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**Cities and daily life** • Cities provide homes, food, transport, water, jobs, and education. • Urban and rural areas are distinct but interconnected. • Sustainable cities balance human needs with environmental care. **Nature in cities** • Clean air, safe water, and green spaces are vital for health. • Trees, parks, and gardens improve living conditions. • Urban biodiversity includes plants and animals supporting healthy ecosystems. • Communities shape shared spaces like playgrounds and gardens. **Environmental challenges** • Cities face pollution, waste, and biodiversity loss. • Climate change brings risks such as floods, heatwaves, and storms. • Green spaces, energy-efficient buildings, and sustainable waste systems reduce impacts. **Fairness and inclusion** • Everyone should have access to housing, clean air, and safe spaces. • Inclusive design ensures accessibility for people with disabilities. • Cultural diversity enriches urban life. • Community participation strengthens sustainable neighbourhoods. **Water and waste** • Conserving water is essential for people and nature. • Recycling, composting, and waste reduction improve urban environments. • Urban water systems include rainwater harvesting and efficient use.	**Emotional intelligence and empathy** • Develop emotional intelligence to understand the impact of personal actions on the environment and people, especially vulnerable groups. • Cultivate empathy for those affected by urban environmental issues, such as pollution, lack of green spaces, or limited access to clean water. • Use empathy to advocate for solutions benefiting both human and environmental wellbeing. **Resilience and adaptability** • Build resilience to adapt to changing environments and unexpected challenges, including climate change and natural disasters. • Learn from setbacks in sustainability projects and maintain motivation for long-term positive change. **Collaboration and teamwork** • Participate in group projects to develop teamwork skills. • Share ideas, delegate tasks, and solve problems collectively. • Respect diverse viewpoints while working toward common sustainability goals. **Leadership and advocacy** • Take active roles in promoting sustainable practices within schools and communities. • Communicate effectively, organise awareness campaigns, and advocate for social, environmental, and economic sustainability. • Build confidence in public speaking and influencing positive change. **Creative problem solving and innovation** • Apply creative thinking to address urban environmental challenges. • Design energy-efficient buildings, waste reduction strategies, or green spaces in communities. • Develop critical thinking skills for tackling complex issues in education and future careers.	**Environmental consciousness and stewardship** • Recognise the importance of sustainable living and responsible resource use. • Understand that actions like reducing waste and conserving water benefit communities and the planet. **Appreciation for diversity and inclusivity** • Respect diverse cultures, backgrounds, and needs in urban environments. • Support inclusive development that ensures equal access to opportunities and resources for all. **Leadership in sustainability** • Take initiative in schools or communities to advocate for sustainable practices. • Promote positive environmental change and serve as role models. **Commitment to social equity and justice** • Understand the link between sustainability and fair access to resources, clean air, safe water, and green spaces. • Advocate for policies that protect marginalised and vulnerable populations. **Respect for safe spaces and security** • Value parks, playgrounds, and public areas as essential for physical and mental wellbeing. • Support efforts to ensure safe, accessible spaces for all, including children, the elderly, and those with disabilities. **Effective communication and advocacy** • Communicate sustainability ideas clearly through speaking, presentations, or campaigns. • Use communication to raise awareness and promote sustainable, inclusive urban change. **Sustainable futures** • Appreciate that public transport, cycling, and walking reduce pollution; that well-planned streets and safe public spaces foster healthy, active communities.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Importance of sustainable cities and communities** • Key characteristics of sustainable cities that balance development with environmental protection. • Housing as a basic need and the role of various forms of shelter in urban, peri-urban, and rural settings. • Meeting essential human needs: food, water, energy, transport, and waste management. **Urbanisation and its impact** • Causes and consequences of urbanisation, including population growth, migration, and economic opportunities. • Social and economic aspects: employment, education, and urban economic development. • Environmental challenges: biodiversity loss, pollution, and waste. • Building resilience to climate risks and disasters, particularly for marginalised groups. • **Urban Planning and Sustainable Development** • Functions of urban systems: transport, housing, utilities, and infrastructure. • Smart cities and digital technologies for improved urban management. • Consequences of poor planning: overcrowding, pollution, and environmental degradation. • Sustainable strategies: renewable energy, green transport, and eco-friendly infrastructure. **Green and blue infrastructure** • Benefits of green spaces for health, biodiversity, and air quality. • Role of blue infrastructure – rivers, lakes, wetlands – in stormwater management and recreation. • Examples from global cities integrating nature into urban planning. **Sustainable mobility and transport** • Public transport systems, cycling networks, and pedestrian-friendly design. • Policies reducing car dependency, with examples from leading cities. • Emerging alternatives: electric vehicles and shared mobility systems.	**Sustainable urban living and infrastructure** • Assess and implement energy-efficient, eco-friendly building practices that balance financial and environmental sustainability. • Ensure inclusive urban design so public spaces, transport, and housing are accessible to people with disabilities and other vulnerable groups. **Waste management and resource conservation** • Apply responsible waste disposal, recycling strategies, and circular economy principles in schools and communities. • Conduct environmental audits to identify opportunities for waste reduction and improved sustainability practices. **Community engagement and policy advocacy** • Participate in local sustainability initiatives, such as urban gardening, clean-up drives, and awareness campaigns. • Collaborate with local authorities to advocate for policies promoting sustainable, inclusive, and resilient cities. • Use research and data analysis to support evidence-based proposals on urban sustainability topics, including public transport, green spaces, and waste management. **Innovation and problem solving in urban sustainability** • Apply critical thinking to analyse urban challenges, including pollution, traffic congestion, and housing shortages. • Use design thinking to develop prototypes of sustainable urban environments incorporating smart technologies and eco-friendly materials. **Research, data analysis, and communication** • Collect, organise, and interpret data on air quality, water use, and energy efficiency to guide decision-making. • Communicate sustainability findings effectively through reports, presentations, debates, and digital tools. • Use mapping and digital technologies to visualise urban challenges and propose data-driven solutions.	**Responsibility and civic engagement** • Recognise the role of individuals and communities in shaping resilient, inclusive cities. • Participate actively in sustainability initiatives, such as waste reduction, energy conservation, and urban greening. • Lead and advocate for sustainable urban policies through community engagement. **Environmental stewardship and ethical living** • Conserve natural resources and reduce ecological footprints. • Adopt responsible consumption, support sustainable products, and reduce waste. • Promote clean air, water, and green spaces for current and future generations. **Social justice, inclusion and equity** • Support equitable access to housing, education, healthcare, and public spaces. • Respect cultural and socio-economic diversity, fostering inclusive communities. • Advocate for accessibility and universal design in urban development. **Global citizenship and sustainable development** • Understand the global implications of urban sustainability and interconnections between cities. • Raise awareness of SDGs, particularly SDG 11 on sustainable cities. • Collaborate across communities and countries to share sustainable urban practices. **Empathy, resilience and wellbeing** • Promote empathy and emotional intelligence in addressing urban and environmental challenges. • Develop resilience to adapt to climate change, migration, and economic shifts. • Support safe, inclusive urban spaces that enhance mental and physical wellbeing.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education (ctd)	**Social inclusion and equity** • Access to affordable housing, healthcare, and education in urban areas. • Inclusive policies addressing inequality and improving living conditions. • Importance of safe, accessible, and inclusive public spaces for all citizens. **Waste management and the circular economy** • Recycling, composting, and reducing landfill dependency. • Principles of the circular economy: minimizing waste and reusing materials. • Zero-waste initiatives and urban transitions to sustainable resource use. **Cultural and economic contributions of cities** • Cities as centres of creativity, innovation, and cultural diversity. • Urban economies driving national and global trade, business, and industry. • Role of arts and culture in shaping identity, tourism, and social cohesion. **Policy and governance in urban sustainability** • Government roles in sustainable planning at local, national, and international levels. • Global frameworks guiding urban sustainability, such as the Paris Agreement and UN-Habitat Urban Agenda. • Community and youth participation in shaping sustainable urban futures.	**Civic engagement** • Participate in local sustainability initiatives, including tree planting, recycling programmes, and climate awareness campaigns. • Appreciate that everyday actions, such as reducing waste or conserving water, contribute to collective urban sustainability. **Experiential learning and practical applications** • Conduct site visits to urban planning offices, sustainable housing projects, and recycling centres. • Engage in project-based learning, such as designing model sustainable cities or developing smart city innovations. • Participate in simulations, such as city council meetings, to debate and propose sustainable urban policies.	**Advocacy and vision for the future** • Inspire forward-thinking approaches to sustainable, innovative, and inclusive cities. • Encourage youth to contribute ideas and influence urban policies. • Commit to lifelong learning about urban development, sustainability trends, and environmental challenges. **Appreciation for sustainable transportation** • Understand the health and environmental benefits of walking, cycling, and public transit. • Encourage the use of low-pollution transport options to support clean, safe cities. **Conflict resolution and navigating diverse perspectives** • Manage conflicts and diverse perspectives in collaborative sustainability projects. • Negotiate differences, find common ground, and create solutions that meet the needs of various groups. • Promote inclusivity in sustainable city planning and urban development.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Sustainable urban development and resilient cities** • Principles of sustainable urbanisation, including links between rapid urban growth, migration, and environmental sustainability. • Cities' contributions to climate change and their vulnerabilities, with emphasis on mitigation, adaptation, climate justice, and equitable planning. • Ecological restoration, urban green spaces, and biodiversity as factors in urban resilience. • Interactions between urban development and natural systems, and the regulation of human activities to support sustainability. **Urban infrastructure, smart cities, and technological innovation** • Concepts of sustainable building materials, green architecture, energy-efficient housing, and passive design. • Application of GIS, smart city technologies, and building information modelling (BIM) in urban management. • Use of ecological and GIS data for carbon monitoring, air quality management, and urban green space planning. • Principles of sustainable urban mobility, including public transit, electric vehicles, cycling, and pedestrian-friendly infrastructure. **Urban ecology, waste management, and resource conservation** • Urban agriculture, community gardens, and permaculture principles for local food systems and food security. • Sustainable water management, including rainwater harvesting, efficient irrigation, and wastewater recycling. • Waste management and resource conservation through circular economy principles, recycling systems, and zero-waste approaches. **Social equity, environmental justice, and inclusive urban design** • Access to affordable housing, essential services, and the impacts of urbanisation on marginalised populations. • Policies addressing slum conditions, sanitation, and sustainable livelihoods. • Inclusive urban design ensuring accessibility for people with disabilities and vulnerable groups.	**Sustainable urban design** • Integrate green spaces, energy-efficient infrastructure, and eco-friendly materials. • Design climate-resilient, space-efficient, and environmentally harmonious urban developments. **Waste management & circular economy** • Implement smart waste systems, recycling, and composting. • Refurbish, reuse, and recycle modular components to minimise resource use. **Affordable and sustainable housing** • Develop low-cost, safe, energy-efficient housing with solar, rainwater harvesting, and passive cooling. **Workplace sustainability** • Apply energy-efficient office design, waste reduction, and renewable energy solutions. • Conduct audits and recommend efficiency upgrades. **Socio-economic & digital inclusion** • Assess energy-efficient technologies' social impact and support equitable access. • Provide digital skills training for participation in sustainable urban projects. **Sustainable construction & technological solutions** • Use green building techniques, passive solar design, and renewable energy. • Apply GIS, BIM, and smart city systems for sustainable urban planning. **Project management** • Lead sustainability projects from planning to execution, including budgeting and team coordination. **Urban mobility & transportation** • Plan bike lanes, EV infrastructure, pedestrian-friendly streets, and promote low-carbon transport. **Water & environmental management** • Design and implement rainwater harvesting, irrigation systems, and ecosystem restoration. • Support biodiversity, green corridors, and environmental stewardship.	**Appreciation for green spaces and wellbeing** • Recognise the role of green spaces in enhancing quality of life, community wellbeing, and biodiversity. • Understand their positive impact on mental and physical health. • Advocate for preserving and expanding parks, green belts, and community gardens. **Environmental protection and sustainable housing** • Balance environmental protection with the development of energy-efficient, affordable housing. • Promote sustainable building materials while preserving surrounding ecosystems. **Environmental stewardship** • Take responsibility for individual and collective environmental impacts. • Adopt eco-friendly practices in professional and personal contexts. • Support policies and practices that reduce waste and promote sustainability. **Ethical and sustainable decision-making** • Prioritise long-term sustainability over short-term gains. • Choose eco-friendly materials and methods that reduce carbon footprints. **Social equity and inclusivity** • Promote inclusive urban development, ensuring access to housing, green spaces, and public transport for all. • Support projects and policies that address marginalised communities' needs. **Collaboration and collective action** • Work across sectors and communities to achieve sustainability goals. • Collaborate on projects like integrated waste management or urban greening initiatives. **Engagement in recycling and circular economy** • Understand the importance of recycling and resource conservation. • Promote circular economy practices, including composting, waste sorting, and upcycling.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET (ctd)	**Disaster preparedness and climate resilience** • Urban vulnerabilities to floods, heatwaves, and extreme weather events. • Risk assessment, early warning systems, and nature-based solutions such as green roofs and wetland restoration. **Policy frameworks and global commitments** • International frameworks guiding sustainable urban development, including SDG 11, the New Urban Agenda, and the Paris Agreement. • National and local urban policies promoting sustainability, resilience, and environmental protection. • TVET's role in providing knowledge for addressing urban challenges and supporting workforce readiness.	**Critical thinking & ethical decision-making** • Encourage solution-oriented thinking, ethical use of resources, and long-term sustainability in urban development. • Design and apply creative, practical solutions to sustainability challenges. • Use design thinking to improve energy efficiency, reduce waste, and enhance urban systems. **Collaboration & community engagement** • Support teamwork across sectors and involve communities in sustainable urban initiatives. • Promote collective action in green projects, recycling, and urban biodiversity.	**Sustainability and alternative entrepreneurship** • Commit to sustainability and support green business ventures. • Encourage innovative, eco-friendly entrepreneurial initiatives. **Restoring the natural environment** • Support ecosystem restoration and create urban buffer zones. • Participate in reforestation, wetland rehabilitation, and green corridor development.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary Education	**Urban governance and policy frameworks** • Governance systems supporting sustainable urban planning, including climate adaptation and mitigation. • Role of municipal, national, and international policies in shaping sustainable cities. • Key international agreements, such as the New Urban Agenda, and their influence on national and local governance. **Sustainable city design and urban resilience** • Principles of sustainable urban design, including green spaces, eco-friendly architecture, and urbanisation challenges. • Importance of green open spaces for resilience and community wellbeing. • Spatial planning linked to sustainable development and resilient infrastructure. **Climate resilience and urban adaptation** • Urban vulnerabilities to climate change, including flooding, heat stress, and water scarcity. • Cases of cities implementing climate adaptation strategies. • Environmental science principles for sustainable urban management, including air and water quality, pollution control, and ecological restoration. • Resilient infrastructure designed for extreme weather events and climate shocks. **Sustainable infrastructure and essential services** • Green and safe transport systems, freshwater supply, and resilient infrastructure planning. • Design and management of energy, water, and waste systems. • Decentralised solutions, including rooftop gardens, rainwater harvesting, and waste-to-energy initiatives. **Sustainable urban transport and mobility** • Public transport systems, mobility-as-a-service (MaaS), and low-carbon transport solutions. • Mass transit, electric vehicle infrastructure, and land-use planning for efficient mobility. • Integration of smart mobility technologies to enhance accessibility and reduce emissions.	**Urban planning and resilient housing design** • Design, plan and implement urban spaces that are sustainable, inclusive and resilient, integrating green infrastructure and sustainable mobility options. Focus on flood-resilient housing and carbon emissions mitigation. • Create urban master plans incorporating flood-resistant housing, low-carbon mobility infrastructure and green spaces to improve urban resilience against climate change. • Apply policies that mandate resilience in housing design, such as building codes for flood-prone areas, ensuring alignment with national and international climate adaptation frameworks. **Application of innovative urban governance** • Introduce and apply innovative governance models that support sustainable urban development, particularly in environmentally at-risk areas. • Implement adaptive urban governance strategies to manage climate-related risks, including building regulations and resilient community programmes. • Engage with policy frameworks that enable smart governance, urban planning reforms, and climate adaptation integration at local, regional and national levels. **Using urban spaces for food and employment security** • Repurpose urban spaces for local food production and employment opportunities, especially in underserved inner-city areas. • Develop urban agriculture initiatives and community-based businesses that provide fresh food and create jobs, supporting food security and economic resilience. • Promote policies supporting urban agriculture, local business incubation and green job creation through zoning regulations and incentives for sustainable enterprises.	**Social responsibility and equity** • Commit to providing inclusive housing and urban services for all, especially marginalised populations. • Support policies that reduce inequality, promote social inclusion, and ensure equitable access to education, healthcare, and transport. **Local and context-driven action** • Recognise the importance of addressing local urban challenges with tailored, context-specific solutions. • Empower communities to co-design and implement strategies for issues like air pollution, flooding, or food insecurity. **Cultural diversity and inclusion** • Value and respect diverse cultures and identities in urban communities. • Promote intercultural understanding through festivals, art projects, and inclusive urban policies. **Social and environmental justice** • Advocate for policies that ensure fair access to clean air, water, housing, and public services. • Champion environmental equity and sustainable urban development that benefits vulnerable groups. **Ethical leadership and accountability** • Lead with integrity, ensuring transparent, accountable, and environmentally responsible urban planning. • Prioritise long-term sustainability over short-term gains in urban development decisions. **Collaboration and interdisciplinary engagement** • Work across disciplines and sectors to address urban sustainability challenges. • Support multistakeholder partnerships for urban regeneration, climate adaptation, and resilient city planning.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary Education (ctd)	**Energy efficiency and renewable solutions** • Residential and institutional energy research, including thermal-energy efficiency and solar systems. • Sustainable construction techniques and eco-friendly building materials. • Green building certification systems, such as LEED and BREEAM. **Smart cities and technological integration** • Data science, IoT, and AI for optimising urban systems and sustainability. • Use of data to monitor energy, water, and traffic patterns. • Integration of sensors and smart systems for energy, pollution, and infrastructure efficiency. **Social equity and inclusive urban development** • Access to affordable housing, essential services, and participatory planning. • Case studies on urban regeneration integrating marginalised communities. • Policies promoting inclusive innovation and equitable access to urban resources. **Advanced data analysis and gis for urban sustainability** • GIS, spatial analysis, and data science techniques to assess urban sustainability. • Analysis of urban heat islands, green space planning, and infrastructure improvements. **Sustainability assessment and environmental impact analysis** • Environmental impact assessments and sustainability audits, including energy use, carbon footprint, and water consumption. • Lifecycle analysis and modelling software for evaluating urban development sustainability. **Circular economy principles in urban systems** • Application of circular economy concepts, including waste reduction, material reuse, and product lifecycle extension. • Citywide recycling and waste management strategies to reduce resource consumption.	**Building urban climate change resilience** • Apply climate change resilience techniques to urban planning and infrastructure design to mitigate environmental hazards. • Design urban green spaces and sustainable infrastructure that help cities adapt to heatwaves, flooding and other climate impacts while promoting environmental sustainability. • Advocate for climate-resilient urban development policies, including green infrastructure mandates and disaster risk reduction strategies, aligned with national and international climate frameworks. **Data analysis and statistical insights for urban sustainability** • Collect, analyse and apply urban data to assess sustainability and identify areas for improvement in urban planning. • Use disaggregated data to examine gendered health impacts in urban slums and identify sustainable interventions for marginalised populations. • Support policy implementation that promotes data-driven decision-making in urban development, including the use of GIS, spatial data and environmental impact assessments. • Advocate for policies requiring data collection and environmental regulations in construction and urban expansion to ensure sustainable growth. **Analysis and advocacy for sustainable development** • Analyse urban policies, identify gaps and develop advocacy strategies to promote sustainable urban development. • Evaluate urban transport policies and advocate for improved public transit and bicycle infrastructure to support low-carbon mobility. • Support development and enforcement of policies incentivising sustainable construction and energy-efficient building standards.	**Critical thinking and problem solving** • Apply holistic, data-driven approaches to complex urban systems, integrating social, economic, and environmental perspectives. • Design innovative, sustainable policies that address urban challenges, such as pollution, transport, and infrastructure needs. **Participatory urban planning** • Engage communities and stakeholders in participatory planning to ensure inclusivity and alignment with urban residents' needs. • Organise community workshops for feedback on urban regeneration projects, ensuring marginalised groups participate in decision-making. • Promote participatory policy frameworks that ensure transparent urban development and advocate for mechanisms giving marginalised communities a voice in urban planning.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Principles of sustainable construction and resource use** • Principles of sustainable construction, including eco-friendly materials, energy-efficient designs, and resource-efficient practices. • Efficient use of resources, integration of sustainable materials, and consideration of gender in urban development. • Guidance from green building certifications, such as LEED and BREEAM, for sustainable and inclusive urban design. **Laws and regulations governing urban development** • Familiarity with zoning, property ownership, building standards, and energy conservation laws. • Zoning laws, property rights, expropriation regulations, pollution control, and building codes shaping urban development. • Understanding how local regulations influence sustainable and safe urban planning. **Impact of climate change on human settlements** • Risks to urban environments, including rising sea levels, extreme weather, and urban heat islands. • Climate adaptation strategies for settlements, including flood defences and urban cooling measures. **Urban resilience strategies** • Strategies for resilient cities, including disaster preparedness, sustainable infrastructure, drainage systems, and flood mitigation. • Integration of rainwater harvesting and sustainable urban drainage for community resilience. **Key elements of sustainable communities** • Eco-friendly housing, local food production, energy-efficient homes, waste reduction, and circular economy practices. • Community-based sustainability initiatives, such as urban farming, solar installations, and composting programmes. **Practical approaches to reducing environmental footprints** • Use of renewable energy, waste segregation, and promotion of locally produced goods. • Local projects that support sustainability, including community recycling and small-scale renewable energy.	**Use of vacant lots and open spaces for urban gardens** • Repurpose vacant lots, rooftops and open spaces into sustainable green areas, including rooftop and vertical gardens incorporating plants and animals. • Transform unused rooftops into community gardens with vegetables, herbs and small wildlife to improve local biodiversity and provide fresh produce. **Enhancing personal and local spaces with environmentally friendly materials** • Design and create personal and community spaces using eco-friendly and sustainable materials, such as recycled items or second-hand purchases. • Craft household accessories like furniture, planters or decorations from reclaimed materials, or shop for second-hand goods to reduce waste and support sustainable consumption. **Adaptability to rapidly changing urban environments** • Respond and adapt effectively to evolving urban landscapes, including environmental changes, social dynamics and technological advancements. • Address new challenges such as extreme weather, shifting community needs or emerging technologies by adopting strategies for sustainable living. **Urban planning and design for sustainable communities** • Develop proficiency in designing, planning and implementing urban spaces that are sustainable, inclusive and resilient, integrating green infrastructure, low-impact development and circular economy principles. • Design urban master plans that include mixed-use zoning, promote sustainable mobility options (for example, bike lanes and pedestrian zones), and incorporate green spaces for community wellbeing. **Urban policy analysis and advocacy** • Analyse and critique urban policies, identify gaps and develop strategies to advocate for sustainable and equitable urban development. • Evaluate a city's transportation policy and advocate for expanded public transit networks or improved bike lanes to reduce car dependency and lower carbon emissions.	**Environmental responsibility in housing and urban design** • Commit to minimising environmental impact when acquiring shelter, constructing homes and designing living spaces. • Recognise the role of sustainable materials, energy efficiency and green infrastructure in reducing ecological footprints. • Choose energy-efficient housing, using recycled or locally sourced materials and integrating passive design principles to reduce reliance on artificial heating and cooling. **Critical reflection on housing needs across life stages** • Critically assess housing and shelter needs throughout various stages of life, considering cultural traditions, economic constraints, human resources and energy costs. • Weigh the long-term affordability and sustainability of housing choices, such as selecting adaptable, multigenerational housing that accommodates changing family needs while remaining energy efficient. **Commitment to community and social inclusion** • Develop a strong sense of community, recognising the importance of collective wellbeing, inclusivity and social support in urban environments. • Support neighbourhood initiatives such as community gardens, local markets or shared public spaces that enable interaction and social cohesion. **Active engagement in environmental and urban decision-making** • Take an active role in decisions that impact the environment and urban habitat, advocating for policies and projects that promote sustainability. • Participate in town hall meetings, support green building codes or engage in local campaigns to improve waste management, public transportation or renewable energy adoption.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education (ctd)	**Common urban issues** • Challenges in cities, such as air pollution, overcrowding, housing shortages, and waste management. • Strategies for reducing urban environmental impacts, including low-emission transport and efficient public transit. **Community-driven solutions** • Initiatives addressing urban challenges, such as urban gardens, recycling programmes, and shared mobility schemes. • Benefits for food security, social cohesion, and reduction of traffic-related emissions. **Role of parks, gardens, and public spaces** • Importance of green spaces for public health, biodiversity, pollution reduction, and ecological restoration. • Urban planning approaches for parks, green rooftops, and tree-lined streets. • Ensuring access to nature for all residents in dense urban environments. **Social equity and inclusive development** • Importance of equitable urban development, recognising vulnerable populations. • Urban regeneration projects prioritising low-income and marginalised communities, including access to housing, healthcare, education, and transport.	**Project management in urban sustainability** • Lead and implement urban sustainability initiatives from planning through to resource allocation, execution and evaluation. • Manage green building retrofit projects, overseeing energy-efficient system implementation, coordinating with contractors, and ensuring the project remains on schedule and within budget. **Community engagement and participatory planning** • Engage communities in decision-making and planning processes, ensuring local voices and needs are incorporated into sustainable development projects. • Organise community workshops or town halls to discuss urban regeneration projects, gathering feedback to ensure plans address the needs of marginalised groups. **Resilient infrastructure design and management** • Design and manage infrastructure that can withstand the impacts of climate change, such as floods, heatwaves and extreme weather events. • Develop resilient stormwater management systems to mitigate flooding risks in urban areas or retrofit existing infrastructure for future climate challenges. **Integration of circular economy principles in urban development** • Apply circular economy principles to urban systems, focusing on material reuse, waste reduction and designing products for longer lifespans. • Develop citywide recycling programmes that reduce landfill waste or work with local industries to design buildings and products that can be disassembled and reused.	**Locally led urban climate adaptation** • Recognise the value of locally driven, community-focused approaches to urban climate resilience, drawing on the unique knowledge, skills and lived experiences of residents. • Support grassroots initiatives such as rainwater harvesting projects, local flood mitigation strategies or neighbourhood tree-planting programmes to combat urban heat islands. **Participation in urban planning and civic engagement** • Believe in the power of civic participation to shape sustainable cities, understanding the impact of individual and collective actions on urban development. • Attend urban planning meetings, voice concerns about zoning changes, advocate for more green spaces and contribute ideas to local sustainability projects. **Adaptability and lifelong learning** • Cultivate an openness to innovative ideas, continuous learning and adaptability in the face of evolving urban sustainability challenges and emerging technologies. • Keep up to date with innovations in smart cities, renewable energy solutions and sustainable building practices, integrating these into real-world applications. • Promote policies that incentivise continuous professional development in urban sustainability fields and integrate emerging technologies into urban policy frameworks.

14. Goal 12 – Responsible Consumption and Production

Ensure sustainable consumption and production patterns

The challenge: unsustainable use of resources

As the global population grows and lifestyles become more resource-intensive, the pressure on Earth's natural systems is increasing rapidly. If current consumption trends continue, we may need the equivalent of three planets to sustain life by 2050 (UN 2015).

Water is a key concern. Agricultural irrigation alone uses 70% of the world's freshwater, and pollution is outpacing nature's ability to clean it. Over a quarter of the global population and 40% of agricultural production rely on groundwater that is being used faster than it can be replenished (Levintal *et al.* 2023).

Other sectors also contribute to the problem. Hazardous waste production has nearly doubled since the late 1990s (World Bank 2016), and energy use continues to rise – especially in transport, homes, and businesses. Despite progress, only about 20% of global energy comes from renewable sources.

Food waste is another major issue. One-third of all food produced is lost or wasted – about 1.3 billion tonnes annually. This waste also means wasted water, energy, and chemicals. In 2022, food waste reached 1.05 billion metric tons, yet only 9 out of 193 countries included food waste reduction in their climate plans (UNStats 2024).

Electronic waste (e-waste) is also rising. Between 2015 and 2022, global e-waste grew from 6.3 to 7.8 kg per person, totalling 62 million metric tons. Yet only 22% was properly collected and recycled, leaving the rest to pollute ecosystems (ibid.).

Shared responsibility for sustainable consumption and production

Sustainable consumption and production (SCP) means using resources efficiently and equitably, without harming the environment or compromising future generations. If current patterns persist, pollution, biodiversity loss, and climate change will increasingly constrain economic growth and human wellbeing.

Governments, businesses, and individuals all have a role to play. One key government action is reforming fossil fuel subsidies, which distort markets and encourage excessive emissions. In some countries, these subsidies exceed 5% of national income (Mahler *et al.* 2023).

Transitioning to a green economy – one that is low-carbon, resource-efficient, and socially inclusive – requires systemic change across supply chains, from raw materials to final consumption. Businesses can lead by adopting sustainable practices, offering eco-friendly products, and investing in employee training for green skills. Individuals can contribute by making informed choices, reducing waste, and rethinking consumption habits.

The role of education in driving change

Education is a powerful tool for advancing SCP. It equips people with the knowledge, skills, and values needed to make sustainable choices. For example, UNESCO (2016) found that education increases the likelihood of households adopting energy- and water-saving practices and participating in recycling.

Education also develops critical thinking about the environmental and social impacts of products and services. It helps learners understand concepts like the product lifecycle (how goods are made, used, and disposed of) and the environmental footprint of everyday choices.

Businesses can support this by partnering with schools and universities to offer training in sustainable design, production, and marketing. On-the-job learning and continuous professional development are essential for building a workforce ready for the green economy.

However, awareness remains limited. A study in Spain found that while most teachers supported SDG12, only 28% had received training on

responsible consumption (Cuesta *et al.* 2024). Primary educators were more engaged than secondary teachers, often using digital tools or classroom activities to introduce the topic.

Integrating sustainability into education systems

Target 12.8 of the SDGs aims to ensure that people worldwide have the information and awareness needed to live sustainably and in harmony with nature by 2030. This is measured by Indicator 12.8.1, which assesses the extent to which global citizenship education and education for sustainable development (ESD) are integrated into national policies, curricula, teacher training, and student assessments.

As of the latest available data, comprehensive global information on ESD integration remains limited. However, several countries have made notable progress, for instance, Japan has embedded environmental education into its national curriculum, promoting the development of a sustainable society. Japan has embedded environmental education into its national curriculum, promoting the development of a sustainable society. Germany has adopted a National Action Plan for ESD, aiming to integrate sustainability across all levels of education. The European Commission emphasises that education for the green transition must be transformative and interdisciplinary, equipping learners with the agency to drive structural change (CEC 2022).

Despite these efforts, challenges persist. The Global Education Monitoring (GEM) report finds that many countries struggle to translate sustainability policies into classroom practice due to insufficient teacher training, resource constraints, and inconsistent interpretations of sustainable development (UNESCO 2019).

Beyond formal education, Indicator 12.8.1 also relies on public awareness campaigns, media, and community-based initiatives. NGOs, youth networks, and local education programmes play a vital role in amplifying sustainability messages and practices.

Measuring education's impact on sdg12

To evaluate how education supports SDG12, it is essential to assess how sustainability topics are addressed across educational stages. This includes curriculum integration; teaching practices; student learning outcomes and public engagement and informal learning.

Such assessments can guide improvements and ensure that learners acquire the competencies needed to implement sustainable practices – at home, in the workplace, and in civic life. These include skills in monitoring, accountability (e.g. corporate sustainability reporting), and innovation.

Expanding access to sustainability education enhances the capacity of individuals, businesses, and governments to make informed choices. The *Skills Demand for the Future Economy* report by SkillsFuture Singapore (SSG 2025) emphasises the growing importance of green, care, and digital skills, and calls for a skills-first approach to navigate future employment landscapes.

A call to action

Achieving SDG12 is not just about reducing waste or switching to renewable energy – it is about transforming how we live, learn, and lead. Education must be at the heart of this transformation. By empowering learners of all ages to understand the consequences of consumption and to act responsibly, we can build a future where economic development respects planetary boundaries.

Governments must invest in sustainability education. Businesses must champion green skills and innovation. Educators must be supported to teach for change. And individuals must recognise their power to shape a more just, resilient, and sustainable world – starting with the choices they make every day.

Responsible consumption and production should not just be a goal, but a global norm.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**The 4Rs** • Learn simple meanings of reduce, reuse, recycle, and recover. • Spot everyday examples (e.g., using both sides of paper, reusing a jar as a pencil holder). **Water and energy care** • Practise turning off taps and lights when not in use. • Notice where water and energy come from (e.g., taps, plugs, the sun). **Waste and the environment** • Identify where waste comes from (e.g., snack wrappers, broken toys). • Explore what happens if waste is not managed (e.g., litter in parks, dirty rivers).	**Practical activities** • Play sorting games with objects: reduce, reuse, recycle, recover. • Practise water-saving by turning off taps during handwashing. • Role-play energy saving by switching off lights when leaving a room. **Hands-on projects** • Try simple upcycling (e.g., cereal box into a toy car). • Follow the "journey" of a plastic bottle from use to disposal. • Join a mini clean-up or visit a recycling centre. **Home and community links** • Do a one-day "waste check" at home. • Play a shopping game to spot products with less packaging or eco-labels.	**Responsibility and stewardship** • Show care for natural resources by not wasting water, paper or food. • Understand the value of reusing and recycling as acts of caring for the Earth. **Family and community participation** • Encourage children to talk about eco-friendly actions at home (for example, using cloth bags). • Engage in family decision-making (for example, choosing products with less plastic). **Sense of agency** • Cultivate a feeling of empowerment through achievable actions (for example, 'I helped save water!'). • Celebrate small wins in sustainability through positive reinforcement. **Developing habits** • Instil habits of turning off unused taps and lights, putting waste in the correct bin and taking care of belongings.
Primary education	**The 4Rs in daily life** • Reduce, reuse, recycle, and recover through classroom, household, and community examples. • Emphasise reducing packaging, reusing everyday items, recycling properly, and recovering value from waste. **Sustainable vs. Unsustainable choices** • Compare sustainable and unsustainable practices (e.g., reusable bottles vs. single-use plastics). • Identify local and global examples of harmful consumption such as food waste, e-waste, and excessive plastic use. **Environmental and health impacts** • Effects of waste and pollution on people, animals, water, air, and ecosystems. • How everyday consumption contributes to climate change, overflowing landfills, and ocean plastics. **Global perspective** • How people use resources differently around the world. • Connections between food waste and food insecurity in a global context.	**Practical sustainability activities** • Compost and recycle in school. • Join upcycling workshops (e.g., t-shirts into tote bags). • Create simple eco-products (e.g., natural cleaners). **Investigation and critical thinking** • Trace product lifecycles (paper, bottles, phones). • Assess decomposition times of materials. • Map household waste pathways and impacts. **Participatory learning** • Take a footprint challenge and find ways to reduce it. • Analyse family food choices for environmental impact. • Explore technology for sustainability (solar, apps reducing food waste). **Numeracy and research** • Calculate simple carbon or water footprints (e.g., showers, transport). • Collect and analyse data on school or home waste, then propose solutions.	**Environmental responsibility** • Cultivate care and respect for the environment and understanding of limited natural resources. • Develop ownership and pride in adopting sustainable habits at school and home. **Conscious consumer behaviour** • Develop consumer awareness: reading labels, understanding product origins, ethical choices. • Encourage thoughtful consumption and a shift away from instant gratification (for example, rethinking fast fashion, snacks with excessive packaging). **Action and agency** • Build confidence to act and advocate for change (for example, start a recycling campaign or composting club). • Empower children to engage their families and communities in sustainability discussions and actions. **Equity and global solidarity** • Reflect on fairness in resource access – why some people have more while others go without. • Encourage empathy for communities facing environmental challenges due to overconsumption elsewhere.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Global interconnectedness** • Consumer choices in one country and their impacts on economies, labour conditions, and environments elsewhere. • Global supply chains, trade flows, and dependencies illustrated through examples such as electronics, fast fashion, and palm oil. **Global standards and quality** • ISO standards, eco-labelling, and product lifecycle assessments. • Sustainability certifications including Fair Trade, Rainforest Alliance, organic labels, and energy efficiency marks. **Unsustainable trends** • Causes and consequences of overconsumption, planned obsolescence, and resource depletion. • Global environmental concerns linked to globalisation: pollution, deforestation, biodiversity loss, and climate change. **Technology and sustainability** • Positive and negative impacts of technology on consumption, including fast production cycles, digital waste, and smart farming. • Innovations supporting low-impact production and sustainable alternatives.	**Data literacy and critical thinking** • Analyse statistics on waste, carbon footprints, and resource use. • Compare ecological and social impacts of different consumption models. **Systems and supply chain analysis** • Audit supply chains of common products (e.g., jeans, smartphones). • Examine sourcing, production efficiency, and labour conditions. **Project-based learning** • Lead a *Week for the Planet* campaign: workshops, zero-waste challenges, sustainable fashion shows, recycling drives. • Develop projects tracing a product's journey from raw material to disposal. **International standards and certification** • Apply ISO principles to assess sustainability, safety, and efficiency. • Explore eco-labelling and certification schemes (Fair Trade, organic, Energy Star).	**Global citizenship** • Awareness of shared responsibility in production and consumption. • Empathy for people affected by unsustainable systems, such as workers in low-wage manufacturing. **Sustainability mindset** • A sense of duty to reduce one's environmental footprint and influence others through informed choices. • Participation in eco-school programmes, climate strikes and sustainability campaigns. **Advocacy and leadership** • Engage in peer-led campaigns or debates on environmental issues. • Propose innovative solutions for reducing waste or improving consumption behaviours in their school or community. **Reflection and empowerment** • Engage in reflective practices that examine their own lifestyles and purchasing behaviours. • Commitment to lifelong sustainable habits and to question the ethical dimensions of consumption.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Sustainable production systems** • Concept of decoupling economic growth from environmental degradation, with case studies across industries such as manufacturing, agriculture, and food systems. • Resource-efficient production models, circular economy principles, and waste reduction strategies in technical operations. • Lifecycle assessments (LCAs) for goods and services in sectors including construction, agriculture, transport, and food processing. **The food and product lifecycle** • Complete lifecycle of food and manufactured goods: sourcing, production, packaging, distribution, use, and disposal. • Energy consumption, engineering processes, and environmental impacts at each stage. **Environmental impact of industry** • Pollution, waste generation, and emissions across different production methods. • Eco-efficiency, green technologies, and innovations to reduce ecological footprints in trade and industry. **Responsible consumerism** • Psychological, social, and economic factors influencing consumer decisions. • Influence of product design, packaging, and marketing on behaviour, with pathways to more sustainable consumption.	**Environmental and product auditing** • Conduct audits of resource use (water, energy, raw materials) in training centres or industries. • Track workplace waste streams, identify inefficiencies, and propose sustainable alternatives. **Process improvement and innovation** • Redesign or optimise production processes to reduce environmental impact (e.g., energy-efficient machinery, clean energy integration). • Apply green engineering solutions such as eco-packaging or water recycling systems. **Communication and consumer education** • Develop sustainability marketing tools: eco-labels, guides, and campaigns. • Facilitate workshops to raise awareness of sustainable choices and product impacts. **Lifecycle and footprint tools** • Use digital tools for lifecycle assessments and footprint calculations (carbon, water, ecological). • Apply results to improve industry practices and promote sustainability.	**Environmental responsibility** • Promote accountability and ethics in technical professions regarding environmental and social impacts. • Cultivate an appreciation of the finite nature of resources and the need for long-term thinking in production roles. **Empowered professional identity** • See themselves as agents of change in their industries – able to advocate for and implement sustainable practices. • Cultivate pride in contributing to sustainable development and circular economies. **Commitment to systemic change** • Proactive mindset to challenge unsustainable norms and push for greener standards and policies. • Encourage collaborative problem solving for local and global sustainability challenges in teams, businesses and communities. **Equity and inclusion** • Promote inclusive production and consumption models that support decent work, ethical sourcing and the wellbeing of vulnerable populations. • Integrate gender-sensitive and community-led approaches in consumption/production strategies.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Sustainability in production and consumption** • Environmental, economic, and social implications of current consumption and production systems. • Political economy of production and consumption, including roles of governments, corporations, and consumers. • Interdependence of ecological systems and development models, incorporating ecosystem health and socio-ecological resilience. **Circular economy and resource efficiency** • Circular economy principles: design for durability, repair, remanufacturing, reuse, and recycling, including material recovery in product design. • Waste minimisation methods, toxic waste management, and sustainable material flow systems. **Technological and policy innovations** • Technological approaches for waste reduction, cleaner production, and resource conservation, e.g., green chemistry, biodegradable packaging, smart materials. • Policy frameworks and governance mechanisms, including multilevel governance, subsidiarity, and international standards such as ISO and EMAS. **Measurement and audit tools** • Eco-auditing and application of the Eco-Management and Audit Scheme (EMAS). • Interpretation of ecological footprint data and sustainability metrics to guide corporate or institutional decisions.	**Research and innovation** • Conduct interdisciplinary research on ecological impacts of consumption and production. • Design innovation pathways and social learning mechanisms for circular economies. **Sustainable planning and systems analysis** • Plan and evaluate sustainable management of energy, water, materials, and waste flows. • Apply systems thinking to model impacts on biodiversity, climate, and community wellbeing. **Strategic design and management** • Apply product design for disassembly, material recovery, and efficient resource use. • Develop CSR strategies, sustainability reporting, and ESG policies. **Policy engagement and governance** • Analyse national and global policies on responsible consumption and production. • Contribute to policy design, stakeholder consultation, and advocacy for green transitions.	**Ethical leadership and accountability** • Develop a strong sense of accountability and integrity in leadership roles – balancing environmental, economic and social responsibilities. • Champion green business practices, public policy reforms and corporate transparency. **Systemic thinking and global citizenship** • Recognise the interconnectedness of environment, economy and society, and the need for integrated approaches. • Adopt a global perspective on equity and justice in production and consumption, particularly regarding North–South dynamics and access to resources. **Sustainability as core professional identity** • Embrace the identity of a change agent committed to advancing sustainability through expertise, teaching, policy or entrepreneurship. • Drive sustainable innovation in sectors such as agriculture, energy, finance, construction and design. **Commitment to equity and participation** • Value inclusive processes that consider local knowledge, gender equity and marginalised voices in shaping sustainable solutions. • Promote participatory governance, youth engagement and co-creation in sustainability transitions.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Impact awareness** • Environmental, social, and economic consequences of unsustainable consumption and production, including pollution, health risks, resource depletion, and inequity. • Lifecycle of products, from sourcing and production to use and disposal. **The 4rs in everyday life** • Application of Reduce, Reuse, Recycle, and Recover in homes, workplaces, markets, and communities. • Local waste management systems, informal recycling economies, and sustainable alternatives. **Local livelihood and sustainability** • Integration of sustainable practices into livelihood strategies, including eco-crafts, community gardening, waste upcycling, and sustainable home industries. • Connections between responsible consumption, health, food security, and local resource resilience.	**Practical sustainable living** • Apply energy and water conservation, composting, and waste separation at home. • Join workshops on upcycling, eco-friendly products, and community recycling. **Sustainable decision-making** • Evaluate products and services using labels, durability, and sourcing. • Identify and avoid greenwashing in consumer choices. **Community engagement** • Facilitate dialogues on sustainable lifestyles with families, peers, and leaders. • Organise or join clean-ups, repair cafés, and circular economy initiatives. **Income-generating activities** • Develop eco-entrepreneurship in areas like recycling crafts, sustainable catering, and green farming. • Partner with co-operatives, NGOs, or microfinance institutions for small-scale sustainable ventures.	**Environmental respect and care** • Encourage a deep appreciation for the intrinsic value of nature and the role of local ecosystems in community wellbeing. • Encourage conservation-minded behaviours, such as using local resources wisely and reducing waste. **Social responsibility and empowerment** • Cultivate a sense of responsibility for current and future generations in making choices that reduce harm and build resilience. • Promote shared ownership of community resources and encourage collective stewardship of public goods. **Commitment to action and equity** • Value equitable access to sustainable goods and services, and advocate for inclusive community-based solutions. • Build confidence to act – individually and collectively – for more sustainable, just and resilient communities. **Lifelong learning for sustainability** • Embrace lifelong learning as essential for adapting to change and building sustainable futures. • Promote a mindset of curiosity, adaptability and continual improvement in sustainable living and livelihoods.

15. Goal 13 – Climate Action

Take urgent action to combat climate change and its impact

Climate change: a defining global challenge

Climate change is reshaping our world – disrupting ecosystems, threatening livelihoods, and deepening global inequalities. Rising sea levels, extreme heat, droughts, and flooding are becoming more frequent and severe. Vulnerable groups – including the urban poor, elderly, children, traditional societies, subsistence farmers, and coastal communities – are disproportionately affected (IPCC 2023). Environmental degradation and systemic risks emphasise the urgent need for resilient societies.

Education equips individuals and communities with the knowledge, skills, and values needed to respond to climate challenges. Yet, half of the world's out-of-school children live in countries highly vulnerable to climate impacts. Addressing their educational needs is essential for building resilience and promoting equity.

The Global Education Monitoring (GEM) report *Learning to Act for People and Planet* (UNESCO & Monitoring and Sustainability Education Research Institute, 2024) proposes a global benchmark to assess green education content in national curricula. This supports the Greening Education Partnership (UNESCO 2024), launched at the Transforming Education Summit in 2022.

Small island developing states (SIDS) – which comprise around 60% of Commonwealth member countries – face acute climate and economic challenges. Despite contributing minimally to global emissions, they are highly exposed to rising sea levels, extreme weather, and water scarcity (UN-OHRLLS 2023). For example, Kiribati faces the risk of submersion within the next 30 to 60 years (Displacement Solutions and UNEP 2015).

Bridging gaps through climate education

Climate change is not consistently integrated into formal curricula, and many teachers lack the training to address it. Despite this, young people are increasingly aware of climate issues and eager to act. In South Africa, a participatory study revealed that climate knowledge is often shaped by dominant Global North perspectives, leading to distrust and uncertainty. Limited digital access further affects how students in townships receive and share information (MECCE 2022).

A comprehensive climate education approach can bridge these gaps. By integrating themes such as sustainable consumption, disaster preparedness, and waste management, learners gain tools to make informed decisions and act. Climate literacy also supports behavioural change, community planning, and policy engagement – especially when informed by indigenous and local knowledge.

Youth leadership and climate justice

Young people are at the forefront of climate activism, demanding justice, accountability, and urgent action. Promoting youth participation in climate policy dialogues – locally, nationally, and globally – is essential for inclusive and effective climate governance.

The UNDP's guidance note *Aiming Higher: Elevating Meaningful Youth Engagement for Climate Action* (2022) outlines pathways to support youth representation in national and international climate processes. The Intergovernmental Declaration on Children, Youth and Climate Action, launched at COP25, represents a global commitment to accelerate inclusive, child- and youth-centred climate policies (UNICEF 2019).

Education systems – particularly the schooling and post-schooling sectors – play a vital role in raising environmental awareness among youth and enabling them to articulate their voices. This includes building learners' capacity to understand governance structures, climate finance, and rights-based frameworks, so they can participate meaningfully in climate decision-making.

For example, in Brazil's Pará state, the World Resources Institute collaborated with indigenous leaders and researchers to advocate for an inclusive bioeconomy – regenerating agricultural lands while preserving forests and respecting indigenous knowledge (Nobre 2023). Such initiatives

demonstrate how education can empower youth and communities to co-create sustainable futures rooted in justice and equity.

Education for sustainable development

The UN Economic Commission for Europe (UNECE 2012) defines sustainable development as meeting present needs without compromising future generations. Education for Sustainable Development (ESD) encourages critical thinking, collaboration, and problem-solving. It empowers learners to contribute to sustainable societies and supports transformative learning.

In Mumbai, for example, a rooftop farming initiative addressing urban heat and food insecurity is expanding to 250 schools (WRI 2024). In South Africa, the Department of Basic Education has recontextualised ESD across the curriculum, embracing transdisciplinary approaches that transcend mono-cultural practices and promote sustainability and social justice (Mabunda and McKay 2021; McKay 2018).

Vocational and higher education for climate action

A successful transition to a green economy depends on a skilled, inclusive workforce. Technical, vocational education and training (TVET) systems equip learners with practical expertise for low-carbon industries, including renewable energy, sustainable agriculture, green construction, and circular economy practices. These systems must adapt rapidly to meet evolving labour market demands, supported by digital and mobile platforms that enhance access and flexibility.

Universities and research institutions play a pivotal role in advancing climate solutions through innovation, policy analysis, and interdisciplinary collaboration. Social science research provides insights into how communities experience climate risk and adapt, while indigenous knowledge offers practical, place-based solutions. Integrating traditional knowledge into curricula promotes culturally responsive learning and strengthens climate resilience.

Training in areas such as green finance, sustainable product development, and resource-efficient production supports sustainable livelihoods and inclusive economic growth. Strategic partnerships between TVET institutions, universities, and industry are essential to bridge skills gaps and cultivate real-world learning aligned with climate goals.

Key skills for the green workforce

To support climate action and green transitions, learners need to develop:

Technical skills in renewable energy, sustainable agriculture, green construction, and waste management;
Digital literacy for smart technologies and data-driven sustainability solutions;
Green finance and entrepreneurship for sustainable business models;
Systems thinking to understand complex climate–society–economy interactions;
Policy literacy to engage with climate governance and finance;
Intercultural competence to integrate indigenous and local knowledge;
Innovation and problem-solving for climate adaptation and mitigation;
Collaboration and leadership for cross-sectoral climate action.

Initiatives like the Transforming Energy Access – Learning Partnership (TEA-LP) exemplify education's transformative potential. TEA-LP collaborates with universities in Africa, South Asia, and the Indo-Pacific to deliver postgraduate and professional development programmes tailored to local needs and gender equity priorities.

Global commitments and greening education

The Greening Education Partnership (GEP) brings together governments, organisations, and stakeholders to ensure every learner acquires climate competencies. By April 2024, 86 member countries and over 1,200 organisations had joined the GEP, with 45 countries signing the Declaration on the Common Agenda for Education and Climate Change at COP28 (UNESCO 2024).

UNESCO's Greening Curriculum Guidance and Green School Quality Standard aim to green 50% of the world's schools by 2030.

Learners' climate competencies can be assessed through formative and summative methods, including community projects; citizen science; reflective journals; digital storytelling; scenario simulations.

These approaches value critical thinking, collaboration, innovation, and commitment to sustainability.

Climate justice and the one health approach

UN Secretary-General António Guterres (2020) emphasises that climate change threatens intergenerational justice. Millions will be affected by malnutrition, disease, migration, and extreme weather. Those most impacted have contributed least to global warming. Climate justice demands that we go beyond mitigation and advocate for fairness and equity (ibid.).

The Joint Tripartite and UNEP statement (FAO 2021) calls for climate justice through the integrated 'One Health' approach – recognising the interdependence of human, animal, and ecosystem health. This approach supports all SDGs and mobilises cross-sector collaboration to address climate change, food security, and environmental sustainability.

Conclusion

Climate change threatens to reverse development progress, making immediate action essential to build adaptive capacity, mitigate risks and strengthen resilience. Interventions must minimise the cumulative impacts of climate change, particularly on future generations.

Education plays a fundamental role in effective climate strategies. By promoting knowledge, skills, values and attitudes for sustainable action, education systems can empower individuals and communities to contribute to a resilient and sustainable future. Through formal, non-formal and informal learning, education raises awareness, provides adaptive skills and develops a culture of sustainability. Climate education prepares individuals to make informed decisions and implement solutions to mitigate and adapt to climate challenges (UNESCO 2023).

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Emergency preparedness and safety awareness** • Recognition of emergency signals (sirens, alarms) and safe places. • Participation in drills, role play, and storytelling to experience safety procedures. • Following guidance from adults during emergencies. **Nature awareness and appreciation** • Engagement with nature through outdoor play, forest visits, and sensory experiences. • Observation of plants, animals, and seasonal changes to develop curiosity about the environment. **Weather and environmental changes** • Identification of weather conditions (sunny, rainy, windy) and their effects on daily life. • Exploration of natural processes, such as tree growth, leaf shedding, and water movement. • Interactive discussions and activities to introduce basic environmental concepts.	**Emergency preparedness** • Participate in playful activities and role play to practise safety procedures. • Recognise emergency signals and follow adult guidance. **Environmental awareness and concern** • Explore natural elements through sensory activities with soil, water, plants, and outdoor environments. • Engage in stories, songs, and games that highlight caring for the earth and observing seasonal and weather changes. • Experience narratives of environmental champions to inspire connection to nature. **Gardening and plant-growing skills** • Plant seeds, water plants, and observe growth processes. • Discover the role of plants in providing oxygen, food, and habitats for animals.	**Curiosity and wonder** • Develop a sense of awe and appreciation for nature through exploration and observation. • Cultivate curiosity and a keenness to investigate natural phenomena. **Empathy for living things** • Show care for plants, animals, and their surroundings. • Develop patience and responsibility while nurturing plants and observing wildlife. **Basic responsibility** • Take simple, practical actions such as conserving water, avoiding littering, and caring for plants. **Co-operation** • Work collaboratively during activities like gardening, clean-ups, and nature-based projects. **Sense of safety and preparedness** • Gain awareness of safety during emergencies such as storms, floods, or extreme heat. • Build confidence and security through adult guidance and support. • Practise emergency drills in a calm and reassuring way.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**Emergency preparedness and safety awareness** • Recognition of emergency signals and safe places, reinforced through drills, role play, and storytelling. • Following guidance from adults during emergencies. • Basic safety concepts for floods, tsunamis, earthquakes, hurricanes, and other hazards. **Nature awareness and appreciation** • Connection with nature through outdoor play, forest visits, and sensory experiences. • Observation of plants, animals, and seasonal changes to spark curiosity about ecosystems. **Weather and environmental changes** • Identification of weather conditions (sunny, rainy, windy) and their effects on daily life. • Simple explanations of natural processes such as water flow, leaf shedding, and plant growth. • Introduction to human impacts on the environment, including water cycles and carbon absorption. **Climate science foundations** • Greenhouse gases, the carbon cycle, and the influence of human activities on climate. • Age-appropriate experiments and illustrations to encourage scientific curiosity. **Connections between climate and human life** • Impacts of climate on food, water, energy, health, and daily activities. • Story-based examples linking people to environmental changes. **Indigenous knowledge and cultural practices** • Traditional methods of environmental conservation and adaptation passed down through generations. • Stories illustrating community resilience to environmental challenges. **Mitigation and adaptation concepts** • Waste reduction, energy conservation, tree planting, and other eco-friendly practices. • Community-based strategies to respond to changing climates. **Building resilience and sustainable thinking** • Hands-on projects like school gardens, recycling initiatives, and nature-based learning. • Cultivate responsibility, environmental stewardship, and long-term care for the planet.	**Natural disaster preparedness** • Participate in school drills and role-play exercises for floods, storms, heatwaves, and other emergencies. • Practise age-appropriate safety responses. **Climate change observation** • Explore local effects of climate change on weather, water, plants, animals, and communities. • Use storytelling, drawings, and experiments to represent environmental changes. **Sectoral impacts and vulnerabilities** • Discuss how climate change affects farming, water supply, health, and other sectors. • Compare impacts across regions and populations. **Visual data interpretation** • Interpret maps, charts, and illustrations showing climate patterns and trends. • Participate in activities that connect visual data with real-world changes. **Adaptation and mitigation actions** • Distinguish actions that reduce emissions (mitigation) from those that help people adjust (adaptation). • Engage in practical activities like tree planting, water conservation, and energy-saving projects. **Creative problem solving** • Develop solutions for local environmental challenges through class projects and group discussions. • Collaborate to implement ideas that reduce waste, save energy, and protect natural resources.	**Respect for nature** • Recognise the importance of protecting the environment and reducing waste. • Appreciate the diversity of plants, animals, and ecosystems. **Responsibility for actions** • Understand how personal choices affect the environment. • Strive to make positive, environmentally conscious decisions. **Empathy and fairness** • Be aware of how climate change impacts people, animals, and plants. • Develop concern and responsibility for all living organisms and their habitats. **Community awareness** • Learn about early warning systems and community resilience. • Participate in local sustainability initiatives and group projects. • Appreciate traditional cultures and their role in environmental stewardship. **Readiness to act** • Practice energy-saving habits, reduce waste, and support greener choices. • Develop a sense of global citizenship and active environmental participation. **Equity and climate justice** • Understand that some communities are more affected by climate change than others. • Manifest fairness, empathy, and collective responsibility in protecting the environment.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Fundamentals of climate science** • Greenhouse effect, carbon cycles, and feedback mechanisms in climate systems. • Evidence for human-induced climate change, including data analysis and case studies. • Disproportionate impacts on vulnerable populations, small island nations, indigenous communities, and low-income regions. • Ethical responsibilities and intergenerational justice principles. • Global frameworks and agreements: Paris Agreement, UNFCCC, SDGs, IPCC, and COP summits. **Integrative concepts and systems thinking** • Interconnections between climate action, economy, society, and environment. • Economic-environmental interactions: carbon trading, carbon taxes, green technologies, and renewable energy transitions. • Economic-social interactions: human capital, green jobs, and workforce requirements in a sustainable economy. • Social-environmental interactions: governance, policies, cultural values, and traditional knowledge supporting climate resilience. **Implications of inaction** • Economic: costs from extreme weather, loss of productivity, food insecurity, and infrastructure damage, with emphasis on developing nations. • Social: displacement, health risks, and exacerbation of social inequalities due to climate change. • Environmental: biodiversity loss, desertification, deforestation, ocean acidification, and ecosystem tipping points. **Mitigation and adaptation strategies** • Mitigation: renewable energy, energy efficiency, sustainable land use, and circular economy approaches. • Adaptation: community-based climate resilience, climate-smart agriculture, coastal protection, and urban planning for extreme events. • Personal and collective action: sustainable behaviours, advocacy for climate policies, youth engagement, and educational initiatives for climate leadership.	**Problem-based learning** • Address real-world climate challenges using interdisciplinary approaches. • Analyse environmental issues and propose practical, context-specific solutions. **Critical thinking and analysis** • Evaluate climate data from scientific, economic, and social perspectives. • Assess credibility of information and challenge misinformation. • Apply systems thinking to understand feedback loops, cumulative impacts, and interconnected climate effects. **Adaptive learning and reflection** • Reflect on new evidence and adjust perspectives on climate issues. • Develop resilience and flexibility in evaluating scenarios and solutions. **Theory-practice integration** • Apply theoretical knowledge to community projects, simulations, and hands-on environmental monitoring. • Connect classroom learning with real-world climate actions. **Adaptation planning** • Design local adaptation strategies considering agriculture, water, infrastructure, and public health. • Assess vulnerabilities and propose community-based measures. **Carbon footprint and emissions management** • Calculate individual and community carbon footprints. • Explore strategies to reduce emissions through lifestyle changes, advocacy, and sustainable practices. **Environmental monitoring and citizen science** • Collect and analyse data through school and community monitoring initiatives. • Translate findings into local, national, and global climate actions. • Use online data, modelling tools, and digital platforms for climate problem-solving and citizen science initiatives. • Use online data, modelling tools, and digital platforms for climate problem-solving and citizen science initiatives.	**Critical thinking and awareness** • Analyse climate issues thoughtfully, considering multiple perspectives and solutions. • Evaluate behaviours and lifestyle choices to reduce CO_2 emissions, conserve energy, and promote sustainable consumption. **Commitment to climate justice** • Recognise inequalities in climate impacts and advocate for fair and equitable solutions. • Engage actively in climate action initiatives that contribute to Sustainable Development Goals locally and globally. **Individual and collective action** • Participate in community climate education, sharing knowledge and promoting dialogue. • Contribute to collective initiatives that strengthen local and regional resilience. **Global responsibility and systems thinking** • Understand the interconnectedness of social, economic, and environmental systems. • Act as responsible citizens aware of the broader implications of local actions on global climate outcomes. **Problem-solving and innovation** • Identify climate challenges and propose practical, actionable solutions. • Apply creative thinking to design context-appropriate mitigation and adaptation strategies. **Resilience and adaptability** • Develop the capacity to respond proactively to changing environments and uncertain futures. • Build flexibility and perseverance in the face of climate-related challenges. **Applied learning** • Evaluate local and global evaluation of climate policies, projects, and grassroots initiatives. • Community awareness campaigns, sustainable school projects, and climate action planning. • Integrate climate considerations into economics, geography, science, and social studies.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Climate and environmental systems** • Climate and environmental systems, including human influence, environmental degradation, and regional vulnerability. • Interconnected impacts of human actions on climate, biodiversity loss, and resource depletion. **Integrated assessment of economic, environmental, and social aspects** • Multidimensional evaluation of climate change trade-offs and synergies among economic growth, environmental protection, and social wellbeing. • Consideration of global migration patterns, climate impacts, and social trends in scenario analysis. **Intergenerational and future dimensions** • Climate justice and the long-term consequences of current actions on future generations. • Ethical and equity-based implications of climate change for vulnerable populations. **Green and blue economy** • Contributions of renewable energy, sustainable agriculture, circular economy initiatives, and responsible marine resource management to climate mitigation. • Case studies and industry partnerships illustrating practical applications. **Policy and regulatory frameworks** • Climate-related policies, environmental regulations, and compliance standards. • Application of regulatory frameworks to support industry climate goals. **Sector-specific climate impacts** • Climate implications for key sectors: agriculture and food supply chains, marine resources, renewable energy, waste management, and sustainable construction. **Mitigation and adaptation solutions** • Technologies and practices for emission reduction, energy efficiency, and low-carbon transitions. • Adaptation measures including climate-resilient infrastructure, sustainable water management, and early warning systems for natural disasters.	**Practical application and problem solving** • Engage in project-based learning, internships, and community partnerships to implement local climate resilience initiatives. • Develop context-specific, practical solutions to environmental challenges. **Workplace skills for climate action** • Apply sustainable practices across sectors such as renewable energy, green construction, energy-efficient technologies, waste management, and ocean resource management. • Implement environmentally responsible practices within industries and workplaces. **Adaptation and mitigation strategies** • Conduct vulnerability assessments and design community- or industry-based adaptation and mitigation measures. • Support climate-resilient infrastructure and collaborate with local stakeholders to ensure feasibility and effectiveness. **Systems innovation and holistic thinking** • Apply systems thinking to link environmental, social, and economic dimensions of climate action. • Integrate circular economy principles and climate resilience into planning and decision-making. **Green and blue economy competencies** • Contribute to sustainable fisheries, ecotourism, renewable energy, and marine conservation initiatives. • Implement resource management practices that balance ecological and economic resilience. **Climate risk management** • Analyse current and future climate risks using risk assessment tools and data. • Integrate resilience measures into workplace practices and industry planning. **Global-local linkages** • Connect local actions to international climate goals and agreements, such as the Paris Agreement. • Examine how sustainable practices are implemented across businesses, governments, and communities worldwide.	**Sustainability and professional responsibility** • Apply low-carbon, climate-resilient practices within the learner's industry. • Take responsibility for reducing environmental impacts through everyday professional actions. **Ethical and evidence-based decision-making** • Integrate climate ethics into workplace decisions. • Ensure fairness, accountability, and responsible resource management in professional contexts. **Innovation and problem-solving** • Develop practical and creative solutions to environmental challenges. • Pursue entrepreneurial opportunities that combine sustainability with economic viability. **Collaboration and leadership** • Engage with colleagues, communities, and stakeholders to promote climate action. • Lead initiatives that support sustainable practices and community resilience. **Lifelong learning and adaptability** • Continuously update knowledge of emerging technologies and sustainable practices. • Adapt professional practices to evolving climate, industry, and environmental demands.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Adaptive and integrated governance** • Adaptive governance systems operating across scales, including co-management and transboundary approaches. • Policy frameworks supporting resilience and sustainable resource management. **Population, urbanisation, migration, and conflict** • Links between climate change, population dynamics, urbanisation, migration, and conflict. • Impacts of climate-induced displacement and sustainable urban planning strategies. **Climate-resilient development pathways** • Scenario modelling and policy analysis for adaptation, mitigation, and SDG alignment. • Balancing climate resilience with social, economic, and environmental objectives. **Specialised research and analysis** • Investigation of complex climate issues, including gendered vulnerabilities and climate-sensitive health challenges. • Evidence-based research methods to propose solutions. **Social change and vulnerability** • Examination of social dimensions, vulnerability drivers, adaptive capacity, and social movements. • Analysis of advocacy approaches and transformative change mechanisms. **Climate impact projections** • Use of climate modelling tools, scenario planning, and uncertainty analysis. • Assessment of long-term risks and adaptation strategies. **Limits to adaptation and transformational approaches** • Evaluation of conventional adaptation limitations and transformational strategies. • Policies promoting resilience, equity, and climate justice in contexts of irreversible impacts. **Technological and economic models** • Development of models for sustainable development, including industrial ecology, agroecology, ecological engineering, and social enterprises. • Analysis of case studies to extract lessons for practical application.	**Advanced research and innovation** • Conduct interdisciplinary research to develop innovative climate solutions at national and regional levels. • Use cutting-edge tools and technologies to enhance resilience and address knowledge gaps in publications. **Climate-resilient development** • Design strategies balancing economic, social, and environmental goals. • Develop scenario-based models to evaluate long-term climate impacts and propose context-specific adaptation and mitigation plans. **Integrated systems thinking** • Analyse cross-scale interactions and cascading climate effects using systems thinking. • Develop frameworks integrating sustainable development principles into policy and practice. **Complexity management** • Assess inequitable impacts and design inclusive adaptation strategies. • Lead multidisciplinary teams to tackle large-scale climate challenges. **Climate modelling and scenario planning** • Utilise advanced climate and geospatial models to simulate future scenarios. • Create downscaled regional models and use scenario planning for policymaker guidance. **Risk, impact, and vulnerability assessment** • Conduct comprehensive assessments using quantitative and qualitative methods. • Evaluate social, cultural, economic, and environmental dimensions to inform resilience strategies. **Socio-political and economic analysis** • Analyse how governance, economic, social, and cultural factors shape climate adaptation and mitigation. • Strengthen institutional capacity for inclusive decision-making and policy implementation. **Climate information and services** • Develop and improve climate data collection, analysis, and dissemination systems. • Integrate climate information into local and regional planning in collaboration with agencies and institutions.	**Integration of local and global knowledge** • Connect local actions to global climate goals. • Understand international agreements (e.g., Paris Agreement) and how governments and industries implement sustainable practices. • Apply insights from global knowledge to practical solutions. **Scientific integrity and curiosity** • Commit to evidence-based research and continuous learning on climate issues. • Approach climate challenges with intellectual rigor and openness to innovation. **Global and systemic thinking** • Recognise the interconnectedness of social, economic, and environmental systems. • Advocate for transparent governance and climate-responsive development. **Commitment to sustainable development** • Contribute to solutions that advance climate resilience and the Sustainable Development Goals. • Prioritise long-term ecological, social, and economic sustainability. **Advocacy and ethical leadership** • Promote policies and practices that mitigate climate impacts. • Lead ethically, considering equity, justice, and community wellbeing. **Collaborative spirit** • Engage in interdisciplinary and cross-sector collaboration to address complex climate challenges. • Value teamwork and shared responsibility in climate action initiatives **Climate responsive change** • Commitment to fair resource use, ethical climate finance, and protecting vulnerable communities. • Appreciation of sustainable technologies and circular economy models as shared pathways to resilience. • Willingness to co-create climate solutions through collaboration with communities, industry, and policymakers.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Climate change and human impact** • Direct and indirect effects of climate change on communities, including vulnerabilities to health, livelihoods, and ecosystems. • Multiplier effects of climate-related hazards on social and economic systems. **Indigenous and traditional knowledge** • Contributions of indigenous and local practices to climate adaptation and resilience, such as sustainable agriculture and early warning systems. **Social and cultural change** • Impacts of climate change on societal norms, migration patterns, and cultural practices. • Community-led strategies for resilience and climate advocacy. **Climate mitigation and adaptation** • Measures for reducing greenhouse gas emissions and enhancing adaptive capacity, including renewable energy, resource management, and disaster preparedness. **Sustainable development and livelihoods** • Opportunities for green and sustainable livelihoods through circular economies, ecotourism, sustainable agriculture, and climate-conscious entrepreneurship. **Monitoring and evaluation** • Track and assess the effectiveness of community climate initiatives. • Collect and analyse data to evaluate progress on adaptation and mitigation goals.	**Community-based climate preparedness** • Assess local climate risks, especially in vulnerable coastal and rural areas. • Participate in community-driven disaster preparedness initiatives, including early warning systems, evacuation planning, and resource management. **Community research and outreach** • Conduct participatory research to gather and share local climate data. • Facilitate community dialogues, awareness campaigns, and knowledge exchange with scientists, educators, and policymakers. **Ethical decision-making in climate action** • Apply climate ethics to evaluate fairness, equity, and social and environmental justice in policies and projects. • Strengthen capacity to participate in discussions on ethical climate considerations. • Application of Climate Information • Access, interpret, and apply climate data from local, national, and global sources. • Use information to inform planning, agriculture, water management, and other climate-sensitive livelihoods. **Integration of indigenous and traditional knowledge** • Apply local and indigenous knowledge systems to address climate challenges. • Document and share traditional practices in areas like water conservation, sustainable agriculture, and resource management to strengthen resilience. **Sustainable livelihoods** • Transition to climate-resilient livelihoods in renewable energy, sustainable agriculture, ecotourism, and circular economy sectors. • Develop entrepreneurship, financial literacy, and resource management skills to support community-based solutions.	**Empathy and solidarity** • Support vulnerable groups affected by climate change. • Recognise and value local and traditional knowledge in building resilience. • Engage in collective climate action with communities. **Sustainability awareness** • Adopt sustainable practices in daily life, including waste reduction, energy conservation, and responsible consumption. • Advocate for inclusive and equitable climate policies. • Lead or contribute to local adaptation and mitigation initiatives. • Build leadership, facilitation, and teamwork skills to drive collective climate action. **Community participation** • Collaborate in community projects and knowledge-sharing activities. • Engage in participatory evaluation to strengthen local climate resilience efforts. **Adaptability and resilience** • Embrace lifelong learning to stay informed about climate challenges and solutions. • Demonstrate flexibility in responding to changing environmental conditions. **Environmental stewardship** • Take personal responsibility for protecting ecosystems and reducing environmental impact. • Champion climate justice and support community-based conservation efforts.

16. Goal 14 – Life below Water

Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Marine ecosystems: vital for life and livelihoods

Oceans are essential for food security, economic development, climate regulation, biodiversity, and cultural identity. Over 3 billion people rely on the ocean for protein, and fisheries support the livelihoods of around 60 million people globally (FAO 2022). In small island developing states (SIDS), sub-Saharan Africa, and Southeast Asia, marine resources are central to survival and resilience.

Oceans also absorb approximately 30% of global CO_2 emissions, acting as a major carbon sink. Yet, marine ecosystems are under threat from overfishing, pollution, habitat destruction, and climate change. Ocean acidification, deoxygenation, and biodiversity loss are accelerating, undermining both ecological stability and human wellbeing (IPCC 2023).

Climate justice and vulnerable communities

The impacts of ocean degradation are not evenly distributed. Coastal and island communities – especially in SIDS, sub-Saharan Africa, and Southeast Asia – face rising sea levels, extreme weather, and declining fish stocks. Countries like Kiribati and Tuvalu are already experiencing existential threats due to sea-level rise (UN-OHRLLS 2023). These communities contribute the least to global emissions but endure most of the consequences, making marine sustainability a matter of climate justice.

Challenges in marine governance

Weak coastal planning, limited enforcement, and the exclusion of indigenous and local knowledge hinder effective marine management. Many Commonwealth countries lack integrated frameworks to manage marine resources sustainably. Strengthening governance through inclusive, cross-sectoral approaches – such as Integrated Coastal Management (ICM) – is essential for balancing ecological, economic, and social priorities (Cisneros-Montemayor *et al.* 2021).

Ocean literacy and lifelong learning

Ocean literacy (OL) empowers individuals to understand, value and protect marine environments. OL encompasses understanding the ocean's influence on humans and the impact of human activities on the ocean. It also encourages responsible consumption and supports sustainable practices.

To strengthen OL, marine science and sustainability should be embedded across school curricula to raise public awareness and influence consumer behaviour. Curricula should also promote cross-sectoral and integrated approaches, equipping learners with the knowledge and decision-making skills needed to address the complex, multiple-use challenges facing oceans and coasts.

Teacher training in ocean education is essential to ensure educators are confident in delivering marine content. Beyond formal education, non-formal and informal learning – through community programmes, museums, and digital platforms – can broaden public engagement and encourage lifelong learning. Capacity-building efforts must be tailored to regional contexts, with a focus on developing expertise in marine law, spatial planning, and monitoring to support inclusive and effective ocean governance.

Building a skilled blue economy workforce

Education systems must prepare learners to lead in marine conservation, sustainable fisheries, ocean governance, and marine innovation. Vocational and tertiary institutions should offer programmes in marine ecology, aquaculture, sustainable tourism, ocean engineering, and spatial planning – anchored in sustainability, equity, and systems thinking.

A strong grasp of marine ecology and resource management enables informed decision-making and long-term stewardship. Learners equipped with critical thinking skills can interpret ecological data, assess cumulative human impacts, and propose science-based solutions. When education develops holistic understanding of ocean ecosystems, it strengthens both individual agency and community engagement.

Traditional knowledge and ocean stewardship

Indigenous and local communities have long practiced sustainable marine management. Integrating their knowledge into education and policy enhances both relevance and effectiveness.

Examples include:
Pacific Islands: *Tabu* areas (temporary no-fishing zones) support fish stock recovery (SPC 2023);
Arctic Inuit: Seasonal hunting and fishing practices based on ecological indicators help maintain marine balance;
East Africa: Swahili communities use *sheria za bahari* (customary sea laws) to regulate fishing and protect breeding grounds;
Northern Australia: Aboriginal ranger programmes combine traditional sea country knowledge with modern conservation tools.

Recognising and embedding these practices in curricula builds respect, cultural continuity, and co-management of marine resources.

Strengthening policy for ocean sustainability

Achieving Goal 14 requires governments and stakeholders to adopt inclusive, science-based, and locally grounded policies that protect marine ecosystems and promote sustainable use of ocean resources. Strengthening marine governance is a critical first step. Integrated Coastal Management (ICM) frameworks – successfully implemented in countries like the Philippines and South Africa – demonstrate how cross-sector collaboration can balance ecological, economic, and social priorities. Expanding Marine Protected Areas (MPAs), as seen in Belize and Seychelles, has led to measurable improvements in biodiversity and fish stocks when communities are actively involved in co-management.

Education must be recognised as a strategic enabler of marine sustainability. National curricula should embed ocean literacy and marine science across all levels of learning, supported by teacher training and regionally tailored capacity-building. Vocational and tertiary institutions should align programmes with the needs of the blue economy, preparing learners for careers in marine conservation, fisheries, ocean engineering, and governance.

Equity must be central to policy design. Small island developing states (SIDS) and vulnerable coastal communities require targeted support to strengthen resilience and adaptive capacity. Inclusive participation – particularly of women, youth, and indigenous groups – should be prioritised through funding, training, and leadership development. For example, Fiji's Locally Managed Marine Areas (LMMA) network empowers communities to lead conservation efforts, combining traditional knowledge with modern science.

Public engagement is equally vital. National ocean literacy campaigns, citizen science initiatives, and youth-led marine projects can encourage widespread understanding and stewardship. Digital platforms and open-access data tools can expand access to marine education and support informed decision-making.

By aligning policy, education, and community action, stakeholders can shift from exploitation to stewardship – ensuring that oceans remain a source of life, livelihoods, and learning for generations to come.

Capacity building and careers in the blue economy

A sustainable blue economy depends on a skilled, inclusive, and future-ready workforce. Education systems – particularly technical and vocational education and training (TVET) – play a pivotal role in equipping learners with practical competencies in areas such as sustainable fisheries management, marine renewable energy, aquaculture, maritime transport, and ocean governance.

Gender equity must be central to workforce development. Although women make up nearly half of the global fisheries workforce, they remain under-represented in higher-skilled, better-paid roles (FAO 2022). Addressing this imbalance

requires gender-responsive policies, targeted training, and inclusive leadership pathways. Programmes such as the African Women in Maritime (WIMAfrica) initiative have demonstrated success in promoting women's participation in maritime careers across the continent.

Equitable access to blue economy opportunities is especially critical for coastal and island communities, where livelihoods often depend directly on healthy marine ecosystems (Costello *et al*. 2019). Small-scale fishers, many of whom fall within the lowest income brackets, benefit from targeted capacity-building in marine science, technology, and regulatory systems. For example, Fiji's Locally Managed Marine Areas (LMMA) network empowers communities to lead conservation efforts while enhancing economic resilience.

Successful models such as the Seychelles Blue Economy Strategic Framework and Roadmap show how national investment in education, innovation, and marine entrepreneurship can drive sustainable growth. Similarly, the Caribbean Regional Fisheries Mechanism (CRFM) supports training in fisheries governance and climate-smart aquaculture, helping member countries build adaptive capacity and improve food security.

To ensure long-term sustainability, capacity-building must be tailored to regional contexts and aligned with labour market needs. This includes developing curricula that integrate marine business planning, climate adaptation, ocean monitoring technologies, and marine law. Field-based learning, entrepreneurship training, and digital literacy are essential to prepare learners for emerging roles in conservation, ecotourism, and ocean energy.

By investing in inclusive education and skills development, governments and institutions can unlock the full potential of the blue economy – creating jobs, strengthening resilience, and safeguarding marine ecosystems for future generations.

International commitments and cooperation

Global cooperation is central to achieving Goal 14. The UN Decade of Ocean Science for Sustainable Development (2021–2030) is driving innovation, knowledge exchange, and capacity building to restore ocean health. Complementing this, the Commonwealth Blue Charter promotes collaboration among member countries to address shared ocean challenges, from plastic pollution to climate resilience.

Progress is evident in the expansion of marine protected areas (MPAs), which now cover approximately 8 per cent of the global ocean (UNEP-WCMC 2024). Countries such as Chile, Palau, and Seychelles have demonstrated leadership by establishing large-scale MPAs that balance conservation with community livelihoods. International agreements to phase out harmful fishing subsidies – such as those negotiated under the World Trade Organization – are also critical to reducing overexploitation and supporting sustainable fisheries.

Investments in renewable ocean energy, such as offshore wind and tidal power, are growing, with successful models in Denmark, the UK, and India. These initiatives not only reduce carbon emissions but also create new employment opportunities in the blue economy. Enhanced support for ocean research, including open-access data platforms and regional marine science hubs, is helping countries make informed decisions rooted in both scientific evidence and traditional knowledge.

By aligning international commitments with national action, and by enabling inclusive partnerships, governments can strengthen marine resource management and accelerate progress toward SDG14.

Responsible ocean stewards

Protecting and restoring ocean ecosystems is not only an ecological imperative – it is a foundation for sustainable development, climate resilience, and social equity. Education plays a transformative role in this effort, cultivating a generation of informed and responsible ocean stewards. By investing in ocean literacy, inclusive capacity building, and equitable blue economy development, societies can safeguard marine resources and ensure that the benefits of healthy oceans are shared across generations and geographies.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Oceans and water** • Oceans cover most of Earth, giving it the "blue planet" appearance. • Ocean water is salty and moves through waves and tides. • Water cycles between ocean, sky, and land, influencing weather and rainfall. **Marine life and ecosystems** • Diverse plants and animals inhabit oceans, from fish and crabs to whales and seaweed. • Coastal areas, including beaches and mangroves, provide habitats and support biodiversity. **Human connection and stewardship** • Oceans provide food, water, and recreational resources for communities. • Pollution, litter, and plastic harm marine life. Small actions, like cleaning up, benefit ecosystems. **Changes and observations** • Ocean conditions vary with weather, seasons, and natural events like tides and waves. • Imaginative and sensory experiences, including stories, role play, and exploration, reveal the lives of ocean animals and the ocean's role in daily life.	**Creative expression** • Ocean-themed art and crafts using shells, pebbles, and sand to explore textures. • Storytelling and puppet shows to represent ocean life and habitats. • Music and movement activities inspired by waves, currents, and marine animals. **Hands-on exploration** • Build and care for mini aquariums to observe underwater habitats. • Engage in water play to explore floating, sinking, and water movement. • Sensory activities with beach-found objects such as shells, seaweed, and driftwood. **Physical and social engagement** • Supervised swimming activities to build water confidence and basic safety awareness. • Interactive role-play games simulating ocean environments and marine animals. **Environmental awareness** • Participate in simple beach or schoolyard clean-ups to experience environmental responsibility.	**Appreciation and respect** • Develop wonder and admiration for the ocean and its creatures through stories, songs, and nature experiences. • Celebrate the diversity of marine life and cultural connections to the ocean. **Curiosity and exploration** • Be inspired to ask questions about ocean life, habitats, and natural processes. **Care and responsibility** • Recognise that the ocean needs protection and that small actions, like reducing litter, contribute to its health. **Empathy for marine life** • Form emotional connections to sea creatures and their habitats. **Interconnectedness** • Appreciate how the ocean connects all living things and influences human and environmental wellbeing. **Stewardship** • Participate in simple conservation actions, such as litter collection or reducing plastic use at home.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**Role of the ocean** • Provides oxygen, regulates climate, supplies food, energy, minerals, and medicines. • Supports marine life and maintains water and carbon cycles. **Marine life and biodiversity** • Different ocean zones (sunlight, twilight, midnight, abyss, trench) host distinct species. • Mangroves, coral reefs, and seagrass beds protect coastlines and provide habitats. • Human activities like pollution, overfishing, and plastic waste threaten marine biodiversity. **Human connection and livelihoods** • Fisheries support local communities; unsustainable practices threaten livelihoods. • Indigenous and local knowledge contributes to sustainable ocean management. **Ocean changes and conservation** • Natural events (tsunamis, cyclones, sea-level rise) impact communities and ecosystems. • Simple actions, like reducing plastic use, promote ocean conservation. • Early awareness fosters care for marine life and support for conservation efforts	**Marine species and habitats** • Investigate threatened marine species, their habitats, causes of endangerment, and conservation approaches. • Examine how marine species adapt to different environments and explore measures to support their survival. **Community and citizen engagement** • Engage with local anglers, fishers, and community members to explore sustainable ocean practices. • Participate in beach clean-ups, coastal surveys, and citizen science programmes monitoring ocean health. **Environmental problem-solving** • Investigate marine pollution and implement school or community recycling initiatives. • Develop creative solutions to reduce plastic use, prevent pollution, and protect local marine life. **Ecosystem awareness and advocacy** • Create models or diagrams representing ocean zones and their unique species. • Organise school campaigns to promote ocean conservation, climate action, and sustainable practices.	**Environmental stewardship** • Participate in conservation activities, such as beach clean-ups, waste reduction, and habitat protection. • Take responsibility for actions that impact oceans and coastal environments. **Sustainability awareness** • Adopt practices that minimise harm to marine ecosystems. **Problem solving** • Propose solutions to local and global ocean challenges. • Assess the effects of human actions on marine life. **Community engagement** • Contribute to community-led conservation initiatives and awareness campaigns. **Cultural appreciation** • Value diverse cultural and economic relationships with the ocean. **Scientific curiosity** • Explore the ocean through observation, experiments, and inquiry. **Long-term thinking** • Recognise intergenerational responsibility and the impact of current actions on future ocean health.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Ocean's role in earth systems** • Regulates climate, carbon, and water cycles. • Supports life on Earth through ecosystem services and biodiversity. **Marine ecosystems and biodiversity** • Coastal and marine habitats include mangroves, coral reefs, seagrass beds, and open ocean. • Marine species interact within food webs, contributing to ecosystem balance. **Human impacts** • Pollution (plastic, oil, chemicals), overfishing, and habitat destruction threaten marine ecosystems. • Marine disasters and climate change (acidification, warming, sea-level rise) affect both ecosystems and communities. **Sustainable management and policy** • Marine Protected Areas (MPAs), Exclusive Economic Zones (EEZs), and international agreements regulate ocean use. • The Blue Economy provides sustainable livelihoods in fisheries, tourism, energy, and biotechnology. • Technological innovations support monitoring, restoration, and sustainable exploitation of marine resources. **Practical engagement** • Field trips, ecosystem monitoring, and community projects encourage direct observation and participation in ocean stewardship. • Exposure to careers in marine science, oceanography, renewable energy, and maritime law builds awareness of professional pathways.	**Research and analysis** • Investigate ocean-related issues such as oil spills, overfishing, coral reef destruction, and marine pollution using primary and secondary research. • Conduct coastal surveys, water quality tests, and biodiversity assessments to monitor marine health. **Problem-solving and innovation** • Design technological solutions or propose policy measures to address specific ocean challenges. • Analyse climate change impacts on coastal ecosystems and develop adaptation and mitigation strategies. **Community engagement and advocacy** • Plan and implement awareness campaigns on sustainable fishing, marine conservation, and pollution reduction. • Participate in youth forums, presenting findings to decision-makers and contributing to policy discussions. **Cultural and stakeholder collaboration** • Document and integrate local and traditional marine knowledge into conservation initiatives. • Collaborate with local marine organisations, governments, or academic institutions for experiential learning. **Citizen science and practical action** • Involve learners in monitoring marine litter, coral reef health, and other community-based conservation activities.	**Appreciation and respect** • Recognise the ecological, economic, and cultural significance of the ocean. • Develop a respectful relationship with marine environments and life forms. • Value traditional knowledge and practices of indigenous and coastal communities in sustainable ocean management. **Environmental stewardship and social responsibility** • Take personal and collective responsibility for ocean conservation. • Participate in initiatives such as beach clean-ups, plastic reduction, and marine conservation projects. • Promote sustainable daily choices and advocate for responsible practices. **Empathy and global awareness** • Acknowledge challenges faced by marine species and coastal communities affected by pollution, climate change, and habitat loss. • Recognise the interconnectedness of local and global ocean issues. • Engage in discussions, campaigns, and advocacy to address marine sustainability challenges. **Sustainability, critical thinking, and problem solving** • Make informed decisions considering environmental impacts, including consumption and resource use. • Analyse complex marine issues, evaluate solutions, and propose actionable strategies. • Support and comply with laws, regulations, and policies that promote ocean health. **Intergenerational responsibility** • Understand the long-term impacts of today's actions on future generations. • Promote practices that ensure ocean health and sustainability for years to come.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Sustainable fisheries management** • Principles and practices of sustainable fishing, including ecosystem-based management. • Methods for monitoring fish populations and maintaining the balance of marine ecosystems. **Marine technology and innovation** • Emerging technologies in offshore renewable energy, aquaculture systems, and ocean observation. • Applications of innovation in supporting sustainable marine industries. **Maritime operations** • Shipbuilding processes, vessel operation, and maritime logistics. • Practices for sustainable shipping and reducing environmental impacts. **Marine business and entrepreneurship** • Fisheries and aquaculture business planning within the blue economy. • Management strategies for marine tourism and ocean-based economic activities. **Climate adaptation and risk management** • Coastal engineering approaches and disaster risk mitigation. • Methods for monitoring ocean changes and adapting to climate-related impacts. **Marine conservation and policy** • Environmental regulations, management of marine protected areas, and international maritime law. • Policy frameworks guiding sustainable resource use and biodiversity protection. **Renewable energy** • Offshore wind, wave, and tidal energy systems. • Integration of renewable energy into sustainable marine industry operations. **Fieldwork and research** • Applications of field surveys, GIS analysis, and environmental impact assessments in marine monitoring. • Data collection and observation for informed decision-making in marine resource management.	**Business and economic development** • Develop business plans for fisheries, aquaculture, and ecotourism ventures that integrate sustainable practices. • Promote eco-friendly tourism initiatives to protect marine biodiversity while supporting local economies. • Engage in policy discussions and provide insights on sustainable ocean management for cross-sector collaboration. **Green technology and renewable energy** • Design, operate, and maintain offshore renewable energy solutions, including wind, wave, and tidal power systems. • Participate in research and development projects to advance sustainable marine technologies. **Marine resource management** • Implement sustainable fisheries, aquaculture, and marine conservation practices to ensure responsible resource use. • Work with coastal communities to apply sustainable fishing and resource management plans. • Conduct environmental impact assessments and support climate adaptation measures in coastal areas. **Maritime operations and technology** • Engage in shipbuilding, port management, and marine engineering, incorporating energy-efficient and sustainable technologies. • Apply circular economy principles to reduce waste, recycle materials, and recover energy in maritime industries. **Data and digital applications** • Use GIS and other marine monitoring technologies to map coastal areas, track resources, and support evidence-based decision-making. **Regulatory compliance and policy** • Apply local and international regulations for marine resource management, environmental protection, and pollution control.	**Sustainability and stewardship** • Commitment to applying green technologies, sustainable fisheries management, and marine conservation to minimise environmental impact. • Personal responsibility for protecting ocean ecosystems through practical actions such as coastal clean-ups, habitat restoration, and sustainable tourism initiatives. **Respect for marine resources and traditional knowledge** • Valuing the ocean's natural resources and supporting responsible production and consumption of seafood, aquatic products, and marine-based materials. • Integration of indigenous and local ecological knowledge into sustainable ocean management strategies. **Ethics and social responsibility** • Ethical decision-making in workplace practices across fisheries, aquaculture, maritime transport, and marine engineering. • Awareness of the social and environmental impacts of industrial and small-scale maritime activities, advocating for equitable and responsible practices. **Innovation, adaptability, and lifelong learning** • Development and application of creative solutions to sustainability challenges, including pollution control, waste management, and climate adaptation. • Continuous learning to remain updated on emerging technologies, regulations, and best practices in ocean-related sectors. **Collaboration and blue economy awareness** • Active engagement with local communities, NGOs, and governments to implement sustainable ocean management initiatives. • Recognition of the blue economy as a pathway for sustainable development, promoting innovation in aquaculture, renewable energy, and maritime industries.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Marine science and climate change** • The role of oceans in climate regulation, carbon sequestration, and global ecosystem balance. • Impacts of climate change on marine biodiversity, fisheries, and coastal ecosystems. **Climate adaptation and resilience** • Vulnerabilities of marine ecosystems and coastal communities to climate change. • Approaches to enhance resilience of fisheries, coastal infrastructure, and marine habitats. **Blue economy and marine technology** • Principles of sustainable ocean-based industries, including aquaculture, renewable energy, and marine biotechnology. • Opportunities and constraints of emerging marine technologies in supporting sustainable development. **Marine policy and governance** • International ocean governance frameworks, maritime law, and coastal zone management policies. • Mechanisms for balancing conservation, resource use, and economic development in marine contexts. **Marine ecosystem management** • Ecosystem-based approaches to fisheries management, biodiversity protection, and restoration of degraded habitats. • Ecological roles of keystone species, habitats, and trophic interactions in marine systems. **Innovation and monitoring technologies** • Applications of GIS, remote sensing, and underwater robotics in observing and mapping marine environments. • Use of modelling and satellite data to assess ocean changes and anticipate future scenarios. **Coastal community resilience** • Socio-economic interactions between coastal populations and marine ecosystems. • Carbon sequestration potential of mangroves, seagrasses, and salt marshes. • Integration of ecological sustainability with economic development in ocean-based sectors. • Carbon sequestration potential of mangroves, seagrasses, and salt marshes. • Integration of ecological sustainability with economic development in ocean-based sectors.	**Sustainable resource management** • Design and implement strategies for sustainable fisheries, aquaculture, and marine resource use. • Conduct ecological and socio-economic assessments to guide responsible management decisions. **Marine renewable energy and technology** • Develop, optimise, and operate wave, tidal, and ocean current energy systems. • Innovate technologies for sustainable marine industries, pollution mitigation, and bioprospecting. **Policy, governance, and advocacy** • Analyse and contribute to national and international marine policies and maritime law. • Lead initiatives to promote ocean conservation and engage stakeholders in sustainable practices. **Environmental impact assessment and coastal resilience** • Evaluate environmental, social, and economic impacts of maritime activities. • Design adaptation measures for coastal communities and contribute to disaster risk reduction. **Blue carbon and ecosystem restoration** • Investigate and support carbon sequestration initiatives in coastal ecosystems. • Plan and participate in restoration projects for mangroves, seagrasses, and salt marshes. **Data, monitoring, and research collaboration** • Apply GIS, remote sensing, and marine modelling for evidence-based decision-making. • Collaborate across disciplines to address complex ocean challenges and contribute to innovative solutions. **Entrepreneurship and blue economy development** • Establish enterprises in sustainable aquaculture, ecotourism, and marine renewable energy. • Develop business models that integrate ecological conservation with economic opportunities.	**Commitment to sustainability** • Dedication to sustainable ocean management and responsible use of marine resources, prioritising ecological balance alongside technological innovation. **Support for the blue economy** • Recognition of the blue economy as a pathway for sustainable development that integrates economic growth with environmental stewardship. **Ethical ocean governance** • Promotion of moral, legal, and ethical principles in ocean governance, supporting transparency, equity, and fairness in resource management. **Valuing marine protected areas** • Appreciation for the ecological, economic, and cultural benefits of marine reserves; advocacy for their establishment, protection, and sustainable management. **Social and environmental responsibility** • Awareness of the social and environmental impacts of ocean-related industries, fostering responsible practices across corporate, governmental, and community spheres. **Respect for traditional knowledge** • Recognition and integration of indigenous and coastal communities' ecological knowledge in marine conservation and resource management. **Research integrity** • Commitment to scientific inquiry that prioritises environmental sustainability, community wellbeing, and reliable, ethical research practices. **Global citizenship** • Recognition of the interconnectedness of global ocean issues, contributing to international collaboration and collective conservation efforts. **Critical thinking and problem solving** • Evidence-based evaluation of complex ocean challenges, fostering innovative solutions, adaptive strategies, and informed policy recommendations. **Advocacy and leadership** • Active engagement in promoting ocean sustainability through policy influence, advocacy, public awareness, and academic discourse.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Sustainable resource management** • Principles for managing marine resources, including fisheries, coastal habitats, and ecotourism. • Value of indigenous and local knowledge in conservation and sustainable use of ocean resources. **Marine pollution prevention** • Causes and impacts of marine litter and pollution on ecosystems and communities. • Strategies for responsible waste management to protect marine environments. **Disaster preparedness and climate resilience** • Community risks from coastal hazards, including storms, flooding, and sea-level rise. • Early warning systems, vulnerability assessments, and gender-sensitive disaster response approaches. • Sustainable adaptation practices addressing coastal erosion and climate change impacts. **Sustainable livelihoods** • Ocean-based livelihoods that balance economic needs with environmental protection, such as sustainable fisheries, aquaculture, and ecotourism. • Socio-economic and ecological benefits of community-led sustainable resource use. **Community monitoring and engagement** • Citizen science programmes and community participation in monitoring ocean health. • Public engagement in reporting environmental changes and promoting marine stewardship. **Cultural and indigenous knowledge** • Traditional practices and cultural values that contribute to marine conservation and sustainable resource management. • Role of local communities in maintaining biodiversity and ecosystem services. **Ocean literacy and public awareness** • Significance of oceans for life, livelihoods, and climate regulation. • Human impacts on marine ecosystems and the importance of advocacy, outreach, and partnerships to promote ocean stewardship.	**Environmental decision-making and policy engagement** • Participate in local, regional, and national decision-making on ocean conservation and sustainable marine resource management. • Analyse policies, regulations, and management plans, recommending strategies that integrate ecological, economic, and social considerations. • Advocate for sustainable ocean governance through engagement with NGOs, governmental bodies, and international organisations. **Sustainable practices in coastal communities** • Implement environmentally responsible fishing, aquaculture, and ecotourism practices. • Promote and apply climate adaptation strategies for coastal erosion, sea-level rise, and extreme weather events. • Encourage circular economy approaches, waste reduction, and pollution prevention in marine industries and community activities. **Community engagement and participation** • Facilitate participatory approaches for developing and monitoring marine management plans. • Support gender-sensitive and inclusive participation, ensuring marginalised groups have equitable opportunities in decision-making. • Foster intergenerational collaboration to share knowledge, traditions, and conservation practices. **Research, monitoring, and innovation** • Conduct community-based monitoring of marine ecosystems, including fisheries, coral reefs, and coastal habitats. • Integrate traditional and indigenous knowledge with modern approaches to support sustainable marine management. • Develop and apply innovative solutions for marine conservation, resource management, and sustainable livelihoods.	**Sustainable production and consumption** • Embrace practices that reduce environmental impact, support responsible use of marine resources, and contribute to a thriving blue economy. • Appreciate the interconnectedness of consumption choices and ocean health. **Active participation and advocacy** • Value engagement in environmental decision-making and conservation initiatives. • Champion sustainable policies and practices within communities and organisations. **Community empowerment and local knowledge** • Respect and promote community-led solutions for sustainable ocean management. • Recognise the importance of indigenous and local knowledge in conservation and resource management. **Innovation, adaptability, and problem-solving** • Support creative and adaptable approaches to address challenges in coastal and marine ecosystems. • Value the use of available resources to foster sustainable livelihoods and community resilience. **Environmental stewardship** • Cultivate a personal sense of responsibility for the protection of marine environments. • Uphold commitment to conservation efforts, including habitat restoration, biodiversity protection, and pollution prevention. **Ocean literacy and public awareness** • Engage in raising awareness about marine ecosystems, biodiversity, pollution, and climate change impacts. • Promote informed decision-making and environmental responsibility within communities. **Equity, inclusion, and social responsibility** • Value gender-sensitive, inclusive approaches in marine resource management. • Support equitable participation and fair distribution of benefits from ocean-based activities.

	Knowledge and understanding	Skills and applications	Values and attitudes
	Conservation action and stewardship • Habitat restoration projects, such as mangrove reforestation or coral reef protection. • Community initiatives for pollution reduction, recycling, and marine litter clean-up campaigns. • Environmental stewardship through citizen science, awareness campaigns, and collaborative conservation projects.	**Sustainable livelihoods and business development** • Design and implement business initiatives in sustainable fisheries, aquaculture, and eco-tourism that balance environmental protection and economic opportunity. • Promote entrepreneurship and market-oriented solutions that support coastal community resilience. • Apply tools such as GIS and environmental assessments to inform decision-making and resource management strategies. **Disaster preparedness and climate resilience** • Support community risk assessments, early warning systems, and disaster response planning. • Apply adaptive strategies to reduce vulnerability to climate change impacts and natural hazards. • Integrate resilience planning into local livelihoods and ecosystem management.	**Intergenerational learning and knowledge transfer** • Appreciate the importance of passing knowledge and experience between generations to strengthen community resilience and environmental stewardship. **Resilience and climate adaptation** • Support resilience to environmental change by supporting sustainable practices that reduce vulnerability to climate impacts and natural disasters. • Develop attitudes that anticipate and adapt to ecosystem changes while safeguarding livelihoods and biodiversity.

17. Goal 15 – Life on Land

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat deforestation, and halt and reverse land degradation and halt biodiversity loss

Understanding ecosystem challenges

Goal 15 calls for the protection and sustainable management of terrestrial ecosystems. Healthy terrestrial ecosystems are essential for human survival, wellbeing and prosperity. Yet human activities – including deforestation, unsustainable agriculture, mining – and climate change are placing immense pressure on the environment, leading to widespread biodiversity loss, desertification and ecosystem degradation (UN DESA 2023; UNSD 2023).

Forests, which cover approximately 31 per cent of the Earth's land area, are shrinking. Between 1990 and 2020, the world lost over 420 million hectares of forest – 10 per cent of total forest area (FAO and UNEP 2020). Forests support 80 per cent of terrestrial species and provide livelihoods for 1.6 billion people (World Bank 2022). Drylands, covering 40 per cent of land area, contribute 44 per cent of global food production and host the highest diversity of mammals (UNCCD 2021), yet are increasingly threatened by desertification. 52 per cent of agricultural land is moderately to severely degraded (ibid.).

Biodiversity is in steep decline. Between 1992 and 2015, global biodiversity dropped by 25 per cent, with one-quarter of species now threatened with extinction (IPBES 2019). Climate change has accelerated habitat loss, further reducing species populations and undermining ecosystem services such as clean air, water, food and medicine (CBD 2020).

These environmental pressures disproportionately affect poor and marginalised communities, exacerbating inequality. By 2050, global demand for food, water, wood and energy is expected to increase by 1.5 to 2 times (SCBD 2020), placing even greater strain on ecosystems.

Between 1992 and 2015, the world saw a 25 per cent decline in biodiversity, with 25 per cent of species now threatened with extinction (IPBES 2019). In the same period, human-induced climate change has further accelerated habitat loss, leading to a decrease in both the number and population of species. The degradation of terrestrial ecosystems is a major driver of biodiversity loss, which in turn undermines the vital ecosystem services that humans rely on, including clean air, water, food and medicine (Secretariat of the Convention on Biological Diversity 2020).

Human activities that degrade environmental systems disproportionately affect poor and marginalised communities, exacerbating inequalities. The continued expansion of populations and consumption will require a 1.5- to 2-fold increase in the production of food, wood, water and energy by 2050 to meet future demands (SCBD 2020). These trends place even greater strain on ecosystems and challenge the long-term sustainability of development.

Education and ecosystem protection

Education is a powerful enabler of sustainable land management and biodiversity conservation. It develops environmental literacy, critical thinking, and the technical competencies needed to restore and protect ecosystems. As terrestrial environments face increasing pressure from human activities and climate change, education must evolve to equip learners with the tools to understand and respond to these challenges.

Central to this effort is the integration of key ecological concepts into learning (UNESCO 2023). Ideas such as planetary boundaries, ecological carrying capacity, and tipping points help learners grasp the complex interdependencies between biodiversity and human wellbeing. These concepts are not abstract – they provide a framework for understanding how human actions can push ecosystems beyond their limits, leading to irreversible damage. By embedding these ideas

into curricula, educators can cultivate a deeper awareness of the Earth's finite resources and the urgent need for sustainable practices.

To be effective, education must go beyond theory. It should offer practical, interdisciplinary learning experiences that connect students with real-world environmental issues. For example, primary learners might engage in tree-planting or biodiversity treasure hunts, while secondary students could use geographic information systems (GIS) to map local green spaces or analyse land-use patterns. Technical and vocational education and training (TVET) programmes can provide hands-on experience in agroecology, composting, and land rehabilitation – skills that are directly applicable to restoring degraded ecosystems.

Technology also plays a vital role in ecosystem education. Remote sensing tools and open-source platforms like Global Forest Watch allow students to monitor forest loss and biodiversity changes in real time (FAO 2020). Citizen science initiatives, such as tree-tagging or camera trap monitoring, offer opportunities for learners to contribute to conservation efforts while building data literacy and environmental stewardship.

To ensure equitable access, especially in remote or low-connectivity areas, education systems should adopt hybrid and blended learning models. These might include offline apps, radio programmes, and tablet-based lessons. Gamified tools – such as conservation games and biodiversity quests – can make ecological learning more engaging, while virtual classroom exchanges enable cross-regional collaboration and shared problem-solving.

Education must empower individuals and communities to become agents of change. By promoting inclusive and experiential learning, and building capacity across sectors, education can drive the adoption of sustainable land-use practices, protect biodiversity, and support the long-term resilience of terrestrial ecosystems.

Achieving SDG15 requires more than technical expertise – it demands a shift in public attitudes and values. Education across formal, non-formal and informal settings can develop environmental literacy and promote sustainable behaviours.

Campaigns on responsible consumption and sustainable forestry can reduce deforestation and encourage reforestation (UNESCO 2023).

Engaging diverse stakeholders – including governments, civil society, indigenous communities and the private sector – is essential. Indigenous and traditional knowledge systems offer valuable insights into sustainable land management. Integrating this knowledge into education builds cultural respect and environmental stewardship (IPBES 2019).

Building capacity for sustainable practices

Capacity building through education ensures that individuals and institutions are equipped to implement sustainable practices. This includes training in integrated land-use planning, land restoration techniques, adaptive management and the application of traditional knowledge.

Countries can strengthen their education systems by embedding environmental education into national curricula and supporting teacher development (UNESCO 2023).

Virtual classroom exchanges can encourage cross-regional collaboration and dialogue on sustainable land management.

Education also plays a role in strengthening governance systems. Governments, businesses and communities must be equipped to manage ecosystems effectively, while respecting indigenous and traditional land rights.

In the private sector, education supports voluntary sustainability initiatives, such as forest certification schemes and zero-deforestation commitments. Training in green technologies and sustainable finance helps develop green jobs and climate-resilient economies (FAO 2020).

A catalyst for change

Education is not only a tool – it is a catalyst for change. By embedding sustainability into learning systems and encouraging collaboration across sectors, we can protect terrestrial ecosystems and secure a resilient future for all.

Through environmental literacy, technical training and inclusive learning, education empowers individuals and communities to adopt sustainable practices, safeguard biodiversity and promote equitable development. A coordinated approach – engaging governments, educators, civil society and indigenous communities – is essential to achieving Goal 15 and sustaining the ecosystems upon which all life depends.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Elementary awareness of the environment and land pollution** • Recognition and naming of common elements of nature, including trees, flowers, grass, soil, and water. • Awareness that littering and pollution harm animals, plants, and the land. • Appreciation for keeping surroundings clean through proper waste disposal. **Wild animals and their habitats** • Identification and naming of common wild animals, particularly those native to the region. • Recognition that animals inhabit different environments, such as forests, grasslands, deserts, and wetlands. • Awareness that animals depend on plants, water, and shelter for survival. • Understanding that forests and natural spaces provide homes for animals, and that excessive tree cutting can harm these habitats. **Introduction to caring for nature** • Observation of animals and plants in gardens, parks, or schoolyards. • Visits to botanical gardens, nature reserves, or zoos to observe animals in protected settings. • Awareness that plants require sunlight, water, and soil to grow. • Recognition that planting trees and flowers benefits both nature and animals. • Understanding that caring for pets and showing respect for wild animals reflects kindness to nature. **Building a connection with nature** • Engagement in nature walks and sensory experiences, noticing sights, sounds, and textures of the natural world. • Exposure to stories, songs, and poems about animals, forests, and the importance of protecting nature. • Creation of simple drawings, crafts, or role-play activities representing animals and their habitats. **Basic awareness of natural cycles** • Observation of basic natural cycles, such as plant growth from seeds, the role of rain in nurturing plants, and how animals find food. • Recognition of seasonal changes in trees and plants, forming an early understanding of nature's patterns.	**Basic environmental stewardship** • Develop an understanding of how to care for their surroundings. • Practise keeping the environment clean by picking up litter in supervised settings. • Participate in simple waste management activities, such as sorting recyclable and non-recyclable waste. **Observation and exploration** • Engage in nature walks to observe plants, trees, birds and insects in their natural habitats. • Observe seasonal changes, plant growth and the role of sunlight and water in nature. • Learn to describe different elements of nature using sensory experiences (for example, colours, shapes, textures). **Gardening and plant care** • Participate in school or community gardening projects, learning to plant seeds, water plants and observe plant growth. • Understand the basic needs of plants (for example, sunlight, water and soil). **Wildlife awareness** • Recognise common wild animals and their habitats through storytelling, educational videos or zoo visits. • Develop empathy for animals and an understanding of the importance of protecting them. **Practical action and responsibility** • Participate in simple environmental actions such as watering plants, collecting leaves and removing litter. • Practise mindful behaviour outdoors, such as avoiding harm to plants and animals. **Experiential learning** • Engage in nature-based play, encouraging curiosity and discovery in natural settings. • Participate in role-play activities that simulate caring for the environment and protecting animals. **Collaboration and communication:** • Work in small groups to complete environmental activities, develop co-operation and teamwork skills. • Share observations and thoughts about nature through drawing, storytelling and group discussions.	**Environmental awareness** • Value nature as a vital part of their lives, providing clean air, water, food and a healthy environment. • Recognise the presence of plants, animals and insects in their immediate surroundings and learn to appreciate their importance. **Respect for animals and appreciation for nature** • Cultivate empathy and kindness toward animals, both pets and wild creatures, by learning that animals have needs and feelings. • Recognise that animals and plants are part of a larger ecosystem and need care and protection. • Appreciation for the beauty of natural landscapes, forests and wildlife. • Awareness that harming plants, animals, or habitats can have negative consequences. **Lifelong connection to nature and responsibility for the planet** • Curiosity about the natural world, encouraging a lifelong interest in exploring and learning about nature. • Recognise that they have a role in caring for the environment and that their actions, no matter how small, can make a difference. • Understand that people are responsible for keeping the planet clean and protecting plants and animals. • Experience joy and satisfaction in activities that contribute to nature, such as planting seeds or watering gardens. • See themselves as caretakers of the environment. Through meaningful interactions with nature and positive reinforcement, learners grow to appreciate the importance of protecting the planet for both present and future generations.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**Forest and freshwater ecosystems** • Diverse types of ecosystems – forests, rivers, lakes, wetlands – and their roles in supporting life. • Key plants and animals in these ecosystems and their interdependence. • Forests' roles in oxygen production, carbon storage, and regulation of the water cycle. • Freshwater ecosystems as sources of drinking water, food, and habitats for diverse species. **Ecosystem health and human impact** • Effects of human activities such as deforestation, pollution, and urbanisation on ecosystems. • Impacts of littering, overfishing, and habitat destruction on people and wildlife. • Examples of local and global environmental challenges, including desertification and soil degradation. • Roles of individuals and communities in conserving nature and reducing environmental harm. **Biodiversity and its importance** • Biodiversity as the variety of plants, animals, fungi, and micro-organisms. • Contributions of biodiversity to ecosystem balance, food production, medicine, clean water, and air quality. • Influence of indigenous and local communities in maintaining biodiversity. **Threats to biodiversity and habitat loss** • Major threats to ecosystems, including deforestation, pollution, habitat loss, and climate change. • Consequences of habitat destruction, such as species endangerment and extinction. • Significance of wildlife reserves, protected areas, and ecosystem restoration in conservation. **Endangered species and conservation efforts** • Categories of species: endangered, vulnerable, or extinct. • Examples of endangered species locally and globally. • Conservation programmes, sanctuaries, and zoos in protecting species. • Collaborative approaches among governments, scientists, and communities for biodiversity protection.	**Environmental communication** • Share the importance of forests, wildlife, and biodiversity through storytelling, presentations, posters, and group discussions. • Express observations and ideas about environmental issues in the community. • Participate in school projects, debates, or art activities that highlight ecosystem protection. **Observation and analysis** • Identify and describe local plants, animals, and habitats using field guides, drawings, or photography. • Examine cause-and-effect relationships, such as deforestation leading to habitat loss. • Interpret charts, graphs, and images to explore biodiversity loss and land degradation. **Systems thinking and practical environmental action** • Recognise connections between ecosystems and their components. • Observe the impact of human activities, including farming, logging, and pollution. • Take action to reduce environmental harm, such as tree planting, recycling, or reducing plastic waste. • Participate in hands-on environmental activities, including school or community clean-ups, tree planting, and school garden maintenance. • Engage in citizen science projects, such as biodiversity monitoring or water quality assessment. • Adopt simple conservation practices at school and home, including water conservation and material reuse. **Risk and impact awareness** • Recognition of environmental risks, such as littering, pollution, or deforestation. • Participate in awareness initiatives focused on endangered species and protected areas. **Collaboration and problem solving** • Work with peers to design creative solutions for local environmental challenges. • Contribution to group discussions and decisions on protecting school or community environments. • Brainstorming practical approaches to support sustainable practices.	**Appreciation for biodiversity** • Recognition of the variety of plants, animals, and ecosystems, and curiosity about their roles. • Awareness that biodiversity provides essential services such as clean air, water, and food. • Valuing the protection of natural habitats to sustain wildlife and maintain ecosystem balance. • Recognition of the importance of every species, including those that may seem small or inconspicuous. • Participation in events like Earth Day or World Wildlife Day to celebrate and raise awareness of biodiversity. **Respect for the rights of other species** • Recognition that animals, plants, and ecosystems have intrinsic value beyond human use. • Acknowledgment that all species have the right to exist and thrive in their natural habitats. • Support for the protection of endangered and vulnerable species. • Demonstration of empathy and care for living creatures, avoiding harm. • Engagement in discussions about how human actions affect other species and ways to reduce harm. **Recognition of interdependence** • Awareness that all living things are connected and rely on each other for survival. • Observation that changes in one species or habitat can affect the wider ecosystem. • Appreciation of the balance of nature and the roles of pollinators, decomposers, and other species in ecosystem health. • Sense of responsibility to maintain the delicate balance of natural systems.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education (ctd)	**Environmental impact analysis** • Examination of human activities affecting ecosystems, including deforestation, pollution, and biodiversity loss. • Consideration of land-use changes from agriculture, mining, or urban development. • Use of maps, datasets, and basic GIS tools to explore ecological changes and at-risk areas. **Policy awareness and advocacy** • International agreements, such as the Convention on Biological Diversity, in supporting conservation. • National and local policies addressing deforestation, invasive species, and pollution..	**Engagement with nature** • Participation in nature-based activities, including forest walks, field trips, or visits to botanical gardens. • Documentation of seasonal changes, wildlife sightings, and environmental observations in a nature journal. • Observation of ecological roles, such as pollinators, decomposers, and plant life, in maintaining healthy ecosystems. **Problem solving and solution exploration** • Identification of potential solutions to reduce ecosystem degradation and support biodiversity. • Evaluation of existing policies and exploration of innovative approaches for sustainable land management. • Participation in restoration projects, including reforestation, wetland conservation, and community clean-ups. • Participation in discussions and simulations exploring environmental governance perspectives. **Research and inquiry** • Formulation of questions about ecosystem health and biodiversity. • Collection and examination of environmental data using age-appropriate methods. • Contribution to citizen science or school-based environmental projects.	**Environmental stewardship** • Participation in conservation initiatives, including tree planting, habitat restoration, and invasive species management. • Observation and reporting on local ecosystems and contribution of data to community databases. • Adoption of eco-friendly practices in everyday life, including reducing plastic use, choosing sustainable products, and conserving water. • Collaboration with community organisations, researchers, and local leaders to support ecosystem protection and biodiversity.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Earth sciences and ecosystem dynamics** • Structure and function of terrestrial ecosystems, including forests, grasslands, wetlands, and deserts. • Key earth science cycles – carbon, water, and nutrient cycles – and their role in ecosystem health. • Processes of soil formation, erosion, and desertification affecting land productivity. • Role of vegetation in preventing soil erosion, maintaining water quality, and supporting biodiversity. **Impact of land-use change activities** • Effects of deforestation, urbanisation, and agricultural expansion on terrestrial ecosystems. • Case studies illustrating impacts on biodiversity, soil quality, and water resources. • Sustainable land management approaches, including agroforestry, regenerative agriculture, and reforestation. • Concept of land degradation neutrality and ecosystem restoration strategies. **Ecosystem services and their importance** • Provisioning (food, water), regulating (air quality, climate), supporting (soil formation, nutrient cycling), and cultural services (recreation, spiritual value). • Economic, social, and environmental benefits of maintaining healthy ecosystems. • Influence of human dependence on ecosystem services in development decisions and policies. **Environmental justice and land management** • Effects of land-use decisions on marginalised and indigenous communities. • Role of traditional knowledge in biodiversity conservation and sustainable land management. • Impacts of resource extraction, industrial agriculture, and infrastructure projects on communities and ecosystems. • Importance of equitable access to natural resources and inclusive decision-making processes.	**Environmental impact analysis** • Assessment of human activities on local and global ecosystems, including deforestation, pollution, and biodiversity loss. • Evaluation of consequences of land-use changes, such as agricultural expansion, mining, and urban development. • Use of GIS, maps, and environmental datasets to identify ecological changes and at-risk areas. **Problem solving and solution exploration** • Formulation of evidence-based solutions to reduce ecosystem degradation and enhance biodiversity protection. • Analysis of existing policies and identification of innovative approaches for sustainable land management. • Participation in restoration projects, including reforestation, wetland conservation, and community-led clean-up initiatives. **Systems thinking and multiscale analysis** • Exploration of how environmental changes in one region affect ecosystems globally. • Analysis of environmental issues across temporal scales, considering both short-term impacts (e.g., deforestation) and long-term consequences (e.g., soil degradation, species extinction). • Assessment of interactions between environmental, economic, and social factors contributing to biodiversity loss. • Formulation of strategies for conservation, such as protected areas, wildlife corridors, and community-based programmes. **Research and scientific inquiry** • Development of research questions and hypotheses related to ecosystem health and biodiversity. • Collection and analysis of environmental data using scientific methods. • Contribution to citizen science initiatives or school-based environmental research projects.	**Awareness and support for sustainable solutions** • Value sustainable practices in agriculture, forestry, and urban development. • Demonstrate responsibility towards nature and reducing ecological footprints. • Support policies and initiatives that promote sustainable land use. **Recognition of human–environment relationships** • Appreciate biodiversity for ecosystem services, including clean water, air, and fertile soil. • Respect all living organisms and their habitats. • Understand the long-term consequences of human actions on ecosystems and the importance of preserving natural resources. **Informed advocacy for biodiversity protection** • Engage in conservation activities and promote awareness of biodiversity loss. • Show empathy for endangered species and commitment to their protection. • Develop confidence to advocate for informed environmental decisions.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education (ctd)	**Forms of pollution and their impact on land** • Types of pollution affecting terrestrial ecosystems: plastic waste, agricultural runoff, industrial emissions, and soil contamination. • Movement of pollutants through ecosystems and impacts on soil, water, plants, and animals. • Contribution of waste management, recycling, and regulatory measures to pollution reduction. • Mitigation strategies, including bioremediation, sustainable agriculture, and policy enforcement. **Green skills and digital literacy for ecosystem sustainability** • Use of geospatial and climate data to support ecosystem and land-use planning. • Soil and water conservation techniques applied in sustainable agriculture. • Application of low-cost technologies for forest and wildlife monitoring. • Creation of marketable products from agro-waste and invasive species to support conservation and livelihoods. **Cross-disciplinary engagement** • Integration of biology, geography, chemistry, and economics in ecosystem management. • Contributions of traditional ecological knowledge and indigenous practices to sustainable land use and conservation.	**Policy and advocacy** • Evaluation of international agreements, such as the Convention on Biological Diversity, in supporting conservation. • Investigation of national and local policies addressing deforestation, invasive species, and pollution. • Engagement in debates and simulations to explore multiple perspectives on environmental governance. **Communication and environmental leadership** • Communication of sustainable practices through presentations, public speaking, and media campaigns. • Preparation of reports, blogs, or opinion pieces on biodiversity conservation and ecosystem restoration. • Organisation of awareness campaigns and collaborative school or community-based environmental initiatives. **Practical application and stewardship** • Participation in biodiversity conservation projects, including tree planting, habitat restoration, and invasive species removal. • Monitoring of local ecosystems and contribution to biodiversity databases. • Adoption of eco-friendly practices in daily life, such as reducing plastic use, supporting sustainable products, and conserving water. • Collaboration with organisations, researchers, and policymakers to gain practical experience in conservation.	**Contribution to achieving SDG 15** • Recognise personal and collective roles in supporting SDG 15. • Actively participate in local and global environmental protection initiatives. • Appreciate the impact of individual and community actions on ecosystems. • Demonstrate leadership and agency in promoting sustainable land management. • Develop a deep understanding of the interconnectedness of humans and the environment.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Pollution sources and mitigation** • Major sources of land and soil pollution, including industrial waste, agricultural chemicals, plastic waste and untreated sewage. • Impacts of pollution and soil degradation on ecosystems, biodiversity and human health. • Principles of pollution management, including bioremediation, soil restoration and wastewater treatment. • Standards and regulatory frameworks for monitoring pollutants and ensuring compliance. **Resilient landscapes and restoration ecology** • Concepts of resilient landscape management that balance ecological health with human needs. • Ecological principles underpinning restoration of degraded land, including reforestation, wetland rehabilitation and erosion control. • Importance of biodiversity and genetic diversity in strengthening ecosystem resilience. • Ecological engineering approaches to sustainable land management. **Conservation science and sustainable practices** • Integrated ecological–agricultural systems that conserve biodiversity while supporting food security. • Sustainable farming techniques such as agroforestry, crop rotation, organic practices and precision agriculture. • Functions of protected areas, wildlife corridors and community-led conservation initiatives. • Principles of sustainable forest management, including certification schemes and responsible timber harvesting. **Environmental protection policies and regulations** • National and international frameworks governing biodiversity and land use, such as the Convention on Biological Diversity and the UN Convention to Combat Desertification. • Local governance and policy instruments for land use planning, pollution control and biodiversity conservation. • Role of compliance systems, environmental impact assessments and sustainable certification standards. • Importance of environmental audits in maintaining ethical and legal standards.	**Sustainable land management** • Design and execute sustainable land management strategies across agriculture, forestry, and urban landscapes. • Conduct soil conservation, water management, and afforestation interventions. • Apply resource management methods, including agroforestry, permaculture, and regenerative farming. • Assess sites for land degradation and plan appropriate restoration measures. **Environmental regulation and compliance** • Operate within local, national, and international environmental laws, including land-use planning, conservation, and sustainable land management frameworks. • Support implementation of environmental management systems (EMS) in organisations. • Assist industries in meeting standards and certifications, such as FSC and RSPO. • Conduct environmental impact assessments (EIAs) and audits to monitor and mitigate ecological risks. **Integration of sustainability into business practices** • Promote corporate adoption of biodiversity-friendly and sustainable land-use practices. • Facilitate corporate social responsibility (CSR) initiatives focused on environmental protection. • Train staff in green practices, including waste reduction, energy efficiency, and resource conservation. • Advise companies on circular economy principles to reduce waste and maximise resource use. **Environmentally-friendly technologies and techniques** • Operate renewable energy systems, including wind, solar, and biomass installations. • Apply precision, vertical, and drip-farming techniques to minimise water use and prevent soil degradation. • Use soil restoration technologies such as biochar, composting, and remediation methods. • Integrate nature-based solutions, including wetland restoration and green infrastructure, to mitigate ecosystem damage.	**Commitment to occupational environmental responsibility** • Demonstrate accountability for mitigating environmental impacts in industry or trade. • Adopt a proactive approach to addressing occupational environmental challenges. • Uphold legal and ethical environmental standards within professional practice. **Respect for land and natural resources** • Integrate sustainable practices into work routines with respect for ecosystems. • Recognise the importance of preserving land and resources for long-term sustainability. • Minimise environmental footprints in industrial and occupational activities. **Integration of environmental design and thinking** • Apply creative and innovative approaches to sustainable solutions. • Embed environmental considerations throughout work processes. • Promote efficiency in resource use, waste reduction, and energy conservation. **Solutions-focused mindset** • Approach environmental challenges with critical thinking and innovative solutions. • Strive for continuous improvement in sustainable practices. • Take initiative to enhance environmental wellbeing in the workplace and community. **Support for low-carbon and climate-resilient practices** • Champion the adoption of low-carbon energy solutions. • Recognise the importance of reducing carbon emissions for a sustainable future. • Make sustainability a core principle in professional and personal activities. **Collaboration and leadership in sustainability** • Work with communities, governments, NGOs, and industry partners to implement sustainable solutions. • Lead initiatives such as reforestation, soil conservation, and habitat restoration. • Mentor and train others in environmental stewardship and sustainable practices.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET (ctd)	**Technical knowledge for sustainable solutions** • Renewable energy systems and their relevance for land use and conservation. • Low-impact building design, green materials and waste management principles. • Applications of solar, wind and bioenergy in reducing dependence on fossil fuels. • Technical innovations in machinery and tools that support sustainable agriculture and eco-friendly construction. **Sustainable energy and low-carbon development** • Links between land degradation, deforestation and greenhouse gas emissions. • Concepts of low-carbon technologies and regenerative agriculture for mitigation. • Strategies for renewable energy adoption and community-level energy efficiency. • Land-based carbon sequestration opportunities, including afforestation and soil carbon enhancement.	**Innovation and adaptive management** • Analyse environmental data using GIS and remote sensing to monitor land-use changes and biodiversity loss. • Contribute to ecosystem restoration projects that involve inclusive community participation. • Respond to emerging environmental challenges, including droughts, floods, and invasive species, through adaptive management strategies. • Develop innovative approaches to combat deforestation, desertification, and land degradation.	**Responsible stewardship through monitoring and evaluation** • Appreciate the importance of honesty, transparency, and accuracy in environmental monitoring and reporting. • Develop respect for scientific and traditional knowledge in understanding land, soil, and biodiversity health. • Value accountability and ethical responsibility in using data to guide sustainable land management decisions. • Make commitment to continuous learning and improvement in conservation practices. • Cultivate care and empathy for ecosystems, recognising that evaluation helps protect life on land for future generations.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Pollution sources and impacts** • Types and sources of terrestrial pollution, including industrial emissions, agricultural runoff, plastics, and air pollutants. • Ecological and human health consequences of pollution, land degradation, and deforestation. • Principles of pollution control, waste management, bioremediation, and regenerative agricultural practices. • International, national, and local regulatory frameworks for pollution prevention and ecosystem protection. **Resilient landscapes and ecosystem services** • Ecological functions and services of forests, wetlands, grasslands, and other terrestrial ecosystems. • Causes and consequences of land degradation, desertification, and biodiversity loss. • Concepts of integrated landscape management and ecological–agricultural systems. • Role of indigenous and local knowledge in maintaining ecosystem resilience and productivity. **Sustainable energy and low-carbon development** • Concepts of renewable and low-carbon energy systems, including solar, wind, hydropower, biomass, and geothermal energy. • Links between energy systems, land use, and ecosystem health. • Principles of carbon sequestration, soil carbon management, and nature-based climate solutions. • Environmental, social, and economic considerations in transitioning to low-carbon systems. **Sustainable livelihoods and resource management** • Connections between sustainable agriculture, forestry, ecotourism, and ecosystem conservation. • Land tenure systems, governance frameworks, and market mechanisms supporting equitable and sustainable resource use. • Strategies for community-led conservation and ecosystem restoration.	**Advanced research and innovation** • Conduct interdisciplinary research on land degradation, biodiversity loss, and ecosystem restoration. • Apply scientific methodologies, including remote sensing, GIS, and ecological modelling, to monitor terrestrial ecosystems. • Design and implement nature-based solutions, such as agroforestry, habitat restoration, and rewilding initiatives. • Translate research findings into actionable policies and community interventions. **Integration of indigenous knowledge** • Engage with indigenous and local communities to document and apply traditional ecological knowledge (TEK). • Combine indigenous practices with modern scientific approaches to enhance climate resilience, sustainable agriculture, and food security. • Advocate for the recognition and inclusion of indigenous knowledge in policies and land management practices. **Documentation and preservation** • Record and archive traditional knowledge related to biodiversity, conservation, and land stewardship. • Ensure ethical recognition and benefit-sharing with knowledge holders. • Support the revitalisation of indigenous languages and cultural practices connected to ecosystem management. **Human and environmental health** • Investigate links between soil and plant microbiomes, agricultural productivity, and human wellbeing. • Develop integrated interventions that support nutrition, biodiversity, and ecological health. • Collaborate with public health experts, agronomists, and nutritionists on sustainable and biodiversity-friendly food systems.	**Co-operation and knowledge transfer** • Recognise the importance of international and interdisciplinary collaboration to address environmental challenges. • Commit to shared responsibility for preserving ecosystems and biodiversity. • Be open to adapting global best practices and sustainable technologies to local contexts. • Contribute actively to the dissemination and adoption of sustainable solutions. **Commitment to ecosystem protection and sustainable use** • Take responsibility for preventing ecosystem degradation and promoting restoration. • Support sustainable land-use practices that protect natural habitats and biodiversity. • Value ecosystems for their intrinsic worth and recognise their role in a resilient climate future. • Consider ethical, social, and intergenerational impacts when making environmental choices. **Equity and fair resource use** • Advocate for justice and fairness in managing natural resources. • Develop sensitivity to the socio-economic effects of environmental degradation. • Promote policies ensuring that all communities benefit equitably from conservation and sustainability efforts. **Leadership and cultural change** • Engage in decision-making processes to advance environmental priorities. • Inspire cultural shifts toward sustainability through leadership and advocacy. • Motivate others to act on environmental justice and adopt sustainable practices.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education (ctd)	**Human–environment interactions and environmental justice** • Socio-economic, cultural, and political drivers of environmental change. • Relationships between consumption patterns, extractive activities, and ecosystem degradation. • Concepts of environmental justice, equity, and intergenerational responsibility. • Global frameworks and agreements, including UNCCD and CBD, guiding land management and biodiversity conservation. **Policy and governance for sustainability** • Principles of environmental governance, institutional roles, and regulatory mechanisms. • National and international policy frameworks for sustainable land management and biodiversity protection. • Approaches to integrating ecological, economic, and social considerations in policy development. **Digital and technological application** • GIS, remote sensing, and other digital tools to map biodiversity hotspots and monitor land use. • Applied technology to support community-based conservation and ecosystem management initiatives.	**Biodiversity-based production systems** • Implement ecological farming practices that conserve soil fertility, protect pollinators, and prevent land degradation. • Develop landscape-level management strategies integrating forests, wetlands, grasslands, and agricultural systems. • Evaluate the social, economic, and environmental impacts of biodiversity-based production approaches. **Promotion of sustainable diets and nutrition** • Support cultivation and consumption of native, resilient crops that enhance food security and biodiversity. • Develop guidelines for sustainable diets that reduce environmental footprints. • Collaborate with communities, policymakers, and NGOs to scale up biodiversity-friendly food systems. **Policy, advocacy, and governance** • Provide evidence-based recommendations for ecosystem restoration, biodiversity conservation, and sustainable land management. • Support implementation of multilateral environmental agreements such as CBD and UNCCD. • Advocate for community-led approaches and protection of indigenous land rights. • Contribute scientific and policy expertise to national and international climate and land management initiatives.	**Multidisciplinary collaboration** • Participate in cross-sector partnerships with governments, NGOs, private sector actors, and local communities. • Lead or join collaborative projects integrating ecological, social, economic, and cultural perspectives. • Communicate research and policy findings effectively to diverse audiences. • Mentor emerging researchers and practitioners in sustainable land management.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Environmental economics and market opportunities** • Healthy ecosystems support local and global economies through resources, tourism, and ecosystem services. • Market-based solutions, such as eco-labelling, and government incentives promote sustainable agriculture, forest conservation, and renewable energy. • Sustainable practices, including carbon credits, payments for ecosystem services, and resilient land management, provide long-term economic benefits. **Importance of healthy ecosystems** • Forests, wetlands, grasslands, and other ecosystems sustain biodiversity and human wellbeing. • Ecosystems provide essential services: clean air and water, fertile soil, climate regulation, and cultural value. • Deforestation, desertification, and biodiversity loss result from unsustainable practices. • Sustainable land and ecosystem management enhances resilience to climate change and natural disasters. **Poaching and wildlife trafficking** • Poaching and illegal wildlife trade harm biodiversity, ecosystems, and communities. • Legal frameworks and international agreements, such as CITES, guide species protection. • Enforcement agencies, conservation organisations, and local communities prevent wildlife crime. • Poverty, limited livelihoods, and market demand drive poaching and trafficking. • Community-based conservation and alternative livelihoods reduce illegal activities. **Land tenure and traditional rights** • Land tenure systems shape sustainable land management and resource access. • Securing land rights for indigenous peoples, local communities, and small-scale farmers promotes equity. • Customary and traditional practices support ecosystem conservation. • Participatory governance and legal frameworks protect community and indigenous land rights.	**Sustainable livelihoods and practices** • Engage in sustainable livelihood activities, such as agroecology, organic farming, forest management, and ecotourism. • Implement regenerative agricultural practices, including crop diversification, agroforestry, and conservation agriculture, to restore soil fertility and reduce land degradation. • Generate income through sustainable use of natural resources, such as handicrafts from non-timber forest products or beekeeping. • Promote local entrepreneurship by producing and marketing eco-friendly products. **Climate mitigation and adaptation** • Adopt climate-smart agricultural practices, including mixed cropping, crop rotation, and integrated pest management, to enhance resilience. • Restore degraded lands through reforestation, afforestation, and soil conservation techniques. • Manage water resources efficiently with rainwater harvesting, irrigation management, and watershed restoration. • Monitor local biodiversity and contribute to citizen science initiatives tracking species and ecosystem health. • Integrate traditional and indigenous knowledge to adapt to climate variability and protect ecosystems. **Indigenous rights and environmental justice** • Support indigenous and traditional knowledge in ecosystem management. • Advocate for the protection of indigenous land rights and customary land management practices. • Collaborate with governments and organisations to ensure policies reflect the rights and perspectives of indigenous and marginalised communities. • Promote inclusion of indigenous voices in land-use, conservation, and natural resource decision-making.	**Openness to solutions** • Embrace diverse and creative approaches to environmental challenges. • Use local knowledge and practical resources to address sustainability issues. • Maintain a proactive mindset for problem solving and action. **Respect for nature and biodiversity** • Value the natural world and its living creatures. • Recognise the importance of biodiversity for human and ecological wellbeing. • Exercise stewardship that goes beyond utilitarian use. **Commitment to sustainable livelihoods** • Prioritise livelihoods that protect the environment for future generations. • Balance economic needs with ecological responsibility. • Support community prosperity through sustainable practices. **Equity in resource sharing** • Advocate fairness in the distribution of natural resources. • Ensure vulnerable populations benefit from sustainable practices. • Uphold social and environmental justice. **Catalysing community change** • Promote collective action for meaningful environmental outcomes. • Take ownership and responsibility within the community. • Lead initiatives that inspire others toward sustainability.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education (ctd)	**Community-led conservation and sustainable practices** • Community-based conservation empowers local populations to manage natural resources sustainably. • Practices such as agroforestry, sustainable agriculture, and water conservation restore degraded land. • Traditional ecological knowledge (TEK) complements scientific approaches in land management. • Nature-based solutions restore ecosystems while creating economic opportunities. **Market-based solutions for sustainability** • Environmental economics strategies, including eco-labelling, sustainable certification schemes, and carbon credit programmes. • Co-operative business models that add value to sustainably harvested forest products, such as medicinal plants, honey, or crafts. • Sustainable agricultural products in local and regional markets. • Ecotourism ventures that advance environmental conservation and community livelihoods.	**Community education and awareness** • Facilitate knowledge sharing within communities on terrestrial ecosystems and biodiversity. • Organise workshops, dialogues, and campaigns to promote sustainable practices and SDG 15 goals. • Encourage participation in community-led initiatives, such as reforestation, clean-up drives, and habitat restoration. • Develop educational materials using storytelling, songs, and performances to spread environmental messages. • Support school and community gardens to demonstrate sustainable food production and ecosystem restoration. **Protection of endangered species and ecosystems** • Report illegal activities, such as poaching, illegal logging, and trafficking of endangered species. • Participate in community-based conservation initiatives, including wildlife protection and establishment of community forests or conservancies. • Protect native plant and animal species through habitat restoration and invasive species management. • Contribute to monitoring programmes tracking endangered species and conservation outcomes. • Advocate for stronger policies and enforcement mechanisms to protect biodiversity. **Leadership and participation in decision-making** • Develop participatory decision-making and conflict resolution skills in sustainable land management initiatives. • Form and participate in local co-operatives, community forestry groups, or land care groups promoting sustainable resource management. • Collaborate with policymakers, NGOs, and researchers to influence land-use and biodiversity conservation policies. • Represent community perspectives in local, regional, and national forums addressing sustainable land management.	**Leadership in SDG 15 initiatives** • Champion environmental sustainability at the local level. • Adapt to emerging environmental challenges with resilience. • Empower others to participate in and sustain positive change. **Appreciation for the intrinsic value of nature and biodiversity** • Develop a profound respect for the natural world and its living creatures. • Show an understanding of the importance of biodiversity for human and ecological health. • Develop a sense of stewardship for nature that goes beyond utilitarian use. **Commitment to sustainable livelihood generation** • Commit to creating livelihoods that protect the environment for future generations. • Be able to balance economic needs with ecological responsibility. • Believe in the potential for communities to thrive through sustainable practices. **Fair and equitable sharing of resources** • Show a deep commitment to equity and fairness in the distribution of natural resources. • Believe in the importance of ensuring that vulnerable populations are not excluded from the benefits of sustainable practices. • Focus on social and environmental justice. **Enable widespread change** • Believe in the power of collective action to create meaningful environmental change. • Commit to developing a sense of ownership and responsibility in the community. • Show leadership in promoting sustainability and inspiring others to act.

18. Goal 16 – Peace, Justice and Strong Institutions

'All human beings are born free and equal in dignity and rights … Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status.'

– Universal Declaration of Human Rights (UN 1948)

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Education for peace and justice

Sustainable Development Goal 16 (SDG16) calls for the promotion of peaceful, just and inclusive societies through accountable institutions, access to justice, and the protection of human rights. Achieving this goal requires strong governance structures, participatory decision-making, and legal frameworks that guarantee human rights and ensure access to justice for all (UN n.d.) Yet in a world marked by rising conflict, displacement, and systemic inequality, these aspirations remain elusive for many. One billion people live in fragile and conflict-affected settings (World Bank 2023), and children under 18 account for 15 per cent of global homicide victims (UNODC 2023). In regions such as southern Africa, high homicide rates reflect deep-rooted social and economic disparities. South Africa has experienced a steady increase in violence over the past decade, while Uganda and Tanzania have made progress in reducing homicide rates (UNODC 2023). These variations affirm the role of governance and education in shaping security and social stability.

Educational inequality remains one of the most significant barriers to achieving SDG16, as it deepens social divides and increases the risk of instability and violence. Poor access to quality education perpetuates cycles of poverty and exclusion, undermining civic trust and increasing vulnerability to exploitation. In this context, education emerges not only as a human right but as a transformative force – one that equips individuals and institutions to resist violence, uphold justice, and build resilient societies.

Education is foundational to achieving SDG16. It cultivates civic responsibility, legal awareness, and democratic participation. It empowers learners to challenge injustice, advocate for human rights, and contribute to transparent governance. From early childhood to adult learning, education can shape the values, skills and behaviours that strengthen peaceful and inclusive communities.

Education, governance and the rule of law

The rule of law is essential for safeguarding human rights and ensuring that individuals, institutions and governments are subject to fair and impartial legal systems (Bergenas 2016; UN Security Council 2004). Where the rule of law is weak, corruption, inequality and impunity flourish – undermining development and social cohesion.

Education strengthens the rule of law by promoting legal literacy and civic engagement. Integrating human rights, constitutional law and democratic governance into curricula enables learners to understand their rights and responsibilities, and to navigate legal systems effectively. The World Bank (2007) has shown that access to education

correlates with lower rates of juvenile crime, poverty and unemployment – highlighting its role in reducing vulnerability and enhancing social stability.

Beyond shaping citizens, education also builds institutional capacity. Training programmes for police, judges and public officials in human rights, gender sensitivity and conflict resolution encourage transparency and accountability. Public awareness campaigns and legal education initiatives empower communities to hold governments accountable and participate meaningfully in democratic processes.

Emerging technologies such as blockchain and AI offer new tools for transparency in education governance – tracking resources, verifying credentials and combating corruption. However, their use must be guided by ethical principles to protect privacy, prevent bias and uphold the rights-based focus of SDG16. Digital partnerships must prioritise inclusive access and ethical design, especially for marginalised populations.

Bridging inequality through inclusive and equitable education

Addressing educational inequality requires sustained investment in inclusive and equitable learning systems. Universal access to quality education must be ensured, with curricula that incorporate peace education, legal literacy and human rights awareness. Beyond formal schooling, non-formal and informal learning initiatives must be expanded to reach marginalised communities and encourage civic engagement. Schools should work in partnership with communities to extend learning beyond the classroom, promoting broader societal change.

Education systems must also strengthen civic trust and participation. Evidence-based initiatives such as Kenya's School-Based Civic Clubs and South Africa's Active Citizenship Education Programme encourage youth engagement in democratic processes. These programmes link schools with local government structures, enabling students to voice concerns through school parliaments and local councils.

Innovative co-financing models have emerged to support civic education. In India, the Ministry of Education partnered with civil society through co-funded campaigns to promote electoral awareness, resulting in increased youth voter registration. In Ghana, digital platforms such as SchoolGov – supported by the World Bank and private partners – enable students to track school budgets and demand transparency, aligning with broader anti-corruption strategies.

Financing education and partnerships for justice and peace

Meeting the financing needs of SDG16 and SDG17 requires revisiting and updating the Addis Ababa Action Agenda (AAAA), which recognised education as a critical area for domestic resource mobilisation, private sector engagement and international co-operation. The Sevilla Commitment (2025) charts a path forward to catalyse investment at scale for sustainable development, particularly in areas like education, climate action, and social protection. Yet education – especially for peacebuilding, legal literacy and civic empowerment – remains underfunded in fragile and conflict-affected settings.

Recent financing models include pooled funds (e.g. Education Cannot Wait), results-based financing tied to governance outcomes, and local-level co-investment by municipalities and communities. These approaches demonstrate the importance of aligning education financing with peace and governance outcomes, especially when co-financed by local actors.

Remittances have historically supported household-level education financing, but new models focus on financial inclusion and diaspora-led investments in education infrastructure. Platforms such as Kenya's M-Changa enable diaspora communities to co-finance education initiatives through secure digital remittances, blending personal contributions with government support.

Achieving SDG16 also requires breaking down disciplinary silos and promoting systems thinking. Interdisciplinary education – blending law, ethics, technology, history and environmental science – prepares learners to engage with multifaceted challenges. In tertiary institutions, this shift is evident in the rise of peace and conflict studies, human rights law and social justice courses that integrate digital literacy and ethical reasoning.

Collaborative platforms such as the Global Citizenship Education Network (GCEN) and UNESCO's SDG4–Education 2030 Steering Committee exemplify multistakeholder approaches to building capacity across sectors and levels – from

local schools to regional policy-making bodies. These partnerships enhance policy coherence, resource sharing and innovation.

TVET institutions and community learning centres are also forging partnerships with local governments and NGOs to deliver interdisciplinary, peace-focused education tailored to adults and out-of-school youth. These initiatives are particularly impactful in post-conflict settings where reintegration and reconciliation are priorities.

Addressing violence, inequality and exclusion through education

Violence – whether direct, structural or systemic – remains a pervasive threat to peace and inclusion. Gender-based violence, child exploitation, and human trafficking persist across regions, often exacerbated by poverty, discrimination and weak institutional responses. Paulo Sérgio Pinheiro's World Report on Violence against Children (2007) emphasises that violence transcends cultural and socio-economic boundaries, affecting children in every country.

Educational settings are uniquely positioned to prevent and respond to violence. Children spend more time in schools than in any other environment outside the home, making these spaces critical for their development, protection and psychosocial wellbeing. However, schools can also become sites of harm when students are exposed to bullying, corporal punishment, discrimination, or sexual and gender-based violence – whether from peers, educators or other adults. School-based violence prevention must also address broader forms of violence experienced outside the classroom, including domestic abuse, sexual exploitation and community-based conflict. These require coordinated, evidence-informed interventions that extend beyond the school gates.

Studies show that school-based violence is often most severe where institutional responses are inadequate. Rigby (2003) found a direct link between bullying and poor school responses, with vulnerable groups – such as children with disabilities, refugees, ethnic minorities and HIV-positive learners – disproportionately affected. Structural inequalities and systemic neglect further heighten exposure to violence and exclusion (Pinheiro 2007).

Curricula and teaching practices can unintentionally reinforce harmful stereotypes related to gender, ethnicity or socio-economic status. Teacher biases may perpetuate exclusion or condone discriminatory behaviour. To counter this, education systems must adopt inclusive pedagogies and policies that explicitly challenge stigma and promote respect, safety and equity.

Violence beyond the classroom – including domestic abuse, sexual exploitation and community-based conflict – also affects learners' ability to thrive. Education systems must therefore address both in-school and external forms of violence through coordinated, evidence-informed interventions.

Multicomponent and targeted interventions

Effective violence prevention requires a combination of universal and targeted strategies. Multicomponent interventions – which integrate student education, teacher training, and family engagement – are consistently associated with greater reductions in school-based violence (UNESCO 2016). These approaches encourage shared responsibility and build a culture of respect and accountability across the school community.

Targeted interventions are essential for learners at higher risk of exclusion or harm. These may include mentorship, counselling, trauma-informed care, and focused group sessions that address the root causes of aggression and support emotional regulation. When implemented with fidelity and contextual sensitivity, these programmes help at-risk youth re-engage positively in school life.

Participatory approaches are particularly effective in promoting behavioural change and empathy. Methods such as storytelling, role play, simulation, and arts-based activities – including puppet theatre, filmmaking and visual arts – enable learners to explore complex issues in safe, experiential settings. These approaches deepen understanding, develop emotional intelligence, and provide opportunities to practise non-violent conflict resolution.

Cyberbullying and digital safety

Cyberbullying presents a growing challenge, especially among adolescents. Defined as repeated, aggressive behaviour conducted via electronic devices – such as texting, social

media or image sharing – cyberbullying often benefits from anonymity and constant access to victims, intensifying its psychological impact (Ray *et al*., 2024). Victims frequently suffer from anxiety, depression, social withdrawal and academic disengagement. The emotional toll and stigma associated with cyberbullying can lead to school avoidance and increased dropout rates (Greenwood, n.d.).

Digital literacy, mental health support and safe online behaviour must be embedded in curricula to address this hidden but harmful form of violence.

Education for peacebuilding and social inclusion

In conflict-affected or post-conflict regions, education plays a vital role in promoting dialogue, reconciliation and trauma-informed care. Interdisciplinary and ethical education – drawing on history, psychology, media literacy and philosophy – can equip learners to resist extremist narratives and cultivate empathy. The inclusion of indigenous knowledge systems, such as the southern African philosophy of *Ubuntu*, enriches ethical learning by emphasising mutual respect, interconnectedness and human dignity.

Beyond schools, education systems can strengthen civic trust and participation. For example, civic education and voter awareness campaigns in Pakistan ahead of the 2008 general elections contributed to a significant increase in women's electoral participation.

Education as a driver of peace, justice and partnerships

Achieving SDG16 requires more than legal reform or institutional strengthening – it demands a cultural shift toward justice, empathy and civic responsibility. Education is central to this transformation. It empowers individuals to understand their rights, challenge injustice, and build inclusive societies. It equips institutions to act with integrity and transparency. And it cultivates the values and behaviours that support peace, resilience and democratic renewal.

To realise the full potential of education in advancing SDG16 and SDG17, governments and stakeholders must invest in inclusive curricula, teacher training, non-formal learning, and whole-school approaches that prioritise safety, equity and participation. Financing models must align education with peace and governance outcomes, supported by ethical innovation and cross-sector partnerships. Education must be recognised not only as a sectoral priority but as a strategic pathway to peace, justice and sustainable development.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Understanding peace and justice** • Begin to explore concepts of fairness, kindness, and inclusion through storytelling and group activities. • Learn about rules and why they are important in school, at home and in the community. **Diversity and identity** • Discover similarities and differences among people (for example, languages, traditions, appearances). • Encounter religions and worldviews through stories, songs, books, festivals and objects. • Learn about different family structures and cultural practices in a respectful, age-appropriate way. **Respect for rights and responsibilities** • Introduce the idea that all people, including children, have rights (for example, to play, learn, be safe). • Understand the importance of caring for shared spaces and materials in the classroom.	**Communication and listening** • Practise active listening and respectful conversation during storytelling and group discussions. • Learn to express feelings, needs and ideas through words, drawing, music and role play. **Empathy and conflict resolution** • Engage in role-play scenarios to explore and solve simple conflicts (for example, sharing toys). • Use picture books or puppets to reflect on how others might feel in certain situations. **Exploration and inquiry** • Use all senses to explore various places, objects and forms of cultural expression (for example, visiting places of worship, handling traditional objects). • Ask questions and reflect on experiences to develop understanding of fairness, emotions and difference.	**Respect and inclusion** • Develop appreciation of diverse cultures, beliefs and backgrounds through positive exposure. • Value and celebrate diversity in the classroom community. **Empathy and compassion** • Cultivate kindness by helping peers, sharing and including others in play. • Respond with care and concern when others are hurt, excluded or sad. **Belonging and responsibility** • Develop a sense of responsibility for the classroom and community (for example, tidying up, caring for classroom plants or pets). • Children begin to see themselves as part of a wider group where their actions can help or hurt others. **Curiosity and wonder** • Use imagination and curiosity to explore and appreciate the world and the people in it. • Develop a sense of awe and respect for others' traditions, beliefs and expressions.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**Understanding self and others** • Recognise personal identity and family background, and how these relate to community and society. • Identify similarities and differences among people of various backgrounds, including race, ethnicity, gender and religion. • Become familiar with religious and non-religious worldviews through stories, places of worship, rituals and cultural events. **Rights, rules and responsibilities** • Know basic children's rights including those outlined in the UN Convention on the Rights of the Child. • Appreciate the importance of rules at home, school, and in wider society for fairness and co-operation. • Recognise how laws and community structures help maintain peace, justice and safety. **Diversity, culture and global citizenship** • Identify global diversity through books, celebrations, visits and guest speakers. • Recognise the significance of peace, co-operation and fairness across societies. • Become aware of historical and contemporary figures who have promoted justice, human rights or peaceful change. **Understanding conflict and resolution** • Identify causes of conflict and examples of peaceful resolution (for example, classroom disagreements, global peacemakers). • Know basic vocabulary related to justice, fairness and conflict such as compromise, empathy, peace and tolerance.	**Communication and dialogue** • Develop listening and respectful communication skills in discussions and group work. • Ask thoughtful questions about beliefs, experiences and social issues. • Role play peaceful resolution of conflicts and negotiating disagreements respectfully. **Creative expression and inquiry** • Use expressive arts (drama, music, visual arts) to express personal values and experiences of peace, justice and co-operation. • Reflect creatively on stories or issues involving fairness and moral choices (for example, injustice in a storybook character's experience). **Critical thinking and citizenship** • Participate in age-appropriate discussions and debates on fairness, inclusion and helping others. • Explore real-world issues like bullying, inclusion, and co-operation through guided inquiry and group activities. • Begin small-scale civic engagement (for example, classroom voting, participation in community improvement activities). **Collaborative learning and action** • Co-create class rules and charters promoting kindness and respect. • Join school projects that encourage peace, co-operation and inclusion such as anti-bullying campaigns or peer support initiatives.	**Respect and empathy** • Show kindness, care and respect toward others in the school and community. • Express empathy in relationships and understand the feelings and perspectives of others. • Appreciate diverse ways of life and develop openness toward other cultures, beliefs and experiences. **Justice and responsibility** • Recognise fairness and identify situations of injustice daily life. • Make choices that reflect honesty, responsibility and ethical behaviour. • Value everyone's voice and contribution, encouraging inclusive participation. **Co-operation and participation** • Participate actively in teamwork and co-operative tasks in school and community activities. • Believe that collective action can achieve positive outcomes for the group or community. **Global and local awareness** • Observe how actions in the local community affect people and environments elsewhere. • Recognise the connections between local and global issues, and the shared need for peace, justice and equality. • Support initiatives that promote fairness, inclusion and sustainable outcomes at both local and wider levels.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Human rights and legal systems** • Understand key international human rights frameworks such as the Universal Declaration of Human Rights and the Convention on the Rights of the Child. • Explore how national legal systems relate to international law. • Learn about democratic models, good governance, electoral systems, civic duties, and the role of institutions in upholding justice and the rule of law. **Diversity, religion and worldviews** • Explore similarities and differences among world religions and non-religious beliefs, and their role in shaping societies. • Understand how beliefs, practices, and sacred texts influence individual and collective behaviour. • Examine pluralism and the coexistence of multiple faiths and worldviews in diverse societies. **Peace, conflict and global citizenship** • Learn about the causes and consequences of conflict at local, national, and international levels. • Understand global interdependence and the importance of co-operation across countries and cultures. • Study the structures and roles of local, national, and global governance institutions in conflict resolution and peacebuilding. **Civic engagement and freedoms** • Understand the rights and responsibilities of citizens, including freedom of expression, access to information, and participation in governance. • Explore how civil society, social movements, political parties, and governments interact. • Examine the role of media, technology, and access to information in supporting justice and democratic participation.	**Dialogue and critical thinking** • Use respectful dialogue and people skills to resolve disagreements and promote understanding in diverse settings. • Critically interpret sources such as religious texts, legal frameworks and media reports. • Apply critical thinking to assess the reliability of information and recognise competing interests in societal issues. **Debate, problem-solving and participation** • Engage in structured debates, deliberations and group problem-solving on justice-related issues at local and global levels. • Analyse the causes of conflict and identify peaceful, rights-based solutions. • Develop political literacy through simulations of democratic processes such as voting, consultations and participatory governance. • Design and implement small-scale community initiatives or awareness campaigns that promote justice, inclusion or anti-discrimination. **Research and analytical skills** • Research and evaluate evidence on social justice, equity and peacebuilding themes. • Use analytical tools to understand complex issues involving multiple stakeholders and conflicting perspectives. • Assess the impact of laws, policies and public services on individuals and communities. **Leadership and civic responsibility** • Demonstrate active citizenship through community service, volunteering or civic action projects. • Participate in youth parliaments, Model United Nations, or school governance activities. • Explore pathways into careers and roles in law, peacebuilding, diplomacy and public service.	**Empathy, tolerance and mutual respect** • Value the dignity and worth of every individual, regardless of background, belief, ability or identity. • Develop empathy and open-mindedness when encountering diverse cultures, perspectives and life experiences. • Respect the right of others to hold different views and beliefs and engage constructively with diversity. **Justice, peace and responsibility** • Cultivate a strong sense of fairness, equity and justice in both personal and societal contexts. • Take personal responsibility for one's actions, including emotional awareness and validation of others' experiences. • Commit to peaceful solutions, rejecting violence, discrimination and exclusion in all forms. **Democratic participation and global awareness** • Believe in the power of civic and political participation to bring about positive change. • Value civic duties such as voting, advocacy and respect for the rule of law. • Show commitment to global solidarity by recognising shared responsibility for human rights and global challenges. **Sustainable and ethical thinking** • Advocate for solutions to social and global challenges that are inclusive, fair and environmentally sustainable. • Appreciate pluralism and diversity as foundations for peaceful and resilient societies. • Embrace co-operation and collective responsibility in building inclusive institutions and just communities.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Governance, justice and anti-corruption** • Principles of rule of law, human rights, good governance, and transparency. • International and national anti-corruption frameworks (e.g., UN Convention against Corruption, corporate compliance standards). • Roles of law enforcement, civil society, and institutions in promoting justice and integrity. • Zero-tolerance policies on bribery and corruption in key sectors such as procurement, extractives, and construction. **Security and law enforcement** • National and international frameworks to address transnational crime, terrorism, and cybercrime. • Security infrastructure and technologies: surveillance, biometrics, radar, and digital monitoring. • Civilian policing standards, accountability mechanisms, and military conduct under international humanitarian law. **Conflict, recovery and rehabilitation** • Dynamics and root causes of armed conflict, intergroup violence, and political unrest. • Disarmament, demobilisation and reintegration (DDR) programmes for ex-combatants, including child soldiers. • Vocational rehabilitation and skills pathways for reintegrating affected individuals into productive civilian life. **Responsible resource and supply chain management** • Governance challenges in extractives, land use, and natural resources, including conflict minerals and illegal trade. • Ethical sourcing frameworks, due diligence mechanisms, and corporate responsibility in global supply chains. • Digital tools for oversight: virtual audits, chain-of-custody tracking, and secure logistics to prevent resource-linked violence.	**Technical and security skills** • Apply operational and investigative skills to detect and prevent corruption, illicit finance, smuggling, and illegal fishing. • Operate security and surveillance systems such as radar, tracking platforms, and digital monitoring for coastal, border, and critical infrastructure protection. • Conduct cyber risk assessments and ensure cybersecurity of institutional and national digital systems. **Peacebuilding and conflict resolution** • Facilitate vocational pathways for conflict-affected populations, including displaced persons, ex-combatants, and at-risk youth. • Develop life and employability skills that support conflict-sensitive reintegration, trauma recovery, and social inclusion. • Use assertiveness and non-violent communication to mediate workplace and community conflicts. **Governance and supply chain oversight** • Perform audits on resource supply chains with capacity to identify, trace, and report on conflict minerals and environmental violations. • Implement transparency measures, compliance protocols, and third-party verification in procurement and logistics. • Promote corporate social responsibility (CSR) in the extractive, manufacturing, and construction sectors. **Civic and professional engagement** • Take part in campaigns and workplace initiatives that advance transparency, fairness, and community participation. • Train security, coast guard, and law enforcement professionals in ethical conduct, human rights protection, and anti-money laundering standards. • Use data and reporting tools to document violations and propose systemic improvements in governance and institutional accountability.	**Integrity and anti-corruption** • Commit to ethical conduct and make anti-corruption a core aspect of professional life. • Promote transparency, accountability, and openness in all operations and decision-making processes. • Reject bribery, collusion, and any form of abuse of power in public or private contexts. **Peace and social responsibility** • Advocate for peace, uphold justice, and work to reduce violence in the workplace and community. • Support rehabilitation of former combatants and marginalised individuals with empathy and a sense of shared responsibility. • Encourage open-mindedness and dialogue to resolve tensions rather than aggression or exclusion. **Global and community security** • Uphold security in local and international contexts, including coastal and marine conservation, combating trafficking, and protecting fundamental freedoms. • Respect the rule of law and democratic governance as essential pillars for peaceful and sustainable societies. • Value co-operation between nations, institutions, and communities in building peaceful futures. **Inclusivity and equity** • Embrace social inclusion, especially for vulnerable populations affected by conflict, poverty, or displacement. • Champion fair access to justice, education, and employment regardless of background, gender, or ethnicity. • Promote diversity and intercultural respect in professional environments and community life.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Human rights, legal systems, and governance** • International legal frameworks, including the Universal Declaration of Human Rights, the Convention on the Rights of the Child, and CEDAW. • Constitutional law, legal pluralism, environmental law, and governance structures at national and international levels. • Principles of climate justice, natural resource governance, and rural livelihoods law. • Social protection systems and legal mechanisms addressing gender-based violence, trafficking, and child exploitation. • Traditional and indigenous justice systems, including restorative and community-based dispute resolution approaches. **Conflict, justice, and democracy** • Theories and practices of conflict transformation, mediation, and transitional justice. • Models of democracy, public participation, and inclusive governance. • Institutional roles in safeguarding rights, promoting peace, and resolving disputes. • Mechanisms for public access to information, civic engagement, and the role of media and civil society. **Migration, mobility, and globalisation** • Impacts of globalisation on migration, labour flows, and displaced populations. • Links between environmental degradation, land use, and human displacement. • Governance approaches for protecting migrants' rights and promoting social cohesion in multicultural contexts. **Arts, sport, and civic participation** • The role of music, sports, and the arts in fostering peace, identity, and dialogue. • Educational approaches using expressive arts to support tolerance, teamwork, and respect. • Case studies where arts and cultural activities contributed to conflict resolution, reconciliation, and youth engagement.	**Legal, governance, and advocacy skills** • Conduct legal research, analyse case law, and draft policy or programme recommendations related to peace, justice, and human rights. • Apply legal reasoning to issues such as climate justice, land and water governance, and social protection. • Use governance and political analysis tools to evaluate policy effectiveness, citizen participation, and institutional accountability. • Engage with traditional and indigenous justice systems, integrating restorative and community-based dispute resolution approaches. **Conflict resolution and mediation** • Use negotiation, consensus-building, and non-violent communication in interpersonal, institutional, and cross-cultural contexts. • Facilitate dialogues, restorative circles, and peacebuilding workshops in community, academic, or professional settings. • Assess root causes of conflict and develop inclusive, rights-based solutions that incorporate local knowledge and cultural perspectives. **Gender justice and social protection** • Identify and respond to gender-based violence, discrimination, and structural inequalities. • Design and evaluate programmes that improve gender equity, social protection, and access to justice. • Support women, youth, and marginalised groups in leadership, advocacy, and participatory decision-making. **Migration, inclusion, and cultural literacy** • Develop and implement projects promoting social integration and protection of migrants and displaced populations. • Use arts, storytelling, and multimedia to document and communicate migrant experiences. • Support intercultural understanding, inclusive practices, and community cohesion.	**Justice and rule of Law** • Commit to fair, transparent, and inclusive justice systems that protect all people. • Uphold democratic principles of equity, accountability, and public participation. • Value integrity, human dignity, and universal human rights in governance and daily practice. **Empathy and inclusion** • Demonstrate empathy toward marginalised and vulnerable groups, including migrants, refugees, and survivors of violence. • Respect religious, cultural, gender, and identity diversity across personal, professional, and civic life. • Promote reconciliation, social cohesion, and belonging within diverse and mobile societies. **Peace, dialogue, and tolerance** • Commit to resolving disputes through peaceful and restorative approaches. • Value respectful disagreement, dialogue, and active listening across divides. • Embrace civic, cultural, and artistic expression as vehicles for healing, identity formation, and justice. **Global and environmental citizenship** • Recognise shared responsibility for the global commons, including environmental protection and climate justice. • Promote ethical and sustainable use of natural resources, with sensitivity to land, water, and intergenerational rights. • Commit to active citizenship and sustainable development as pathways to peace, equity, and resilience. • Lead civic or cultural initiatives that strengthen social cohesion, youth engagement, and local problem-solving. • Create inclusive activities that encourage participation, identity expression, and community dialogue.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Peace, justice and reconciliation** • Principles of peacebuilding, non-violence, and reconciliation in conflict and post-conflict contexts. • Causes and consequences of violence, including intergroup conflict, land disputes, and gender-based violence. • Community-level peace education approaches integrating local traditions, values, and intercultural dialogue. **Rights, law and citizenship** • Foundational knowledge of human rights, legal rights, and political responsibilities. • Rights and duties of citizenship within national and local legal frameworks. • Legal processes such as drafting wills, resolving land disputes, and accessing basic legal services. **Land and water rights** • Land tenure systems, including communal and individual rights, and intersections with gender, age, and ethnicity. • Issues of land grabbing, displacement, and protection of vulnerable populations. • Water governance and equitable access to natural resources as a component of peace and justice. **Traditional and indigenous justice systems** • Indigenous and customary forms of dispute resolution. • Coexistence of traditional and modern legal systems, including potential tensions between cultural practices and universal human rights. • Restorative justice models rooted in community values and local traditions. **Global awareness and solidarity** • Interconnectedness of local, national, and global challenges to peace and justice. • Conflict, displacement, or human rights violations that affect communities. • Global initiatives for peacebuilding, human rights, and sustainable development.	**Legal empowerment and civic literacy** • Apply knowledge of legal rights in practical contexts, including inheritance, land ownership, child protection, and access to public services. • Participate in community-based legal education activities, such as mock dispute resolution forums or will-writing sessions. • Engage in local governance by consulting community leaders, attending village or council meetings, and contributing to development planning. **Conflict prevention and resolution** • Develop communication, negotiation, and active listening skills to prevent and resolve disputes. • Apply alternative dispute resolution (ADR) techniques, including consensus-building, mediation, and restorative justice circles. • Identify early signs of conflict or violence and take proactive measures within families and communities. **Advocacy and community mobilisation** • Raise awareness on land, water, and resource rights, especially for women, indigenous peoples, and marginalised groups. • Organise or participate in community dialogues, campaigns, and initiatives promoting transparency, non-violence, and accountability. • Strengthen community solidarity through participatory arts, storytelling, theatre, and intergenerational knowledge sharing. • Promote civic participation and leadership, educating communities about voting rights, service access, and participatory decision-making. • Build leadership skills among women, youth, and elders to advocate for community needs and rights. • Develop capacities to engage with public institutions, file complaints, and monitor service delivery effectively. **Monitoring, evaluation, and evidence-based action** • Collect and use community-level data to inform interventions and assess the effectiveness of peacebuilding and governance initiatives. • Apply evidence-based approaches to evaluate policies, projects, and local governance mechanisms.	**Peace and non-violence** • Commit to peaceful coexistence, non-violent resolution of disputes, and social harmony. • Reject violence in all forms, including domestic violence, political conflict, and 'mob justice'. • Demonstrate courage and discernment in taking peaceful action, especially when confronting injustice. • Value restorative justice approaches to repair harm and rebuild community trust. **Cultural respect and Inclusivity** • Value indigenous wisdom, customs, and traditional knowledge while critically engaging with practices that may harm rights and dignity. • Promote mutual respect, intercultural understanding, and tolerance across religions, ethnicities, and generations. • Embrace pluralism and diversity as foundational strengths for resilient communities. **Responsibility and empowerment** • Take personal and collective responsibility for fostering fair, just, and safe communities. • Recognise one's own agency to create change and support marginalised individuals in doing the same. • Participate in community life with compassion, empathy, and solidarity, promoting inclusive decision-making. **Environmental and communal Stewardship** • Care for shared natural resources with an awareness of intergenerational justice and sustainability. • Advocate for equitable access to land, water, and resources, recognising their role in sustaining peace. • Commit to balancing individual rights with collective wellbeing, fostering harmonious and resilient communities. **Equity, justice, and civic responsibility** • Promote fairness, accountability, and transparency in local and national governance. • Advocate for the protection of vulnerable groups, including women, children, and indigenous peoples. • Value civic participation and engagement in legal processes, community decision-making, and public service initiatives.

19. Goal 17 – Partnership for the Goals

Strengthen the means of implementation and revitalise the global partnership for sustainable development

Strengthening global partnerships through education

Sustainable Development Goal 17 calls for revitalising global partnerships to support the implementation of the 2030 Agenda. It emphasises inclusive and cross-sectoral collaboration among governments, civil society, the private sector, international organisations and communities. These partnerships must be grounded in mutual accountability, shared responsibility and respect for national development priorities. Education plays a vital enabling role in this process. It cultivates the knowledge, skills and values needed for civic participation, financial literacy, ethical leadership and technological innovation – foundations that support effective and equitable partnerships.

Country-led development and financing

The global financing landscape for sustainable development is evolving rapidly. While the Addis Ababa Action Agenda (2015) laid the foundation for aligning financial flows with the Sustainable Development Goals, the Fourth International Conference on Financing for Development (FfD4), held in Seville in 2025, marked a pivotal moment for rethinking global cooperation. FfD4 introduced the Sevilla Platform for Action, a new mechanism to mobilise voluntary coalitions and track implementation of financing commitments. It also proposed innovative approaches such as "ODA-plus" to distinguish development and climate finance, and called for reforms to debt sustainability frameworks and global tax systems. These developments reflect a growing recognition that financing strategies must be inclusive, responsive and resilient. Education remains central to this transformation – by building institutional capacity, promoting financial literacy, and equipping learners with the skills to navigate complex fiscal, trade and governance systems. Education must therefore be embedded not only as a beneficiary of financing but as a strategic enabler of sustainable development partnerships.

Domestic resource mobilisation and financial governance

Strengthening domestic revenue systems is essential to reduce reliance on external aid and promote long-term financial sustainability. SDG17 encourages countries to improve tax collection, broaden the tax base and enhance the efficiency of public financial management. Many low-income countries face significant financing gaps – estimated at 15 to 30 per cent of GDP – to meet basic SDG targets in education, health, energy and transport (Carapella *et al*. 2023).

These challenges have been exacerbated by the COVID-19 pandemic, rising debt burdens and limited economic diversification (OECD 2021). Education contributes to domestic resource mobilisation by building public sector capacity in tax administration, budget planning and fiscal policy. It also promotes financial literacy and civic education, empowering citizens to demand equitable and transparent public spending.

Rethinking official development assistance

Despite longstanding commitments, most donor countries have not met the international target of allocating 0.7 per cent of gross national income to ODA. Although global aid reached record levels in 2022, much of the increase was directed toward short-term emergency responses, such as COVID-19 vaccines and humanitarian support for Ukraine. Excluding these exceptional items, aid to the least developed countries declined in real terms (World Bank 2025). In this context, it is increasingly important to ensure that ODA is fit for purpose – responsive to today's challenges, aligned with national priorities and capable of building trust and

long-term resilience. Education plays a strategic role in this transformation by strengthening public understanding of aid effectiveness, supporting civic oversight of aid allocations and building institutional capacity for aid coordination, implementation and evaluation.

Tax justice and illicit financial flows

A fair and well-functioning tax system is central to sustainable development. Yet many developing countries face structural barriers, including narrow tax bases, large informal sectors and limited enforcement capacity. Illicit financial flows – such as tax evasion and profit shifting by multinational corporations – deprive countries of vital revenues. The United Nations estimates that developing countries lose more than US$100 billion annually to tax-related illicit flows (UNESCO 2016). Addressing these challenges requires international cooperation on tax transparency, corporate accountability and anti-corruption measures (IMF 2020). Education supports these efforts by promoting tax awareness, civic responsibility and ethical decision-making. Evidence shows that higher education levels are positively associated with tax compliance and trust in public institutions. Integrating tax education into school and tertiary curricula can help shape a generation of financially responsible citizens.

Debt sustainability and trade capacity

Many developing countries face renewed debt distress, particularly small and vulnerable economies. At the same time, the potential of international trade as a driver of development remains underutilised due to limited export diversification and institutional capacity. Education can support debt and trade resilience by building capacity in public debt management, trade negotiations and infrastructure development. Technical and vocational education and training (TVET) can equip learners with trade-related skills, while tertiary institutions can support innovation and competitiveness across value chains. Partnerships between universities, governments and the private sector are essential to building the institutional foundations for trade integration and financial sustainability.

The developmental impact of remittances

Remittances have become a major source of external finance for many developing countries, often surpassing foreign direct investment and official aid. In 2023, remittance flows to low- and middle-income countries reached approximately US$670 billion, significantly exceeding the US$223 billion in official development assistance (ODA) provided in the same year. Remittances now account for more than 4 per cent of GDP in over 70 countries and play a vital role in reducing poverty and improving nutrition, health and education outcomes (IFAD 2024). When China is excluded, remittances rival foreign direct investment (FDI) flows, with recent estimates placing remittances at US$620 billion compared to approximately US$660 billion in FDI (UNCTAD 2024). These flows also exceed the annual lending volumes of the World Bank Group and the total outstanding loans of the International Monetary Fund (World Bank 2023; IMF 2023).

Evidence from multiple countries shows that remittance-receiving households are more likely to invest in children's education, particularly for girls. In Ghana, Nepal and Kenya, remittances have been linked to higher school attendance and completion rates, improved dietary diversity and better maternal health (Mitra *et al*. 2021; Mishra *et al*. 2022; UNICEF 2025). A study of 122 developing countries found that a 10 per cent increase in per capita remittances led to measurable improvements in health spending, reductions in child malnutrition and mortality (Azizi 2018), and increased enrolment across pre-primary, secondary and tertiary education. Household surveys in Nepal show that remittances contribute to higher spending on education and food, while reducing expenditure on alcohol and tobacco (Kul and Jha 2020). Similar findings have been reported in Cambodia (Chea and Wongboonsin 2019), Ecuador (Ponce *et al*. 2018), Ghana (Gyimah-Brempong and Asiedu 2015), Kenya (Kiiru 2010), Pakistan (Gul *et al*. 2021) and Peru (Berloffa and Giunti 2019).

Remittances also empower women, who are often the primary recipients and decision-makers in remittance-receiving households. In Indonesia, remittances have been shown to improve women's health and reduce acceptance of domestic violence. The impact on girls' education is particularly pronounced, with remittances significantly boosting enrolment and completion rates. Education

systems can support the productive use of remittances by integrating financial education into curricula and by engaging diaspora communities to mobilise knowledge and investment in education and health services.

Technology, innovation and digital co-operation

Access to technology and innovation is essential for accelerating progress across all Sustainable Development Goals. SDG17 calls for enhanced international co-operation in the development, transfer and dissemination of technologies. While digital infrastructure has expanded globally, persistent digital divides remain across income levels, gender, geography and education.

Education systems must lead efforts to bridge these divides. This includes integrating digital literacy across all levels of learning, promoting open science and open educational resources, and supporting public understanding of responsible innovation. Tertiary institutions have a key role in building national research capacity and strengthening partnerships with technology providers, particularly in areas such as climate adaptation, agricultural innovation and health technology (UNCTAD 2021).

Policy coherence, data and multistakeholder partnerships

Fragmented policies and weak coordination across sectors continue to hinder sustainable development. SDG17 promotes policy coherence at national, regional and global levels. Education contributes by developing the analytical capacity of public servants, preparing future leaders to navigate complex systems, and encouraging integrated planning approaches.

Reliable, disaggregated and timely data are essential for informed decision-making and progress tracking. Several countries lack the statistical capacity to measure key SDG indicators, including those related to education and gender equality. Education and research institutions can strengthen data literacy, support monitoring and evaluation, and promote evidence-informed policymaking. This requires investment in data systems, public sector training and partnerships between governments, universities and civil society organisations.

Governance and accountability

Inclusive governance, robust institutions and informed citizens are essential to achieving the SDGs. SDG17 calls for multistakeholder partnerships and mutual accountability. Education prepares individuals for civic engagement by promoting awareness of rights and responsibilities, enhancing critical thinking and encouraging participation in democratic processes.

Education also strengthens accountability by equipping citizens to monitor public budgets, track aid effectiveness and engage in participatory planning. In fragile contexts, where institutional legitimacy may be low, the integration of civic education, public dialogue and digital tools is particularly important. A well-informed and active civil society is crucial for shaping sustainable policies and holding governments to account.

Formal and non-formal education programmes can support civic engagement by training citizens in governance, human rights and participatory decision-making. These programmes can also promote media literacy to combat misinformation and enhance transparency. By embedding advocacy and citizenship skills into learning systems, SDG17 can help build inclusive and democratic societies.

Education for sustainable partnerships

Achieving SDG17 requires more than financial instruments and policy frameworks – it demands a shared commitment to inclusive, accountable and resilient partnerships. Education is the foundation of this commitment. It equips individuals and institutions with the knowledge, skills and values needed to collaborate across sectors, navigate complex systems and uphold the principles of equity and sustainability.

Tertiary education institutions play a critical role in developing expertise in financial governance, trade and sustainable policymaking. Learners must be equipped with advanced financial literacy, policy analysis, strategic negotiation skills and data-driven decision-making. Understanding international financial mechanisms – such as integrated impact assessments and trade agreements – is essential for shaping effective partnerships and ensuring that development co-operation is both impactful and accountable.

By integrating these competencies into curricula, universities can cultivate leaders capable of driving transformative change.

Education must therefore be embedded not only as a beneficiary of financing and policy, but as a strategic enabler of global co-operation. One that transforms collaboration into a powerful engine for sustainable development.

	Knowledge and understanding	Skills and applications	Values and attitudes
ECCE	**Working together** • Families, friends, and classmates help each other through teamwork. • Collaboration solves problems and makes people feel included. **Helping others** • People and groups can share time, tools, and knowledge to support each other. • Examples of support include helping a friend tie a shoelace or sharing toys. **Friendship and co-operation** • Friendships are built on kindness, sharing, and respect. • Co-operation means working with others to complete a task or reach a goal. **Global connections** • People live in different places but can still help each other. • The world is shared, and everyone has a role in looking after it. **Community involvement** • Classroom, school, and local community activities require teamwork and co-operation. **Respect and empathy** • Recognition of others' feelings and responding with care. • Appreciation of different abilities, needs, and perspectives in peers and adults.	**Imaginative and co-operative play** • Take part in pretend play and creative activities that require listening and taking turns. **Communication skills** • Express ideas clearly, listen actively, and respond respectfully. **Collaboration and sharing** • Share toys, materials, and responsibilities during class activities and games. **Group problem-solving** • Work with others to complete puzzles, build projects, or help in the classroom. **Empathy and kindness** • Comfort or support others and notice when a friend may need help. **Diversity and inclusion** • Play and work with children of diverse backgrounds and abilities, valuing differences. **Basic global awareness** • Recognise examples of people working together across countries, such as delivering food, planting trees, or responding to disasters.	**Kindness and empathy** • Show care for classmates and family members through actions and words. • Notice and respond to others' feelings with compassion. **Sharing and fairness** • Take turns and include everyone in play. • Practise fairness in group activities and interactions. **Respect and co-operation** • Treat others with respect during discussions and group tasks. • Value different ideas and co-operate with diverse perspectives. **Curiosity and global friendliness** • Explore other cultures, languages, and ways of life. • Show early sense of global friendship and shared humanity. **Positive team spirit** • Take joy and pride in achieving something together. • Appreciate that everyone's contribution matters in a team effort. **Responsibility** • Help maintain shared spaces, such as tidying up or assisting a friend. • Show accountability for group tasks and shared classroom duties.

	Knowledge and understanding	Skills and applications	Values and attitudes
Primary education	**The power of teamwork** • Solving big problems, like protecting the environment or helping others, requires teamwork from families, schools, communities, and countries. • Everyone plays a role, and goals are reached faster when people cooperate. **Partnerships in daily life** • Examples of teamwork and partnership include school group work, classroom jobs, home chores, family decisions, community clean-ups, and local events. • Cooperation helps communities function better and achieve shared goals. **Global co-operation** • Countries work together by sharing ideas, knowledge, and support to tackle challenges like poverty, hunger, or disease. • Global collaboration includes vaccination campaigns, disaster relief, and international sports or cultural exchanges. **Supporting those in need** • Partnerships help vulnerable groups, such as children, refugees, or people with disabilities, access education, healthcare, and clean water. • Helping others through collaboration strengthens local, national, and global communities. **Sustainable development** • Working together contributes to caring for the planet, reducing waste, and creating a better future for everyone. • The SDGs represent a global agreement to collaborate for a better world.	**Communication and collaboration** • Respectful listening, sharing ideas, and active participation in discussions. • Gratitude and constructive feedback toward peers. **Group problem solving** • Small projects or challenges to develop creative solutions. • Reflection on group performance and ways to improve teamwork. **Co-operative and inclusive play** • Sports, games, and creative activities that require teamwork and fairness. • Inclusion of all peers, especially those who might be left out. **Project-based learning** • Classroom projects such as planting a garden, creating a mural, or writing a shared story that promote shared responsibility and collaboration. **Community engagement** • Participation in school or community projects, including clean-up campaigns, donation drives, or awareness posters. • Clear roles so each student contributes meaningfully to group efforts. **Visual and creative expression** • Drawings, posters, or crafts to show acts of kindness, cooperation, and global partnerships. • Displays, such as a "teamwork wall," to celebrate collective classroom efforts.	**Teamwork and co-operation** • Appreciation that people achieve more when they work together. • Willingness to participate in group activities, share responsibilities, and help others. **Kindness and empathy** • Care, respect, and helpfulness toward classmates, teachers, and community members. • Awareness of the feelings and needs of others and appropriate responses. **Respect for diversity** • Value of differences in culture, language, abilities, and ideas. • Curiosity and openness toward others' ways of life and experiences. **Responsibility and integrity** • Personal responsibility in group settings through honesty, fairness, and dependability. • Recognition that each person can make a positive contribution to a group or community. **Global awareness and solidarity** • Understanding that people and countries support one another to solve problems and improve life for everyone. • Early recognition of oneself as part of a global community with shared responsibilities. **Commitment to helping others** • Motivation to improve the school, neighbourhood, or environment through small, meaningful actions. • Active participation in classroom or community projects with purpose and co-operation.

	Knowledge and understanding	Skills and applications	Values and attitudes
Secondary education	**Global partnerships and interdependence** • Collaboration between governments, international organisations, civil society, and individuals to address challenges like poverty, climate change, and inequality. • Understanding how local actions impact global development and how global decisions affect local communities. **Types of partnerships** • Public–private partnerships, international treaties, non-governmental collaborations, and grassroots alliances. • Formal and informal networks supporting sustainable development, innovation, and community wellbeing. **Role of education and innovation** • Contribution of schools and learning institutions to knowledge sharing, capacity building, and long-term growth. • Application of science, technology, and digital platforms in facilitating partnerships and addressing global challenges. **Global trade, finance, and humanitarian aid** • International trade, investment, and financial mechanisms supporting development and sustainable economic growth. • Humanitarian and development aid, including disaster response, emergency relief, and technical assistance, supporting vulnerable populations. • Public finance, taxation, and transparency in managing shared resources for community services. **Monitoring, evaluation, and policy influence** • Tools for assessing the effectiveness of partnerships and aid initiatives. • Understanding how advocacy, governance, and policy shape successful co-operation. **Ethics, equity, and intercultural competence** • Ethical considerations in global partnerships, including fairness, environmental responsibility, and anti-corruption principles. • Respect for cultural diversity, local knowledge, and inclusive practices in partnerships. **Challenges in global co-operation** • Political, economic, and technological barriers to effective collaboration. • Unequal access to resources, digital divides, and vulnerabilities in low-income or crisis-affected regions.	**Collaboration, teamwork, and leadership** • Work effectively in diverse teams to plan and implement SDG-related projects. • Engage with schools, NGOs, youth councils, and local communities in partnership activities. **Networking and communication** • Build networks to share knowledge, resources, and opportunities across sectors and borders. • Develop skills for persuasive communication, public speaking, and digital advocacy. **Critical thinking, research, and evaluation** • Analyse case studies of successful and unsuccessful partnerships, including humanitarian and development aid programs. • Evaluate the effectiveness, sustainability, and ethical implications of projects and initiatives. **Project management and volunteering** • Plan, organise, and manage tasks, timelines, and resources for collaborative projects. • Participate in community development, humanitarian aid, and service initiatives, reflecting on personal and societal impact. **Innovation and interdisciplinary problem-solving** • Design creative solutions to local and global challenges integrating science, technology, and the arts. • Apply entrepreneurial thinking and project-based approaches to promote sustainable development. **Digital literacy and technology use** • Use online tools to research partnerships, raise awareness, and connect with peers worldwide. • Apply technology to monitor projects, manage resources, and enhance collaboration. **Negotiation, advocacy, and resource mobilisation** • Engage with policymakers, funding agencies, and stakeholders to secure resources. • Develop skills in negotiation, grant writing, and mobilising technical, financial, and human resources. **Adaptability and crisis response** • Adjust strategies in response to emergencies, natural disasters, or sudden community needs. • Demonstrate resilience and problem-solving under changing circumstances.	**Collaboration and inclusivity** • Value diverse perspectives and recognise the strengths everyone brings. • Promote inclusive decision-making in school, community, and global initiatives. **Global citizenship and interdependence** • Recognise the interconnectedness of global challenges and support international co-operation. • Respect and engage in humanitarian aid, development assistance, and educational exchanges. **Fairness, justice, and accountability** • Advocate for equitable partnerships that prioritise the needs of marginalised communities. • Uphold honesty, transparency, and responsibility in group work and civic action. **Social responsibility and civic engagement** • Take initiative in addressing real-world issues through leadership, volunteering, and advocacy. • Demonstrate commitment to local and global change through active participation. **Critical thinking and innovation for change** • Reflect on the effectiveness of partnerships, aid programs, and global co-operation. • Stay open to innovative ideas, technologies, and interdisciplinary approaches for sustainability. **Commitment to sustainable development** • Actively contribute to solving issues such as poverty, inequality, and climate change. • Promote long-term social, economic, and environmental sustainability in personal and collective actions. **Ethical responsibility and integrity** • Uphold ethical standards in collaborations and partnerships. • Ensure partnerships are built on trust, fairness, and shared values.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET	**Workplace and industry partnerships** • Collaboration between educational institutions, businesses, and government in preparing a skilled and adaptable workforce. • How industry–education linkages create job opportunities and contribute to local and regional economic development. **Skills for sustainable development** • The contribution of technical and vocational skills to entrepreneurship, innovation, and economic empowerment. • Alignment of vocational training with sustainable practices in sectors such as renewable energy, agriculture, and manufacturing. **Public–private partnerships (PPPS)** • Role of PPPs in creating employment, improving infrastructure, and providing quality training. • Collaboration between businesses and governments to address skills gaps and national development priorities. **Global trade, finance, and co-operation** • International partnerships in trade, investment, and technology transfer as drivers of economic growth. • Role of global supply chains and multilateral co-operation in supporting sustainable development. **Sustainable business practices** • Ethical business practices and corporate social responsibility in advancing sustainability. • Business partnerships that prioritise environmental responsibility, equitable growth, and social impact. **Entrepreneurship and innovation** • Skills-based entrepreneurship and collaborative projects as drivers of community development. • Innovation in business and industry to address social and environmental challenges. **Compliance, regulatory systems, and ethical finance** • Tax laws, government regulations, and compliance systems as foundations for ethical operations. • Fair trade, anti-corruption, and responsible finance in partnerships.	**Technical skills for sustainable development** • Apply industry-specific skills in ways that support sustainability. • Develop competencies in green technologies and environmentally sound practices. **Workplace communication and teamwork** • Collaborate effectively with peers, industry professionals, and community stakeholders. • Apply professional communication skills: listening, presenting ideas, and negotiating. **Entrepreneurial thinking and innovation** • Identify opportunities for businesses and partnerships to advance SDGs. • Develop creative and sustainable business models that address community and environmental needs. **Project management and implementation** • Plan, organise, and execute collaborative projects with defined goals and timelines. • Lead diverse teams, allocate resources efficiently, and monitor progress. **Financial literacy and resource mobilisation** • Manage finances responsibly and apply principles of business sustainability. • Mobilise resources through partnerships, including technology, expertise, and funding. **Digital and technological skills** • Use digital tools to enhance efficiency, knowledge sharing, and problem-solving. • Support technology transfer and innovation within partnerships. **Collaboration, conflict resolution, and networking** • Navigate differing perspectives, mediate disputes, and build consensus in partnerships. • Develop networks to share resources, knowledge, and opportunities for co-operation. **Civic and community engagement** • Participate in community initiatives and local development projects. • Apply skills to support societal improvement and sustainable development goals.	**Professional integrity and ethical responsibility** • Uphold honesty, transparency, and accountability in workplace collaborations and business partnerships. • Commitment to ethical decision-making in all aspects of finance, trade, and operations. • Promote fair trade, responsible business practices, and corporate social responsibility. **Workplace co-operation and collaboration** • Value teamwork, shared learning, and collective problem-solving to achieve business and societal goals. • Respect diversity, inclusion, and equitable participation within collaborative environments. • Encourage trust and mutual respect among partners, colleagues, and stakeholders. **Entrepreneurial mindset and innovation** • Encouraging creativity, innovation, and calculated risk-taking to develop sustainable business solutions. • Supporting entrepreneurial initiatives that address community, social, and environmental needs. **Sustainability and environmental responsibility** • Commitment to sustainable production and consumption practices across industries. • Valuing initiatives that promote long-term environmental, social, and economic benefits. • Encouraging integration of green technologies and environmentally sound practices in vocational contexts. **Equity, social responsibility, and civic engagement** • Supporting community wellbeing and social equity through partnerships and professional practice. • Promoting active participation in civic and community initiatives that advance sustainable development. • Advocating for policies and practices that ensure fair treatment of workers and inclusive access to opportunities. **Resilience, adaptability, and lifelong learning** • Openness to change, innovation, and continuous improvement in response to evolving workplace and societal challenges. • Valuing flexibility, problem-solving, and perseverance in the face of obstacles. • Commitment to ongoing learning as a foundation for professional growth and sustainable partnerships.

	Knowledge and understanding	Skills and applications	Values and attitudes
TVET (ctd)	**Challenges in partnerships** • Barriers to collaboration such as skills mismatches, economic disparities, and limited technology access. • Limitations and solutions for building inclusive, cross-sector partnerships. **Monitoring, evaluation, and evidence-based decision-making** • Importance of collecting and analysing data to assess the impact of partnerships. • Using evidence to guide improvements, inform strategies, and ensure sustainable outcomes.	**Health, safety, and environmental awareness** • Apply occupational health and safety standards. • Integrate environmental awareness into workplace and project practices. **Monitoring, evaluation, and adaptation** • Use evidence-based tools to assess impact and inform improvements. • Adapt strategies to changing circumstances, ensuring resilient and effective partnerships.	**Digital and global awareness** • Responsible and ethical use of digital tools and technology to enhance workplace and partnership effectiveness. • Respect for diverse cultures, global perspectives, and intercultural collaboration in partnerships. • Awareness of the broader impact of local actions on global sustainability and development goals.

	Knowledge and understanding	Skills and applications	Values and attitudes
Tertiary education	**Global governance and multilateral co-operation** • Role of international organisations (for example, UN, World Trade Organization (WTO), IMF, World Bank) in building partnerships for sustainable development. • Influence of international agreements and institutions on global co-operation and collective responses to global challenges. **Academia-industry partnerships** • Collaboration between universities, research institutions, businesses, governments and civil society in driving innovation, technological advancement and policy solutions. • Importance of interdisciplinary collaboration in solving global challenges. **Public–private partnerships (PPPs)** • Contributions of PPPs to economic growth, infrastructure development and social progress. • Joint efforts of public and private sectors in advancing the Sustainable Development Goals. **Trade, finance and development assistance** • Role of financial institutions, foreign aid and investment as drivers of sustainable development partnerships. • Mechanisms of international trade and finance in enabling equitable and inclusive global development. **Technology and knowledge transfer** • Contribution of digital technology, artificial intelligence and global research collaborations to problem solving and innovation. • Significance of knowledge sharing and transfer of appropriate technologies across borders. **Challenges and ethical considerations in global partnerships** • Issues of power imbalance, economic dependency and ethical dilemmas in international co-operation. • Implementation challenges, including unequal resource distribution, political differences and limited institutional capacity. **Role of higher education in sustainable development** • Contribution of universities to the SDGs through research, policy engagement and capacity-building. • Influence of academia in advancing global citizenship and sustainable solutions.	**Development finance mechanisms** • Assessment of funding sources for sustainable development, including official development assistance (ODA), loan agreements and fiscal policies. • Analysis of the role of financial institutions and their impact on global development initiatives. **Resource mobilisation for SDG implementation** • Mobilisation of resources such as technology, expertise and finance to support the SDGs. • Leveraging of international co-operation to secure resources for development initiatives. **Impact assessment and policy evaluation** • Application of integrated impact assessments (IIAs) to evaluate the effectiveness of development initiatives. • Evaluation of long-term impacts of partnerships using data for policy decisions. **Negotiation and financial diplomacy** • Engagement with funding agencies, international financial institutions and development partners to secure financing and fair agreements. • Use of negotiation strategies to facilitate international agreements and partnerships. **Data-driven decision-making and accountability** • Use of evidence-based tools to ensure transparency in partnerships and track financial resources. • Establishment of systems for accountability and outcome measurement in partnerships. **Fiscal responsibility and economic awareness** • Application of knowledge of taxation systems, fiscal burdens and public–private financing in sustainable development contexts. • Awareness of the economic implications of development financing strategies. **Strategic partnership management** • Design and scaling of collaboration models that maximise impact across education, government and industry sectors. • Leadership and management of cross-sector partnerships aligned with SDGs targets.	**Commitment to social change and development** • Valuing cross-sector collaboration as essential to sustainable development. • Belief in partnerships as vehicles for social transformation and global wellbeing. • Commitment to improving community quality of life through collective action. **Equity and inclusion in partnerships** • Respect for all voices, especially from marginalised and under-represented groups. • Appreciation of diversity in decision-making and inclusive practices. • Support for equitable access to resources, opportunities, and decision-making processes. **Ethical engagement and responsible collaboration** • Upholding fairness, integrity, and mutual respect in partnerships. • Valuing accountability and trust through ethical practice. • Commitment to social and environmental responsibility in all collaborations. **Intercultural competence and global citizenship** • Respect for diverse cultures, perspectives, and traditions. • Belief in global citizenship and shared responsibility for human development. • Awareness of global interdependence and solidarity in addressing challenges. **Commitment to evidence-based decision-making** • Valuing data, research, and evidence as guides for partnership choices. • Belief in informed approaches to identify effective solutions. • Commitment to evidence-informed decisions that sustain long-term impact. **Innovation, knowledge sharing and lifelong learning** • Appreciation of interdisciplinary collaboration and knowledge exchange. • Support for open access to research and best practices. • Valuing lifelong learning as foundation for adaptation, growth, and innovation.

	Knowledge and understanding	Skills and applications	Values and attitudes
	Entrepreneurship and social innovation • Business models and innovations addressing social and environmental challenges through partnerships. • Role of social entrepreneurship in achieving the Sustainable Development Goals. **Sector planning for effective development co-operation** • Alignment of national educational and sectoral targets with development co-operation efforts. • Role of sector-specific training in strengthening SDG implementation. **Monitoring and evaluation for effective development** • Importance of monitoring and evaluation frameworks in assessing the effectiveness and sustainability of partnerships. • Role of data, evidence and evaluations in informing future development policies and decisions.	**Cross-sectoral and global collaboration** • Participation in multilateral partnerships and intercultural dialogue across national and regional boundaries. • Application of cross-cultural communication skills for effective global collaboration. **Technology and innovation transfer** • Use of digital tools and innovative solutions to enhance knowledge sharing between universities, industries and policymakers. • Application of technology transfer processes to support sustainable development. **Sustainability and ethical leadership** • Alignment of partnerships with long-term environmental, social and economic sustainability goals. • Practice of ethical leadership in managing global partnerships with integrity and responsibility.	**Sustainability and long-term impact** • Commitment to partnerships aligned with enduring social and environmental benefits. • Belief in initiatives that deliver lasting benefits across sectors. • Prioritisation of sustainability in all partnership outcomes. **Shared leadership and collective ownership** • Valuing shared leadership and inclusive decision-making. • Belief in collective ownership and responsibility for outcomes. • Respect for co-leadership to strengthen partnership effectiveness. **Adaptability and resilience** • Openness to flexibility, innovation and continuous improvement. • Appreciation of resilience as key to overcoming obstacles. • Commitment to adapting partnerships to meet emerging global needs. **Accountability, transparency and trust** • Upholding ethical standards and transparent processes. • Valuing mutual accountability across all stages of partnership. • Commitment to building trust through openness and integrity.

	Knowledge and understanding	Skills and applications	Values and attitudes
Adult education	**Lifelong learning for sustainable development** • Continuous education to adapt to societal changes and improve livelihoods. • Contributions of lifelong learning to sustainable development and environmental goals. **Community and grassroots partnerships** • Local partnerships that strengthen community development, job creation, and social progress. • NGOs and social movements in public monitoring, accountability, local governance, and climate activism. • Impact of partnerships on sustainable development, community wellbeing, and economic empowerment. **Financial literacy and entrepreneurship** • Partnerships with financial institutions and businesses to support small enterprises, co-operatives, and sustainable economic growth. • Financial literacy as a foundation for community entrepreneurship. **Civic engagement and policy influence** • Adult learners' engagement in advocacy, policy discussions, and grassroots movements for sustainable development. • Civic engagement in shaping public policy and community progress. • Global significance of local partnerships for sustainability and development. • Partnerships in resolving community-level conflicts and promoting social cohesion. • Approaches to negotiation and mediation for effective conflict resolution. **Humanitarian and development aid** • Role of emergency aid, disaster response, and development assistance in supporting communities. • Partnerships for effective implementation, monitoring, and evaluation of humanitarian initiatives.	**Community leadership and partnership development** • Building and sustaining partnerships with local organisations, businesses, government bodies, and international stakeholders. • Managing community-driven initiatives and facilitating effective cross-sector collaboration. **Negotiation and advocacy** • Engaging with policymakers, funding agencies, and stakeholders to secure resources and support. • Applying negotiation skills to advocate for community priorities and development needs. **Communication and networking** • Developing clear and persuasive communication strategies to engage diverse stakeholders. • Building networks to share knowledge, resources, and collaboration opportunities for collaboration. **Collaboration and conflict resolution** • Navigating differing perspectives to achieve mutually beneficial outcomes in partnerships. • Using conflict resolution strategies to address tensions and strengthen sustainable partnerships. **Project management and implementation** • Planning, executing, and evaluation of community-based partnership projects. • Ensuring effective implementation through monitoring, reporting, and adaptive management. **Financial literacy and resource mobilisation** • Applying funding mechanisms, including grant writing and sustainable financial planning. • Developing resource mobilisation strategies to support community-driven initiatives. **Data-driven decision-making** • Collecting and analysing data to guide evidence-based decisions. • Using data to optimise community development strategies and partnership outcomes.	**Community engagement** • Appreciation of active participation in local and global initiatives that contribute to societal progress. • Belief in responsibility and belonging within the community to strengthen collective efforts. **Ethical responsibility** • Uphold fairness, transparency, and accountability in all collaborations. • Value partnerships built on mutual trust and integrity. **Economic and social equity** • Support initiatives that empower marginalised communities and advance social justice. • Belief in equitable access to resources, opportunities, and decision-making. **Intergenerational knowledge sharing** • Respect for learning across generations to strengthen communities. • Valuing both traditional and modern knowledge, ensuring all voices are included. **Commitment to development** • Emphasis on partnerships grounded in mutual accountability, collaboration, and long-term sustainability. • Belief in prioritising on long-term impact over short-term gains. **Adaptability** • Openness to innovative approaches, technologies, and practices to meet evolving needs. • Valuing flexibility and innovation in response to change. **Active citizenship** • Commitment to engaging in advocacy and dialogue that support sustainable development. • Belief in inclusive participation in governance and community-led decision-making.

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