

Building a resilient Myanmar society through education, science and technology

Policy Guidance Brief 6

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The Myanmar Climate Change Strategy & Action Plan (MCCSAP) is a 15-year road map of Myanmar's strategic response to climate-related risks. MCCSAP aims to increase the adaptive capacity of the country and maximise opportunities for low-carbon and climate-resilient development. To achieve this, the Strategy is intended to guide investments in six key development sectors including: (i) agriculture, fisheries and livestock; (ii) environment and natural resources; (iii) energy, transport and industry; (iv) urban development; (v) health and disaster risk reduction; and (vi) education, public awareness and technology.

This Guidance Brief is one of a series produced by the Myanmar Climate Change Alliance (MCCA) to help develop understanding on key sectoral challenges, strategic objectives and specific actions to effectively address climate change in Myanmar. The series aim at providing high-level policy guidance designed for use by the Members of the six sectoral Working Groups on MCCSAP. In addition, the briefs seek to raise awareness of various stakeholders on the national priorities of action in the field of climate change.

Key Points

- The education, science and technology sectors play a pivotal role in creating knowledge-based society that will drive Myanmar's inclusive and resilient economic and social development.
- Climate change will likely limit the access to education especially in rural areas. Key impacts of climate change on the education sector relate to damages to school infrastructure, reduced mobility, increased risks to children's health, and poverty.
- Actions to advance climate change knowledge and public awareness are urgently needed to enhance Myanmar's capacity to respond to climate risks. More specifically, the country should integrate climate change into education and training programmes, improve technical and institutional capacities for research in the field of climate change, develop inclusive public awareness programmes, and establish partnerships at the local, national and international levels.
- According to the Climate Change Action Plan for the Education, Science and Technology Sector, by 2030 Myanmar should have strengthened education, awareness and technological systems that foster a climate-responsive society and human capital to design and implement climate-resilient and low-carbon development solutions for inclusive and sustainable development.
- The expected results to achieve this outcome are: (i) capacity of actors in the education sector is developed to integrate principles of sustainability, low-carbon development and resilience into the curricula at primary, secondary and tertiary levels; (ii) capacity of actors in the science, technology and education sectors is developed to generate research and build and use climate information systems; (iii) institutional capacity and multi-stakeholder partnerships are enhanced to access and manage climate financing to ensure climate-responsive education, science and technology.



Why is the education, science and technology sector of strategic importance for the sustainable development of Myanmar?

Although Myanmar has made progress in the education sector towards promoting free compulsory primary education, major challenges remain to the post-primary education sub-sectors.

In 2014, the adult literacy rate (for people aged 15 and over) was 89.5 per cent with higher rates among males (92.6 per cent) than females (86.9 per cent) (GoM, 2017). Urban population is more literate (95.2 per cent) than rural (87.0 per cent), whereas urban men have the highest literacy rates and rural women the lowest. Adult literacy rates vary significantly among the regions, ranging from 96.6 per cent in Yangon to 64.6 per cent in Shan. Illiterate households are found mainly in rural areas, particularly in Chin (10.7 per cent), Kayin (17.1 per cent) and Shan (24.9

per cent) (GoM, 2017). Projections indicate that in rural areas, the school-age population (children aged 6-17) will decrease from 9.0 million to 7.4 million between 2015 and 2050, while in urban areas an increase from 3.1 million to 3.3 million is expected (GoM, 2017).

Children from rural regions, low-income families and other disadvantaged groups have much lower access to secondary and higher education due to various factors such as higher school costs (than for primary education) and the concentration of secondary schools, higher education institutions, and technical and vocational education training providers in urban areas (ADB, 2016; GoM, 2017).

Improving the access to information and communication technologies (ICT) is essential to create a knowledge society in Myanmar.

The access rates of various ICT services in Myanmar are significantly low. The access to fixed telephone and mobile cellular services is one of the lowest compared to the average for Asia and the Pacific (ADB, 2015). Nevertheless, the demand for mobile



cellular services is rising, increasing from 1.14 subscriptions per 100 people in 2010 to 49.47 subscriptions per 100 people in 2014 (ADB, 2015). Furthermore, figures for 2014 show that only 49.5 per cent of households in Myanmar have access to television, 35.5 per cent to radio, and 3.5 per cent to computer, while more than 30 per cent of households primarily in rural areas still do not have access to any information or communication device (Census, 2014).



What are the impacts of climate change on the education sector?

Floods and cyclones are the major climate hazards that affect the education sector, having high impact on infrastructure and connectivity (MoNREC, 2017). However, increasing temperatures and heat extremes can also cause disruption of school programmes. For instance, extreme heat that affected Myanmar in 2015 forced all schools in Mandalay to close.

In the long-term, climate change will further limit the access to education particularly in rural areas.

“After Nargis life was not easy so I came to Yangon to find a job [...] I left high school when I came to Yangon. I really wanted to finish high school but I couldn’t.”

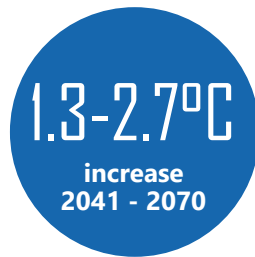
Credit: MCCA (2017). “The Rising Tide” film, Yangon Film School

For instance, climate change impacts on economy, livelihood and ecosystems will likely deepen the poverty and food insecurity in vulnerable regions. Poor families will not be able to cover school costs while many children will be forced to drop out school to work. Furthermore, climate change and hazards pose significant risks to children’s health including malnutrition, heat-related illnesses, infectious diseases, as well as physical trauma and stress caused by disaster or forced migration.



FUTURE CLIMATE IN MYANMAR AND IMPACTS ON EDUCATION

Increasing average temperatures and heat extremes



Sea level rise



Note: The provided values for increase in temperatures and sea level refer to projections with base period 1980-2005 and 2000-2004, respectively.

Erratic rainfall leading to frequent river and flash flood events, and droughts.

Coastal inundation and salinization of water resources due to sea level rise. Increasing risk of coastal hazards – coastal flooding, storm surges, strong winds and cyclones.

Damages to education infrastructure caused by disasters

Impact on livelihood and ability of households to cover school costs

Disruption of school programmes caused by extreme high temperatures, floods, inundation of coastal regions or severe drought conditions

Health risks related to malnutrition, higher exposure to diseases and reduced access to clean water and sanitation

Summarized from: Horton R. et al., 2016; MNREC, 2012; MNREC, 2017.

What is the current response to climate change?

Current education policies and plans are directed towards strengthening primary, secondary and higher education, vocational training and improving scientific research to support development. The Myanmar National Education Law, enacted on 30 September 2014, is designed to reform the country's education system. To this end, the government has carried out a Comprehensive Education Sector Review and developed a National Education Sector Plan, launched in February 2017. The government has also prioritised science and technology, setting up the Ministry of Science and Technology.

In compliance with the Article 6 of the United Nations Framework Convention on Climate Change (UNFCCC), Myanmar has paid special attention to enhancing education and public awareness of climate change through trainings and other means. The Ministry of Education has started mainstreaming climate change concepts and practices into the

school curricula and learning materials. Universities and research institutions have recognised that climate change is a key field of knowledge and skills to offer to future graduates. In addition, a number of environmental and disaster-related policies contain specific provisions for enhanced actions within the education, research and public awareness sectors, such as the National Biodiversity Strategy and Action Plan (2015) and the National Water Policy (2014).

Importantly, Myanmar's Agenda 21 has six integrated programmes for the pursuit of environmental education and public awareness activities, including: (i) formation of national advisory and coordination body for environmental education and training; (ii) improvement of environmental education in school; (iii) improvement of environmental education and research at tertiary and professional level; (iv) building the capacities of business, industry, academic and private sectors for proper code of conduct in environmental conservation; (v) launching a public education and awareness campaign; (vi) developing partnerships with other national and international stakeholders.



What is the required response?

If planned responses to climate change within other sectors such as infrastructure, health and social protections, rural development and disaster risk management are effectively implemented, they can substantially increase the access to education despite the impacts of climate change. However, the lack of climate change knowledge and awareness remains a major constraint to enhancing the capacity of Myanmar's society and economy to respond to the growing threat of climate change. Therefore, the country should take urgent action to create a climate-responsive society through:

- Integrating climate change into the curricula at primary, secondary and tertiary levels.
- Strengthening technical and institutional capacities for research to foster knowledge and innovation by creating a pool of national specialists and supporting research.
- Enhancing regional and international cooperation on knowledge sharing and technology transfer for climate-resilient and low-carbon development.
- Raising public awareness on climate risks, adaptation and mitigation through various channels to effectively reach the private sector, individuals and the most vulnerable members of the society.
- Establishing partnerships with national and local organizations to support local level capacity-building and awareness-raising initiatives.

What is the climate change strategy for the education, science and technology sector?

The Government of Myanmar has recently formulated the Myanmar National Climate Change Policy, which is a high-level statement of the country's long-term vision and position on climate change.

Myanmar's vision is to be a climate-resilient, low-carbon society that is sustainable, prosperous and inclusive, for the well-being of present and future generations.

The Myanmar Climate Change Strategy and Action Plan (MCCSAP) 2016-2030 is the prime instrument for the implementation of the Climate Change Policy, which defines sectoral objectives and response actions.

The Climate Change Action Plan for the Education,

Science and Technology Sector seeks to achieve the following outcome:

Strengthened education, awareness and technological systems that foster a climate-responsive society and human capital to design and implement climate-resilient and low-carbon development solutions for inclusive and sustainable development.

The sectoral response rests on the following key principles embedded in MCCSAP:

- **Inclusive development** to include poor, landless, marginalised and vulnerable women and men to act as agents of change, and all geographic regions to shape and benefit from opportunities provided by climate-resilient and low-carbon development.
- **Integrated development** to direct government, development partners, civil society, private sector entities and communities to align, harmonise and coordinate policies and programmes to support the strategy's overall objectives.



How does the Climate Change Action Plan for the Education, Science and Technology Sector address the climate change vulnerability of Myanmar?

Climate change impacts and sector-specific issues	Key vulnerability factors	Sector Action Plan: Expected Results	Indicators for monitoring progress
<p>Increasing risk of slow- and rapid-onset disasters, and sea level rise</p> <p>Reduced connectivity of remote areas and inability of children to go to school</p> <p>Impact on school infrastructure due to climate-induced disasters</p> <p>Various health risks to children</p> <p>Food and water insecurity due to climate hazards, malnutrition</p> <p>Climate-induced migration and displacements will leave many children without access to schools</p> <p>Poverty as result of climate change impacts on economy and environment, and inability of families to cover school costs</p>	<p>Lack of national climate change specialists and limited research capacities</p> <p>Poor infrastructure and limited access to basic services, including ICT</p> <p>Limited access to education especially in rural regions</p> <p>Rural-urban migration, poverty and social inequality</p> <p>Low level of public awareness on climate change</p>	<p>Capacity of actors in the education sector is developed to integrate principles of sustainability, low-carbon development and resilience into the curricula at primary, secondary and tertiary levels</p> <p>Capacity of actors in the science, technology and education sectors is developed to generate research and build and use climate information systems</p> <p>Institutional capacity and multi-stakeholder partnership are enhanced to access and manage climate financing to ensure climate-responsive education, science and technology</p>	<p># of policies, strategies and action plans in the education, science and technology sectors that integrate climate change</p> <p># of primary, secondary and higher level institutions that integrate climate change in their curriculum, courses and teaching materials</p> <p># of university graduates and researchers trained and capacitated to carry out independent and innovative work on climate change</p> <p># of ICT materials that reflect climate change issues and solutions</p> <p># of university professors, lecturers, school teachers and university graduates who can help the government and private sector consider climate change in their planning and management</p> <p># of households in climate-vulnerable states and townships that are aware of the consequence of climate change and can identify response measures</p> <p>Increase in % of climate financing for information, knowledge, research and capacity building from various sources</p> <p># of networks and partnerships set up to promote climate-responsive education, science and technology</p> <p># of joint collaborative projects</p>



Sectoral Action Plan



Policies and legislation

Objective: Integrate climate change in education, science and technology legal, policy and normative instruments

Activities:

- Develop a new science and technology strategy that integrates climate change
- Revise curricula and syllabus of all the main universities and schools to integrate climate change
- Integrate climate change in education sectoral planning systems at national and local levels by developing guidelines and tools



Institutions

Objective: Build climate change-responsive institutional and educational processes

Activities:

- Develop guidelines and procedures for integrating climate change within existing formal and informal education institutions, including training centres
- Set up climate change coordination mechanisms in the education sector to establish better linkages and synergy
- Form new or revitalise existing organisations to mobilise women, youth, children and vulnerable groups to ensure engagement on climate change
- Develop strategies to strengthen the capacity of Ministry of Education to integrate climate change within institutional portfolios



Capacities

Objective: Increase capacities for climate research and knowledge management and raise climate change awareness in communities, government, private sectors and civil society organisations.

Activities:

- Develop, package and distribute public awareness-raising materials on climate change
- Provide training to all relevant ministries to raise awareness on how to integrate climate change

- resilience into programme and project cycles
- Provide training to all relevant ministries to raise awareness on how to integrate gender into climate change-resilient programmes and project cycles
- Conduct training courses for school teachers on climate change
- Provide training on conducting on climate change research to academic and research institutions and professionals
- Organise events to mobilise women, youth and children on climate change awareness and capacity building activities
- Organise events to increase awareness of media on climate change



Financing

Objective: Build financial capacities to strengthen climate information services, using multiple sources of funding

Activities:

- Set up climate change research fund and develop guidelines to enhance education and research climate change
- Finance projects on climate change-related education, capacity and research
- Develop and circulate budget guidelines for climate change integration in education, science and technology



Technology and innovation

Objective: Increase access to climate information services, research and technological innovations

Activities:

- Implement multi-disciplinary technology and research-focused projects on climate change
- Organise technology fairs at national and local levels to disseminate climate-smart technologies and knowledge
- Develop and promote a number of information and communication technology events and materials to disseminate information on climate-resilient technology to youth, children, women and other vulnerable social groups



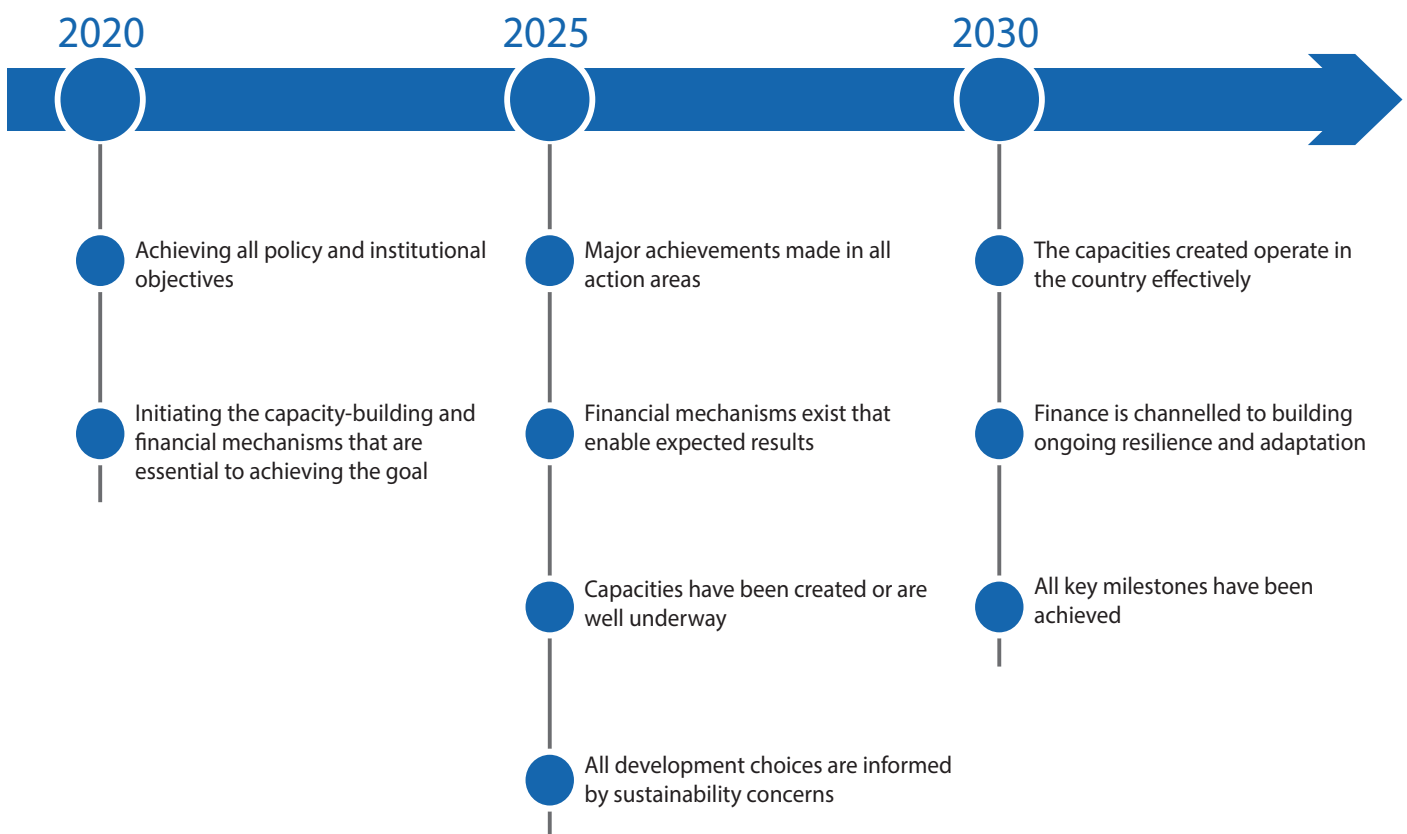
Partnerships

Objective: Promote multi-stakeholder partnerships for climate change education, science and technology at international, national and sub-national levels

Activities:

- Set up climate change working group within the Ministry of Education for climate change awareness, capacity and technology transfer
- Organise joint climate change science and technology fairs at national and regional/state level
- Implement multi-stakeholder events on climate science, education and technology, targeting vulnerable areas
- Set up media and private sector network for climate change information and knowledge exchange

Timeframe to achieve results





How can the response to climate change within the education, science and technology sector bring sustainable development outcomes?

Strengthening the knowledge of society on the risks of climate change and the opportunities for mitigation and adaptation can lead to actions by individuals, organizations and businesses. The demand for technology and innovations can attract investments and foster economic growth. Climate-informed decision making and policy planning can help achieve sustainable development objectives such as poverty alleviation, food security and economic growth despite the impacts of climate change.

Global Action Programme on Education for Sustainable Development

The United Nations Educational, Scientific and Cultural Organization (UNESCO) has launched a global action programme on 'Education for Sustainable Development'. The online knowledge platform of the programme contains various publications, good practices and video materials from around the world on how to promote climate change education, training and public awareness.

Learn more:

www.en.unesco.org/gap

Science and technology: regional collaboration

The Asian Network on Climate Science and Technology (ANCST) provides and facilitates exchange of information to aid development of research coordination projects led by Asian researchers with focus on disaster resilience, extreme climate events and urban climate change and related topics. Learn more: www.ancst.org/

Other regional scientific networks that offer opportunities for collaborative research projects are the Asia Pacific Adaptation Network (www.asiapacificadapt.net) and the Asia-Pacific Network for Global Change Research (<http://www.apn-gcr.org/>).

The Myanmar Climate Change Alliance (MCCA) was launched in 2013 to support the Government of the Union of the Republic of Myanmar in addressing the challenges posed by climate change. MCCA is an initiative of the Environmental Conservation Department (ECD) of the Ministry of Natural Resources and Environmental Conservation (MoNREC). It is funded by the European Union as part of the Global Climate Change Alliance (GCCA), and implemented by the United Nations Human Settlements Programme (UN-Habitat) in partnership with the United Nations Environment Programme (UN Environment). For more information: www.myanmarccalliance.org; Facebook: @myanmarccalliance.



Learn more:

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