



Ministry of Natural Resources and  
Environmental Conservation



Myanmar  
Climate  
Change  
Alliance

# Sustainable management of natural resources for healthy ecosystems

Policy Guidance Brief 2

October 2017

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

- Ecologically diverse, Myanmar has abundant water resources, species-rich coastal ecosystems and large forest reserves. However, population and economic growth and unsustainable use of natural resources are driving forces of ongoing environmental degradation which curb the ability of ecosystems to provide services and respond to shocks.
- Environmental impacts of climate change in Myanmar are far-reaching: increased risk of forest fires, plant pests and diseases, and desertification, particularly in the Central Dry Zone, due to droughts and extreme temperatures; loss of vegetation in mountain regions as result of rapid-onset events such as floods and landslides; and destruction of coastal ecosystems due to strong cyclones, among others.
- Although the country has a significant carbon sequestration capacity, high deforestation rates remain a critical issue. One of Myanmar's major challenges ahead is to enhance the carbon sink potential of its forests which can also help generate other co-benefits such as adaptation.
- The protection and rehabilitation of natural capital of Myanmar is the key to minimize climate risk. The country needs to harness ecosystems such as mangroves and forests and the services they provide for adaptation and mitigation actions, e.g. through promoting and implementing ecosystem-based adaptation and at the same time reducing emissions from deforestation and forest degradation to reach its full adaptation and mitigation potential. This requires actions that promote sustainable management, conservation and restoration of ecosystems in a way that involves both women and men.
- According to the Climate Change Action Plan for the Environment and Natural Resources Sector, by 2030 Myanmar should promote natural resource management that enhances the resilience of biodiversity and ecosystem services that support social and economic development and deliver carbon sequestration.
- The expected results to achieve this outcome are: (i) climate change dimensions are incorporated and enforced in environmental and natural resource management policies, rules and regulations, including gender considerations; (ii) environmentally sound technologies and good management practices are adopted to improve and maintain forest, water, land and coastal ecosystems, health and services; (iii) framework for institutional coordination and multi-stakeholder engagement is established and supports access to finance and implementation of responses.



## Why is the environment and natural resources sector of strategic importance for the sustainable development of Myanmar?

Myanmar is endowed with complex and diverse physiography, which supports a diversity of ecosystems – forests, mountains, dry and sub-humid lands, estuarine mangroves, inland freshwater, grasslands, marine and coastal areas, and small islands. Mountainous areas occupy 42 per cent of Myanmar's territory and supply most of the freshwater for the country (MoNREC, 2015). Its rich fauna includes 252 mammal, 1056 bird, 295 reptile, 775 fish and 119 amphibian species (ADB, 2015).

The national freshwater ecosystems - mountain streams, rivers, lakes and wetlands – are rich in biological diversity and provide essential ecosystem services to humans. There are four principle river basins - Ayeyawady, Chindwin, Sittaung and Thanlwin/Salween - with a catchment area of about 737,800 km<sub>2</sub> (MoNREC, 2012b). The country has several large and numerous small and medium-sized lakes on its territory, including glacial lakes in the north, which provide freshwater, habitat for species and livelihood for local communities (MoNREC, 2015). Although Myanmar has abundant water resources, water availability is highly variable between wet and dry seasons, while the demand for

water significantly increases during the dry period.

The agriculture sector utilizes most of the freshwater withdrawals and the power supply is highly reliant on hydropower generation. At present, only about 30 per cent of the population has access to grid electricity. According to the National Energy Policy (2014), the electricity sector should expand rapidly by 2030, with a target of achieving 60 per cent electrification by 2025–2026, 38 per cent of which generated from hydropower plants.

### *Planned development of irrigation infrastructure and electrification of rural areas means higher water demand in future.*

About 45 per cent of Myanmar's land is covered with forests and the forestry sector contributes one per cent to gross domestic product and 10 per cent to exports revenues (MoNREC, 2017). More than 70 per cent of the population depends directly or indirectly on forest ecosystem services, especially in rural areas. Forests are also essential for maintaining watershed health, reducing flood risk, preserving biodiversity and absorbing atmospheric carbon dioxide (CO<sub>2</sub>).

Myanmar is still a net carbon sink as its forests have the capacity to uptake more CO<sub>2</sub> than emitted from human activities. Carbon sequestration by natural forests contributed 91 per cent to the total CO<sub>2</sub> removal in 2000 (MoNREC, 2012a). However, the total annual CO<sub>2</sub> removals by natural forests are gradually shrinking due to land use change and



### *What are ecosystem services?*

Ecosystem services are the benefits that all living organisms, including humans as well as animals and plants, obtain from ecosystems. These include:

*Provisioning services:* all products obtained from ecosystems such as food, freshwater and raw materials.

*Regulating services:* relate to the ability of ecosystems to regulate natural processes such as water, air and soil quality control, erosion prevention and moderation of extreme events.

*Cultural services:* refer to non-material benefits such as using the nature for tourism, ecotourism and sports, and cultural and spiritual activities.

*Supporting services:* those benefits related to natural processes that support and maintain all other services (e.g. soil formation, providing nutrition and habitat for species).

deforestation, which has become a major source of greenhouse gas emissions. The expansion of agricultural and temporary cropped areas is a primary cause of deforestation. Over the period 1990-2011, the agricultural fields in the country increased by 7.73 million hectares (ADB, 2015). Deforestation and forest degradation are also caused by illegal and uncontrolled logging, over-harvesting of wood biomass as a source of energy, infrastructural developments and forest fires (ADB, 2015; MoNREC, 2012b).

In the future, the human pressure on forest resources will continue to grow if not regulated due to increasing population, economic development and heavy reliance on forest resources in rural areas. Therefore,

*Maintaining its status as a net sink for greenhouse gases is a major challenge to Myanmar.*

A broad range of coastal ecosystems and marine resources are a prime source of livelihood and food security for local communities and of importance for the economic development of Myanmar. The country has the third largest mangrove area in Southeast Asia, which has significantly declined from 2000 to 2013, particularly in Rakhine State and Ayeyawady Region (MoNREC, 2015).

Over the last 20 years, fisheries catches have increased dramatically due to a growing foreign demand (ADB, 2015). The use of traditional fishing practices has mitigated the effects on the environment. However, as the fishing sector is developing and attracting technological innovations, the pressure on fish stocks may increase, while according to data for 2010 and 2012 only 0.22 per cent of Myanmar's territorial water is protected (ADB, 2015). The health and productivity of coastal ecosystems have also been affected by human activities such as over-exploitation of mangrove forests for timber and fuelwood, industrial shrimp farming, as well as pollution from agriculture, industries and human settlements (MoNREC, 2012b).

*Population dynamics and expected economic growth will lead to a significant stress on environment and natural resources and elevated greenhouse gas emissions.*

Population growth and increasing rural-urban migration will increase the demand for water, energy and food in future. Unsustainable land use management, poor farming practices and over-exploitation of natural resources have already affected the health of vital ecosystems and reduced their productivity (MoNREC, 2012b). Observed deforestation trends and expected expansion of livestock and agriculture sectors, manufacturing and coal production will amplify environmental degradation and increase national greenhouse gas emissions.





“Water has become less available over the recent years. It takes about 20 minutes to get to the nearest source of water. It takes about four to five trips to get water by myself and sometimes 10 trips if needed. It’s also no longer cold in the winter.”

We’ve noticed warmer days since 2004. We now depend on drinking water from hand-scooped waterholes... We used to get spring water but it dried up and it’s not available anymore. We’ve also noticed the quantity of water in many streams is decreasing.”

*Credit: Horton et al. (2017)*

## What are the impacts of climate change on ecosystems?

*Myanmar will suffer impacts from climate change that can affect ecosystem functions and provision of ecosystem services. This could undermine the socio-economic development of the country in the absence of an effective policy response.*

Summary of impacts on key ecosystems as described in Horton R. et al. (2016), MoNREC, (2012b); MoNREC (2017) is provided below.

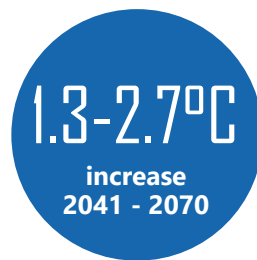
### *Agricultural land, soils and crops*

Climate change will exacerbate soil erosion processes in some areas. For instance, strong winds can remove the surface layer of dry soils, and heavy rains and floods can increase waterlogging and washing away of top soil and nutrients. Intense rainfall and floods will increase the risk of landslides in the Hilly Zone where a loss of agricultural land due to landslides has already been observed. Due to sea level rise, parts of inhabited and productive coastal areas could become permanently inundated, while others could be affected by intrusion of salt water into groundwater systems, soil salinization and coastal erosion processes, restricting agricultural production.

Increasing temperatures and change in soil moisture could have negative impacts on strategic crops such as rice and wheat yields, and could increase the risk of significant losses due to plant pests and diseases. Furthermore, droughts will increase the demand for irrigation that could put water and land resources

# FUTURE CLIMATE IN MYANMAR AND IMPACTS ON ECOSYSTEMS

Increasing average temperatures,  
heat extremes and forest fires



Sea level rise



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

under growing pressure.

## Inland water resources

In future, the rainfall will become more erratic than it is today. Prolonged dry periods will likely occur more often and last longer. The intensity of rainfall and the rate of snow and glacial melt are expected to increase leading to more frequent and severe river and flash floods. In a long-term, these climatic changes will likely affect entire inland freshwater ecosystems in many regions across the country leading to a contamination of water resources, decline in groundwater levels that are main source of drinking water in many rural areas, and loss of freshwater biodiversity.

## Marine and coastal ecosystems

Sea level rise may lead to permanent inundation of inhabited areas and salinization of land and water resources in low-lying coastal areas and the Ayeyawady Delta Region. Myanmar may also experience a loss in marine biodiversity caused by a

Erratic rainfall - periods of heavy and intense rains followed by long-lasting dry spells – leading to frequent river and flash flood events, and droughts.

Loss of ecosystems due to natural disasters that are growing more frequent and intense with the global warming.

Reduced ecosystems productivity and carbon storage and sequestration capacity.

Increasing risk of coastal hazards – coastal flooding, storm surges, strong winds and cyclones. Loss of coastal vegetation and decline in marine biodiversity.

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

change in the seawater chemical composition (due to oceanic warming and acidification as a result of increased temperatures), which is one of the major impacts of climate change. This would impact notably coral reefs - a vital habitat for fish and shellfish - which may be affected by increasing seawater temperatures, altering the living environment of numerous marine species.

Furthermore, coastal erosion, sea level rise, higher temperatures and changes in precipitation patterns, coupled with increasing frequency and intensity of tropical storms will likely lead to deterioration of mangrove ecosystems. A loss of mangroves means higher sensitivity of coastal environments to hazards such as cyclones.

## Forests and mountain ecosystems

Mountain areas will be challenged by a growing risk of floods and landslides as the rains are expected to become more intense in future. Climate change is likely to affect the distribution, composition and health of forests in Myanmar. Droughts and high temperatures will increase the risk of forest



“For the past 23 years I’ve been a farmer. I own 10 acres of land, which used to be my parents’ land. The water levels are rising every year – this started about 10 years ago. We need an embankment to protect our land – farmers like me worry about salt water flooding a lot.”

Credit: MCCA/UN-Habitat (2016)

fires, plant pests and diseases, and desertification, particularly in the Central Dry Zone. Some regions in mountainous and hilly areas may experience degradation of natural vegetation due to intense rains and flash floods. While the presence of forest cover can reduce the adverse consequences of rapid-onset natural phenomena such as floods and landslides, large areas of trees can still be destroyed in the event of a disaster.

### *Biodiversity*

The effects of climate change on biodiversity are likely to include direct loss of biodiversity as a result of heat stress or disasters, increasing spread of invasive species, habitat changes, migration, and impact on life cycles due to changing and shifting seasonal patterns.

*Without adaptation, the long-term impact of climate change on ecosystems in*

*Myanmar could be enormous including: reduced agricultural productivity; increasing human pressure on water resources; reduced health of land and forest resources; water scarcity; loss of species; reduced carbon sequestration capacity.*

What is the current response to climate change?

Myanmar has developed a number of environmental strategies and set objectives for protection of natural resources and sustainable development. These include:





- The newly revised National Environment Policy (2017) and the Environmental Conservation Law (2012) provide strategic priorities and guiding rules to manage the environment.
- The *Forest Policy (1994)* is focused on the protection of soils, water catchments, ecosystems, biodiversity, genetic resources, scenic reserves and national heritage sites. It also recognises that fostering sustainable forest management will ensure tangible and intangible benefits to the present and future generations. It also aims for 30 per cent of the total land area to be reserved forest and five per cent to be protected areas.
- The *National Sustainable Development Strategy (2009)* provides a framework for integrating environmental considerations into future national development plans.
- The *National Adaptation Programme of Action (2012)* prioritizes adaptation projects that seek to enhance the resilience to climate change of forests, water resources, the Coastal Zone, and biodiversity, among others.
- The *National Biodiversity Strategy and Action Plan (2015)* reinforce environmental sustainability.
- The *National Water Policy (2014)* is the first national integrated policy for watersheds, rivers, lakes, reservoirs, groundwater aquifers and coastal and marine waters. According to the policy, Myanmar's vision is to become a water-efficient nation based

on integrated water resource management by 2020.

Other environmental policies include *Agenda 21 (1997)* and the *National Code of Practice for Forest Harvesting (2000)*. The first national and city-level waste management strategy, which will include aspects related to climate change, is under development. Different sector-specific strategies contain significant environmental considerations, such as the Climate-Smart Agriculture Strategy (2016-2030), the Ecotourism Policy and Management Strategy (2015-2025) and the Green Economy Strategic Framework.

In 2011, Myanmar became a partner country of the United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation (UN-REDD Programme) and developed REDD+ Readiness Roadmap in 2013. The Roadmap defines how the country will implement activities aimed at reducing emissions from deforestation and forest degradation, and fostering conservation, sustainable management of forests, and enhancement of forest carbon stocks. Myanmar is currently developing its REDD+ strategy which will help further identify what actions are needed to reduce emissions and what co-benefits can be produced.





## What is the required response?

In the face of climate change, Myanmar should enhance the resilience of ecosystem services obtained from land, water, forest and marine ecosystems for instance through implementing ecosystem-based adaptation, capacity-building and awareness-raising activities. Areas rich in biodiversity should be protected and effectively managed.

Myanmar needs to enforce laws and regulations against illegal commercial logging, conversion of forests to agricultural land, and unsustainable practices (including the 1992 Forest Law, the 2012 Environmental Conservation Law No 9/12) in order to reduce the high deforestation rates. The country needs to implement REDD+ since the protection, rehabilitation and sustainable management of forests can enhance its carbon sink capacity.

Ecosystem-based adaptation and disaster risk reduction should be integrated into development policy and planning to respond to the growing risk of natural disasters such as cyclones, floods, droughts, landslides and wildfires, which can drastically alter the environment.

Informed decision-making is essential for effective climate change response. Therefore, Myanmar must

strengthen its national and sub-national capacities for monitoring of greenhouse gas emissions/removals and key environmental indicators (e.g. climate parameters, soil properties, erosion and sedimentation, water quality). The country needs to implement the four-year National Forest Monitoring System Action Plan (2015), which aims at establishing National Forest Monitoring Information System (NFMS). The NFMS will be the prime information system to provide forest relevant data for: greenhouse gas emissions and sinks; the development and evaluation of the National REDD+ Strategy; and monitoring national policy objectives such as biodiversity conservation, rural development and land use, among others.

Climate change and rural-urban migration of men are already having high impact on rural women. Although women are the main users of natural resources and play an important role in achieving community resilience to climate change, they have limited power in decision-making. Therefore, the climate change actions within the environment and natural resources sector need to be gender-responsive and promote women's leadership and participation.

*"Women are not just victims of adverse climate effects due to their vulnerability; they are also key active agents of adaptation. This is due to their often deep understanding of their immediate environment, their experience in managing natural resources (water, forests, biodiversity and soil), and their involvement in climate-sensitive work such as farming, forestry and fisheries." (UNDP, 2010)*

To address the above challenges, Myanmar should work towards:

### *What is ecosystem-based adaptation?*

Ecosystem-based adaptation is the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change.

- Formulating policies, strengthening regulations and building institutional capacity to control ecosystem degradation and environmental deterioration in the context of climate change.
- Support climate-resilient livelihood diversification through income-generating opportunities, value addition and market linkages targeting landless, poor and marginalised forest-dependent communities.
- Strengthening partnerships with communities, non-governmental organizations, development agencies and international partners to collaborate in the implementation of climate change adaptation and mitigation priorities (MoNREC, 2017).

## What is the climate change strategy for the environment and natural resources 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 Environment and Natural Resources Sector aims at:

*Promoting natural resource management that enhances the resilience of biodiversity and ecosystem services to support social and economic development and deliver carbon sequestration.*

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 Environment and Natural Resources 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>Reduced ground- and surface water availability</p> <p>Contamination of water resources due to floods</p> <p>Increased risk of forest fires in the Central Dry Zone</p> <p>Loss of vegetation as result of rapid-onset events such as floods and landslides</p> <p>Reduced ecosystems productivity in a long-term</p> <p>Decline in marine biodiversity, caused by oceanic warming and acidification</p> <p>Destruction of coastal ecosystems due to strong cyclones, and consequent decline of fish and shrimp stocks</p> <p>Permanent inundation of coastal areas, consequent loss of agricultural and residential land</p> <p>Reduced carbon storage and sequestration capacity</p> <p>Impacts on biodiversity</p>	<p>High deforestation rate and over-exploitation of natural resources, and weak enforcement of existing laws and regulations</p> <p>Increasing human pressure on water, land, forest and marine resources</p> <p>Unsustainable use of ecosystems by communities</p> <p>Population growth, rural-urban migration, poverty and social inequality, coupled with high vulnerability of growing in number women-headed households in rural regions</p> <p>Low level of community's awareness on climate change and knowledge on sustainable resource management</p>	<p>Climate change dimensions are incorporated and enforced in environment and natural resource management policies, rules and regulations.</p> <p>Environmentally sound technologies and good management practices are adopted for improving and maintaining forest, water, land and coastal ecosystem health and services.</p> <p>Framework for institutional coordination and multi-stakeholder engagement is established and supports access to finance and implementation of responses for health, environment and natural resource management.</p>	<p># of policy, strategies, laws and by-laws that integrate climate change, including resilient and low-carbon provisions</p> <p># of officials trained on sector-specific guidelines and tools for integrating climate change into planning and budgeting systems</p> <p># of sector - and technology- specific mitigation and adaptation action plans implemented in regions or areas with higher deforestation and degradation issues</p> <p># of households, NGOs and CBOs benefiting from access to, and implementation of, environmentally sound technologies and good management practices, including ecosystem-based adaptation approach, with training</p> <p># of geographical areas covered and technology-specific institutional arrangements — including multi-stakeholder engagement framework — developed to implement climate change responses at national, sub-national and local levels</p> <p># of climate change projects implemented through externally supported finance and domestic resources that address issues in the natural resource management sector.</p>



# Sectoral Action Plan

deforestation and degradation is high and in critical forest areas



## *Policies and legislation*

**Objective:** Integrate climate change in environment and natural resource management policies, plans, research and development, and extension services at national, sectoral and local levels

### **Activities:**

- Integrate climate change in the new environment policy and law, and in existing sectoral policies such as forest, water, tourism and land use
- Support in preparing climate change policies, National Adaptation Plan (NAP), Green Growth Strategy, National Appropriate Mitigation Actions and Low-Carbon Development Strategy
- Integrate gender considerations and guidelines in key policy frameworks, including the Intended Nationally Determined Contribution (INDC) Implementation Action Plan, REDD+ and NAP
- Prepare REDD+ and INDC implementation action plan to integrate climate change into the national legal framework and development plans
- Integrate climate into guidelines for inventory (forest, greenhouse gases), monitoring (National Forest Monitoring and Information) and mapping
- Develop climate screening/prooing and planning guidelines and tools to climate-proof investments
- Develop/update existing compliance systems (Environmental Impact Assessment, Strategic Environmental Assessment, Social Impact Assessment) to include climate risk management and mitigation plans
- Develop and implement adaptation and mitigation action plans for critical ecosystems including coastal areas, wetlands (such as Inle Lake), watersheds and catchment areas
- Identify and promote successful climate-resilient ecosystem-based adaptation practices that are suitable for different environmental conditions
- Implement livelihood diversification activities — such as skill oriented training on enterprise development, value addition and marketing targeting — to community forestry user group members, including landless, women and other vulnerable households
- Introduce microfinance and credit facilities to support climate-smart diversified livelihood options for poor households in vulnerable townships or districts, including female-headed households
- Develop policy guidelines and directives to establish gene bank to protect species under threat from climate change
- Pilot and scale up REDD+ activities in the areas where



## *Institutions*

**Objective:** Establish and reinforce institutional arrangements to plan and implement climate change responses

### **Activities:**

- Initiate meetings and discussion to harmonise and align existing co-ordination mechanisms to integrate climate change
- Develop training courses and curriculum on climate change integration, assessment and planning, including monitoring and evaluation
- Organise discussion forums to strengthen climate change portfolio within the Environment Conservation Department
- Develop local-level institutional mechanisms to integrate climate change within the sub-national and local plan and activities, with a gender perspective



## *Capacities*

**Objective:** Enhance awareness and capacity to promote and implement climate-resilient and low-carbon responses

### **Activities:**

- Develop plan and materials for climate change awareness and capacity development (for training of trainers)
- Implement training and awareness-raising activities on climate change, targeted at landless, female-headed households and vulnerable communities, including ethnic groups
- Provide capacity building training on vulnerability and risk assessment (inventory, climate hazard mapping), information management (database system) and dissemination (communication strategy)
- Organise capacity-building activities targeted at academic and research institutions to mainstream climate change
- Provide grants for university teachers and students to conduct research on climate change issues within the environment and natural resource management sectors
- Develop mass communication and dissemination strategy for communicating climate change to local communities with a gender-sensitive communications approach



## Financing

**Objective:** Establish financial mechanisms to mobilise and allocate resources for climate change response and climate-responsive development

**Activities:**

- Develop fund management and operating guidelines to operationalise an environmental management fund
- Develop an innovative climate fund mechanism and guidelines at national and sub-national levels (within the Environment Conservation Department of MoNREC)
- Develop a national-level climate financing strategy and roadmap (accessing source and investment areas) to secure investment on climate change
- Develop guidelines and procedures for meeting international standards for fund access with gender-sensitive requirements
- Develop bankable projects to implement climate change adaptation and mitigation priorities



## Technology and innovation

**Objective:** Increase access to climate-resilient and low-carbon technologies and practices

**Activities:**

- Develop, test and scale-up sustainable soil and water

management technologies and practices in climate vulnerable areas

- Organise events to improve farmers' technological access to climate-smart technology and practices with gender considerations
- Establish forest gene banks and conservation zones targeting climate-sensitive ecosystems such as mangroves and wetlands
- Implement energy efficiency plans focusing on biomass conservation, with gender considerations, in the most vulnerable townships, targeting a number of households



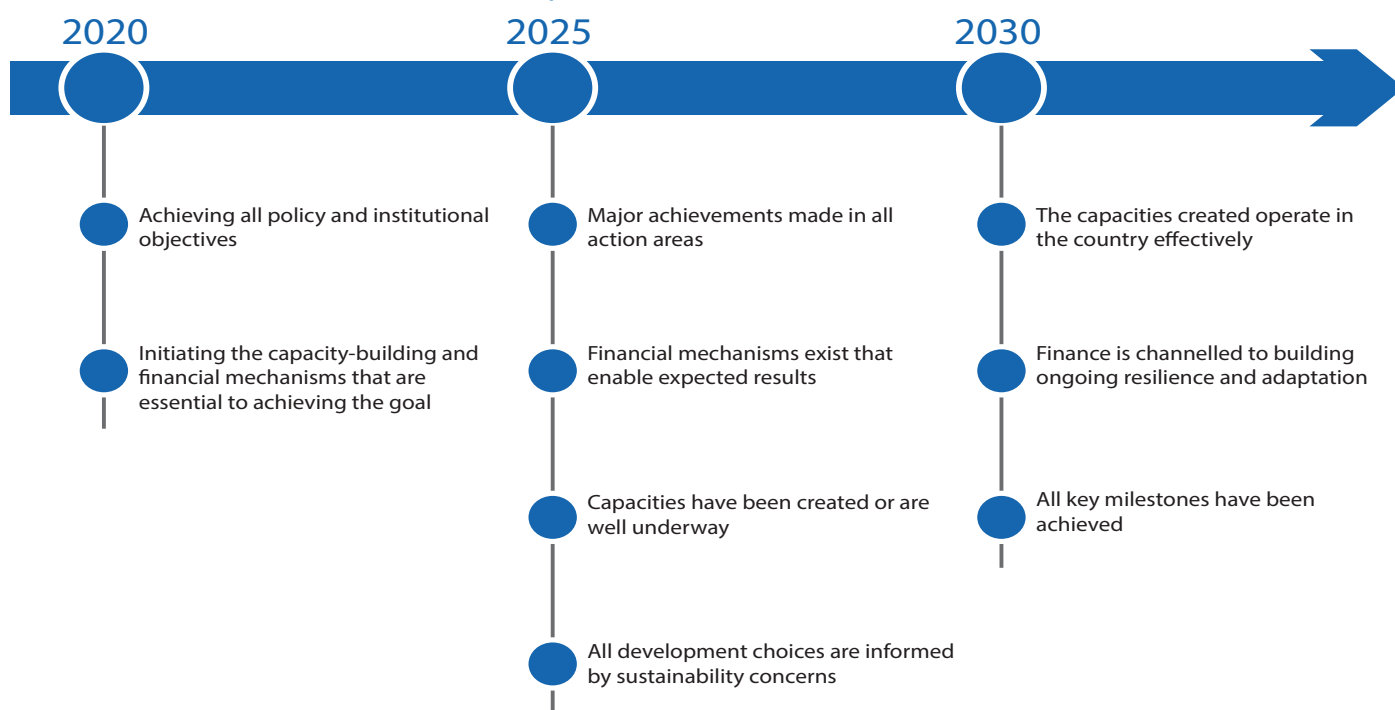
## Partnerships

**Objective:** Promote multi-stakeholder partnerships to support and scale up climate-resilient and low-carbon responses

**Activities:**

- Establish a climate change, environment and biodiversity working group involving multiple stakeholders
- Support community forestry user group and other networks' activities to enhance public participation in addressing climate change issues
- Develop strategy and proposals for joint actions to access climate finance
- Implement joint collaborative project involving government, non-governmental organizations, development agencies and international partners in targeted climate-sensitive and vulnerable areas of Myanmar

### Timeframe to achieve results





## How can the response to climate change within the environment and natural resources sector bring sustainable development outcomes?

Enhancing the resilience of ecosystem services used in the agriculture, fisheries and livestock sectors can secure income and help alleviate poverty in rural areas despite the challenges of climate change. Introducing ecosystem-based adaptation in both rural and urban contexts can build resilience to disasters, reduce food and water insecurity, and improve health and quality of life.

When climate change adaptation and mitigation policies across various sectors of the economy ensure conservation, restoration and sustainable use of land, water, forest and marine resources, communities will be able to benefit from ecosystem services in future. For example, restored, protected and effectively managed forest areas can enhance the carbon sequestration and storage capacity of

the country, while safeguarding critical ecosystem services such as flood control, water purification and food.

If sectoral climate change policies address the needs and capacities of the poor, migrants and other vulnerable groups, they can reduce inequality. For instance, integrating gender consideration into sectoral policies and raising awareness of communities on the role of women in natural resource management in the context of climate change adaptation and mitigation can help reduce gender inequalities.

Raising awareness of key stakeholders on the importance of reducing emissions from deforestation and forest degradation and on the need of re-thinking unsustainable use of natural resources can help achieve sustainable consumption and production patterns. By strengthening environmental education children and youth could become the leaders of change toward a sustainable future.





## Conservation of coastal ecosystems

Mangroves for the Future (MFF) is a partner-led initiative to promote an integrated ocean-wide approach to coastal management and build the resilience of ecosystem-dependent coastal communities across Asia, including in Myanmar. The web-platform of the initiative is a rich source of good practices, tools and research studies on topics related to mangrove restoration, gender, marine tourism, and coastal resilience, among others.

**Learn more:**

[www.mangrovesforthefuture.org](http://www.mangrovesforthefuture.org)

## Climate change and biodiversity knowledge platforms

The International Climate Initiative (IKI) of the Germany's Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety supports projects worldwide in the areas of mitigating greenhouse gas emissions, adapting to the impacts of climate change, conserving natural carbon sinks/REDD+ and biological diversity, as well as cross-cutting issues such as gender and governance. IKI-funded/supported online knowledge platforms can be used by policy-makers and other stakeholders for learning, dialogue and knowledge sharing.

**Learn more:**

[www.international-climate-initiative.com/en/media-centre/knowledge-platforms/](http://www.international-climate-initiative.com/en/media-centre/knowledge-platforms/)

## Ecosystem-based approaches to climate change adaptation and mitigation in mountain regions

The Support to Rural Livelihoods and Climate Change Adaptation in the Himalaya (Himalica) initiative of the International Centre for Integrated Mountain Development (ICIMOD) aims to support poor and vulnerable mountain communities in the Hindu Kush Himalaya to adapt to and mitigate climate change through a sustainable and efficient use of natural resources and nature protection. Key areas of activity include ecosystem services assessment, resilient agriculture and rural livelihoods, local tourism, gender equity, flood vulnerability assessment and policy responses, among others.

**Learn more:**

[www.icimod.org/?q=13764](http://www.icimod.org/?q=13764)



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](http://www.myanmarccalliance.org); Facebook: @myanmarccalliance.



#### Learn more:

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