

Climate Change and Education

A policy brief¹

The effects of climate change are already being felt across the globe and will exacerbate, impacting citizens in all aspects of their lives. Current global temperatures are 0.8°C higher than pre-industrial levels and research shows that 1.5°C of warming is already locked into the Earth (World Bank Group, 2014). Without any action against climate change (i.e. business-as-usual), the world is on track for warming of 2°C by the middle of the century and 4°C or more by the time today's teenagers reach their 80s (World Bank Group, 2014). Climate change affects most sectors (e.g. agriculture, farming, fisheries, water and sanitation, health, education, infrastructure and culture), but more importantly, its full impact on the lives of communities, individuals and society remains to be assessed.

Small states make up approximately 60% of the Commonwealth's members (Commonwealth Secretariat, 2014), and will be disproportionately affected by climate change, despite being the least contributors. It is projected that by mid-century, small states will not be able to meet water demand during low rainfall periods (Intergovernmental Panel on Climate Change, 2007) - a situation compounded by the effects of changes in air and sea surface temperature, rainfall, sea-level rise and extreme weather events on island environments, economies and people. Many small states are predicted to suffer greatly due to rising sea levels and it is likely that Kiribati will disappear within the next 30-60 years (Displacement Solutions and United Nations Environment Programme, 2015).

Climate change and poverty are inextricably linked, and as the effects of climate change increase, it will become increasingly difficult for the Commonwealth to eradicate poverty and address other development concerns. Climate change threatens to reverse development progress, unless concerted efforts are made to make development climate resilient. As such, it is essential for Commonwealth member states to build adaptive capacity, resilience to change and effective solutions. This could be done through implementing measures to ensure the security of a country's citizens, for example Kiribati has already purchased 6,000 acres of land in Fiji to be used for growing crops or as a potential area for relocation (Displacement Solutions and United Nations Environment Programme, 2015).

Addressing climate change and ensuring sustainable development are integral to the global agenda, and are crucial in achieving the Sustainable Development Goals (SDGs). Climate change directly relates to one goal (SDG 13), and links closely to nine other goals (SDGs 4, 6, 7, 9, 11, 12, 14, 15 and 16), but cuts across the entire SDG agenda and is a critical issue for policy makers to address. The 21st Conference of the Parties held in Paris led to the development of a new international agreement on climate change, which aims to keep the rise global temperature well below 2°C. Sustainable development requires a holistic strategy which involves a balance between economic, environmental and social aspects, as demonstrated in Figure 1.

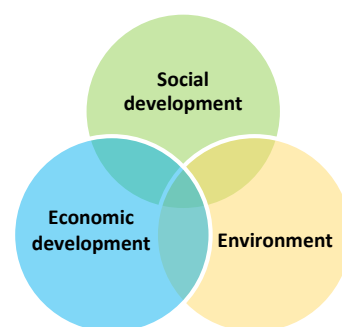


Figure 1 Needs for sustainable development

¹ Context: The purpose of this policy brief is to support the valuable work the Commonwealth Secretariat is undertaking in addressing climate change, and to inform policy makers of the specific contributions that education can make in addressing this issue across the Commonwealth, especially with regards to mitigation and adaptation.

The role of education in addressing climate change

Interventions need to be developed for the mitigation of, and adaption to climate change to minimise impact and ensure resilience. To mitigate impact, immediate action is required. Conversely, impacts are cumulative over time and will disproportionately impact future generations. Education is integral to any strategy to create a resilient generation who will advocate for action and be resilient to change - see Figure 2.

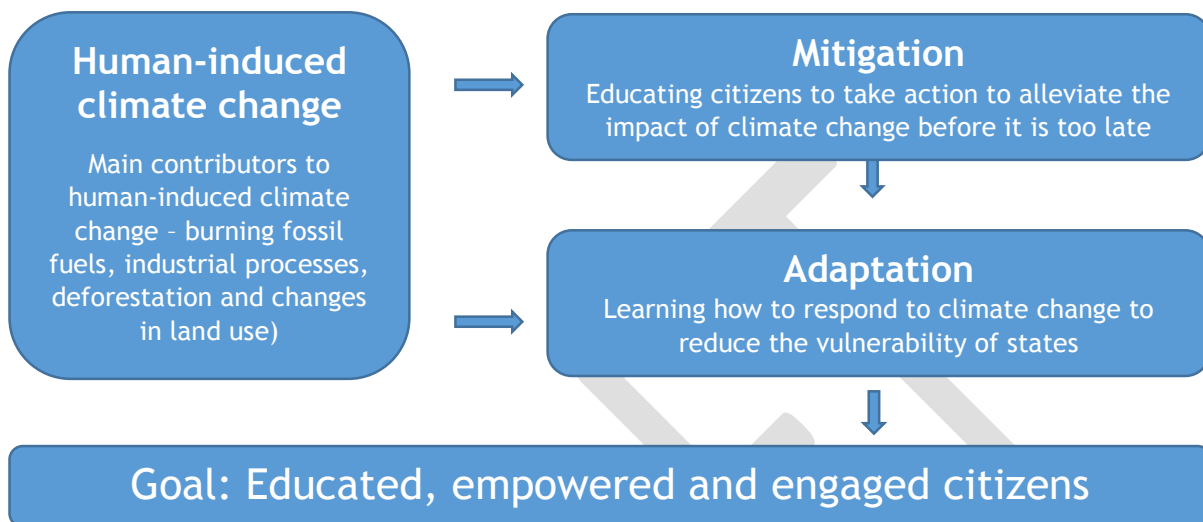


Figure 2 The role of education in addressing climate change

Effects of climate change

This section outlines a range of effects which vary significantly across the globe and can inform mitigating actions. Figure 2 below illustrates some of the potential impacts of climate change on temperature, water and sea level. Other weather-related factors of climate change include precipitation level and water currents.

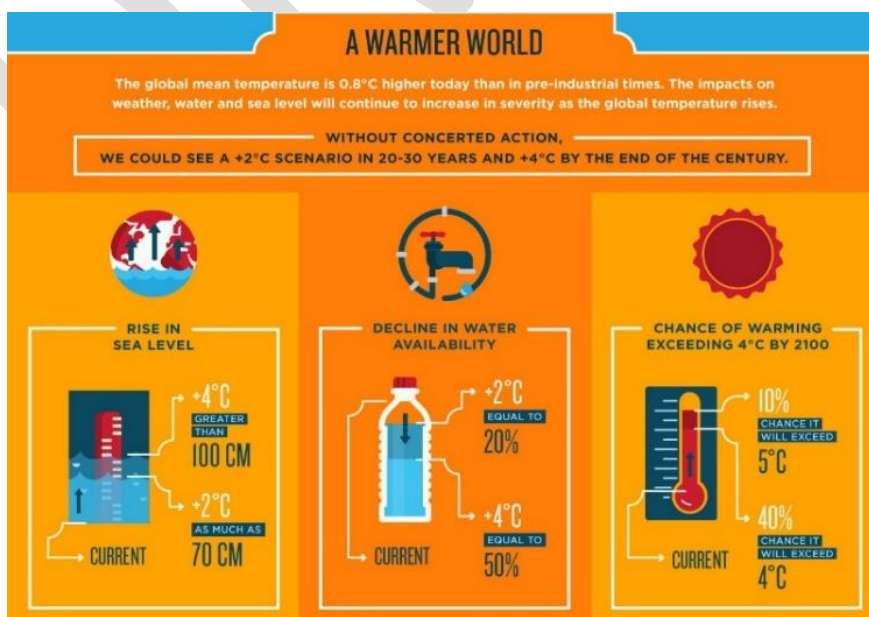


Figure 3 Infographic: What Climate Change Means for Africa and Asia (World Bank, 2013)

The human impacts of climate change

Climate change will most impact human wellbeing in low-income countries. The most vulnerable groups include: the urban poor, the elderly and children, traditional societies, subsistence farmers and those living on the coast (Confalonieri, U., Menne, B., Akhtar, R., Ebi, K.L., Hauengue, M., Kovats, R.S., Revich, B., and Woodward, A., 2007).

- **Agriculture:** Including decreased livestock and crop production from heat stress, droughts and flooding and climate-induced pest and disease migration. The World Bank Group (2013b) projects 40-80% loss of cropland in Sub-Saharan Africa (which is used for staple foods and cash crops) by the 2030s-2040s, due to 1.5°C-2°C warming, drought and aridity.
- **Food security and safety:** Greater risk of food shortages, and access to safe food due to air and sea temperature changes and increased contact between pest species and food.
- **Malnutrition:** Increased malnutrition and resulting illnesses, with impact on child growth and development.
- **Coastal systems:** Including sea level rise, loss of coastline land, coastal flooding, extreme storms, water pollution, the destruction of human settlements and local resources (e.g. fisheries and biodiversity) and forced migration.
- **Water security and safety:** Reduced drinking water, and increased and more severe droughts, due to lower availability and quality of water; and increased spread of water-related diseases and water contamination.
- **Human settlements and infrastructure:** Human settlements and vital infrastructure at risk from rising sea level, extreme weather events and desertification, which could result in forced migration.
- **Climate-induced disasters (e.g. storms, floods, droughts, fires and heat waves):** Injuries, deaths and damage to housing, livelihoods and settlements, population displacement, impact on food production, malnutrition, infectious diseases and respiratory diseases and water contamination.
- **Infectious diseases:** Change in the level, range and intensity of infectious diseases due to temperature changes.
- **Economic and socio-cultural resources:** Reduction in income from tourism and agricultural production; and destruction of traditional, cultural and spiritual sites.
- **Women:** Women are typically responsible for food production and ensuring water and energy supplies, and typically have fewer economic resources than men which means that they are less able to use finance to mitigate the impact of climate change.
- **Education:** Children are the most affected in the event of natural or man-made disasters. Schooling and learning systems are disrupted, affecting their right to education and inducing stressful situations. Developmental gains in education are reversed with the damage or destruction of school facilities or use of school facilities as refuge centres, the prolonged disruption of education and limited access to learning opportunities.

Solutions and the role of education in adapting to and mitigating climate change

It is vital that countries develop strategies to build resilience against climate change, and education is key to this. It is not only a matter of mitigating the effects of climate change, but also of addressing, through educational resources, adaptation measures that are country specific.

Currently, regions with large numbers of youth have low resilience to the effects of climate change and typically have social and political instability and low levels of governance. Additional pressure will be placed on governments due to a combination of the increasingly negative impacts of climate change, and social, economic and political difficulties which could result in social unrest, instability and even conflict.

Under the right environment where their economic and social needs are met (for example through the provision of education and training), the youth population can act as agents of economic growth. However, without this environment, youth may resort to violence which can further destabilise political environments and enhance vulnerability to climate change.

Due to the non-discriminatory and wide-ranging impacts of climate change, education has a crucial role to play in raising awareness about the urgency of addressing climate change programmes, including ways to be more energy efficient. Formal and non-formal education are essential to educate citizens of all ages. For the youngest and future generations who will be most impacted by climate change, positive influences during the stages of an individual's early life can contribute to a society that is equipped with the understanding, values, knowledge and skills to tackle the causes and impact of climate change.

Generic approaches to promote sustainable development in education

- **Curriculum:** Climate change education integrated into the curricula at all levels which is tailored to local contexts - this could include:
 - 1) Information on key climate change related subjects.
 - 2) Practical measures of mitigation and adaptation that students can utilise in their home lives and future careers, and resilience skills to prepare them for the challenges of climate change, such as migration (including the role of ICT).
 - 3) Opportunities for students to apply their knowledge to real life situations through climate change projects and problem solving activities.
- **Extra-curricular activities:** Opportunities to attend field trips and visit environmental sites.
- **Teacher training:** Include climate change in teacher education (e.g. disaster risk reduction education, and aspects of policy, planning and implementation) to ensure educators can effectively communicate its significance to students, with professional development opportunities to ensure up to date knowledge.
- **Green school policies:** Promote environmentally friendly behaviour through schools which embody the values they teach through ensuring they are environmentally sustainable and carbon neutral.
- **Adaptation plans for schools:** To protect students from heatwaves, dust storms, floods, mudslides, hurricanes and storms.
- **Mitigation plans for schools:** Use of green renewable energy, waste management, insulation and efficient energy use, healthy low energy food and drink, physical activity and green transport.

Sample elements of the Commonwealth Curriculum Framework for the SDGs for SDG 13

	Subject competencies	Methodological competencies	Personal & social competencies
	Knowledge , facts, definitions, concepts, systems knowledge	Skills , fact-finding, analysis, problem-solving	Competencies (attitudes, values, ethics/communicating, working interactively, citizenship)
Early Childhood Care and Development	<ul style="list-style-type: none"> Water and sanitation and hygiene Food, fitness and well-being Emergency preparedness, evacuation drills and first aid 	<ul style="list-style-type: none"> Social and physical activity to promote resilience 	<ul style="list-style-type: none"> Awareness of and concern for the environment and nature Curiosity about the world Open-mindedness
Primary Education	<ul style="list-style-type: none"> Economic and social science concepts School gardens and feeding programmes Environmental education and climate change science Cultural heritage 	<ul style="list-style-type: none"> Creative solution finding skills Differentiate between adaptation and mitigation activities Plan and participate in implementing adaptation or mitigation activities 	<ul style="list-style-type: none"> Awareness of climate change and application of learning to daily lives Show concern and responsibility for living organisms and their environment
Secondary Education	<ul style="list-style-type: none"> Integrative concepts and methods (e.g. economic-environment, economic-social, and social-environment interactions) Natural hazards and disasters Impact of human activities on endangered species and conservation Energy transformation, use and conservation 	<ul style="list-style-type: none"> Problem solving skills Adaptive learning and self-reflection Critical thinking Adaptation planning skills 	<ul style="list-style-type: none"> Environmentally active and responsible citizens Climate change preparedness and resilience
TVET	<ul style="list-style-type: none"> Climate change adaptation: Food security, sustainable water resources, marine resources, health and well-being, infrastructure development etc. Climate change mitigation: Sustainable energy and low-carbon usage and transport, use of technology, disaster risk management and mitigation etc. 	<ul style="list-style-type: none"> Ability to devise and implement holistic mitigation and adaptation measures Develop and implement improved processes for decision making in relation to climate compatible development Workplace skills e.g. ocean management, green technology and energy, ICT and innovation 	<ul style="list-style-type: none"> Climate change preparedness and resilience Well-informed, confident decision-making on climate change issues Encourage change and transformation within society as a whole e.g. move to a green/blue economy

Sample elements of the Commonwealth Curriculum Framework for the SDGs for SDG 13

	<ul style="list-style-type: none"> Media and communications in social change Contribution of indigenous knowledge 	<ul style="list-style-type: none"> Research and capacity development to engender social change 	
Tertiary Education	<ul style="list-style-type: none"> Climate change adaptation: Food security, sustainable water resources, marine resources, health and well-being, infrastructure development etc. Climate change mitigation: Sustainable energy and low-carbon usage and transport, use of technology, disaster risk management and mitigation etc. Contribution of indigenous knowledge Mainstream climate change into curricula across faculties and departments Media and communications in social change Governance, participation and social-ecological system change 	<ul style="list-style-type: none"> Ability to devise and implement holistic mitigation and adaptation measures Develop and implement improved processes for decision making in relation to climate compatible development Workplace skills e.g. ocean management, green technology and energy, ICT and innovation Research and capacity development to engender social change 	<ul style="list-style-type: none"> Climate change preparedness and resilience Well-informed, confident decision-making on climate change issues Encourage change and transformation within society as a whole e.g. move to a green/blue economy
Adult Education and Learning	<ul style="list-style-type: none"> Indigenous knowledge, resilience and cultural, social and technological innovation Climate change adaptation: Food security, sustainable water resources, marine resources, health and well-being, infrastructure development etc. Climate change mitigation: Sustainable energy and low-carbon usage and transport, use of technology, disaster risk management and mitigation etc. 	<ul style="list-style-type: none"> Ability to devise and implement holistic mitigation and adaptation measures Develop and implement improved processes for decision making in relation to climate compatible development Workplace skills e.g. ocean management, green technology and energy, ICT and innovation 	<ul style="list-style-type: none"> Climate change preparedness and resilience Well-informed, confident decision-making on climate change issues Encourage change and transformation within society as a whole e.g. move to a green/blue economy

Non-formal education (general public)

- **Innovative communication strategies:** Utilise communication campaigns involving all media sources with different themes according to different seasons. Communication methods could include posters, radio and television programmes and mobile applications.
- **Online platforms:** Websites and online forums can allow communities to share best practice on climate change action.
- **Resources:** Resources and toolkits for local communities developed to help them to address climate change in their area.
- **Training:** Short training sessions delivered by experts to local communities to educate them on how they can tackle climate change in their areas.

Non-formal education (industries)

- **Resources:** Resources and toolkits for industry sectors developed to help them to address climate change in their own work practices and the wider industry.
- **Training:** Short training sessions delivered by experts to industries to educate them on how they can tackle climate change through their work practices.
- **Financial incentives and disincentives:** Provide financial incentives to industries or companies that change their work practices to mitigate or adapt to climate change, and financial disincentives for those that do not.
- **Green workplace policies:** Promote environmentally friendly behaviour by ensuring workplaces are environmentally sustainable and carbon neutral.

Taking forward actions - the role of policy makers

- **National education strategy:** Devise and implement a national education strategy for all levels, both formal and non-formal which incorporates the above points, with appropriate goals and monitoring and evaluation mechanisms.
- **Green setting policies:** Promote environmentally friendly behaviour through ensuring settings are environmentally sustainable and carbon neutral.
- **Public surveys:** Determine baseline levels of public knowledge and action to inform strategy.
- **Indigenous knowledge:** Promote sharing and documentation of indigenous knowledge (of cultural, social and technological innovations) to contribute to mitigation and adaptation efforts and build resilience against climate change, and incorporate into policy making.
- **Research and development:** Invest in research and development to build the resilience of countries against climate change through funding for research, facilities and resources to develop a creative approach to addressing climate change (e.g. solutions to create carbon neutral energy and innovative technology).

Taking forward actions - the role of education in the Commonwealth Secretariat

- **National policies:** The role of the Health and Education Unit at the Commonwealth Secretariat is to strengthen national policies in health and education.
- **Commonwealth Curriculum:** Possible Educational interventions will be incorporated into a Commonwealth Curriculum Framework for the SDGs to support the delivery of the Sustainable Development Goals.
- **Best practice:** Highlighting and promoting the sharing of best practices within the Commonwealth (e.g. through the Education Hub).
- **Collaboration:** We will promote collaborative approaches to address country capacity.

Taking forward actions - the global agenda post COP21 and CHOGM 2015

- **Temperature limit:** The Paris Agreement aims to keep the rise in global temperature to well below 2°C, and to increase efforts to limit this to 1.5°C. This action was heavily advocated for by Commonwealth countries and endorsed at CHOGM.
- **Long-term emissions reduction:** It was agreed through the Paris Agreement to aim to peak greenhouse gas emissions as soon as possible and then decrease the level of emissions, a decision that was promoted by Commonwealth leaders at CHOGM.
- **Global stocktake:** A facilitative dialogue was mandated through the Paris Agreement to take place every five years from 2023 as a global stocktake to assess progress made and influence future actions on climate change.
- **Finance:** The Paris Agreement aims for the provision of a minimum of \$100 billion per year by 2020 to support developing countries with mitigation and adaptation efforts, and developed nations of the Commonwealth pledged their commitment to contributing to this at CHOGM,
- **Climate Finance Access Hub:** The Commonwealth Secretariat's new initiative will support countries to bid for climate change funding, with the aim of increasing funding for addressing climate change.

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