



The Government of the Republic of the Union of Myanmar

Sixth National Report on Biodiversity to Convention on Biological Diversity

2018





**The Government of the Republic of the Union of Myanmar
Ministry of Natural Resources and Environmental Conservation**

Sixth National Report on Biodiversity to Convention on Biological Diversity

**Prepared by
Forest Department**

**Consulted by
United Nations Development Programme-Myanmar**

**Nay Pyi Taw
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Introduction

This is the printed version of the Myanmar 6th National Report (6NR) to the Convention on Biological Diversity (CBD). This version of the 6NR has been entered online for submission to the CBD, and so represents a copy, with some minor sections omitted (e.g., empty sections on “Additional Information”). The report can only be submitted to the CBD (i.e., published) by MONREC.

The CBD online tool has the following sections: I. Targets, II. Implementation, III. Assessment, IV. Contribution towards the Global Aichi Targets, V. A report on the Global Plant Strategy, VI. Contribution by Indigenous Peoples, and VII. Updated status of biodiversity in Myanmar. The two optional sections, Section V. Global Plant Strategy and Section and VI. Contribution by Indigenous Peoples, will not be included in the Myanmar 6th National Report.

The format for this report was required by the CBD Conference of the Parties (COP) and is taken directly from the online tool on the CBD website (CBD Clearing House Mechanism). The same headings are repeated for each measure and for each target assessment throughout the report, and these have been taken directly from the online version. Some maps, graphs and reports were embedded in the online version for most of the Implementation and the Assessment Sections and are either linked or included here in this Word version. This version also includes a series of summary recommendations that are not required by the CBD, but could be useful to Myanmar for the remaining years of the NBSAP implementation.

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List of acronyms

BANCA - Biodiversity and Nature Conservation Association
CBD – Convention on Biological Diversity
CITES – Convention on the Trade in Endangered Species (of the UN)
CF – Community Forestry
CFUG – Community Forestry User Group
CFiUG – Community Fishery User Group
ECD – Environmental Conservation Division
EU-FLEGT – European Union – Forest Law Enforcement, Governance, and Trade programme
FAO – Food and Agriculture Organisation (of the UN)
FD – Forest Department
FFI – Flora and Fauna International
FPIC – Free, Prior and Informed Consent
FREL – Forest reference emissions level
GEF – Global Environment Facility
ICCA – Indigenous Community conserved Area
ICIMOD - International Centre for Integrated Mountain Development
IGO – Inter-governmental organisation
IUCN – International Union for the Conservation of Nature
ITTO – International Tropical Timber Organisation (of the UN)
LMMA – Local Marine Management Area
LCCA – Local Community Conservation Area
MCRB – Myanmar Centre for Responsible Business
METT – Management effectiveness tracking tool
MOALI – Ministry of Agriculture, Livestock and Irrigation (includes the Fisheries Department)
MOHT - Ministry of Hotels and Tourism
MONREC – Ministry of Natural Resources and Environmental Conservation
MPA – Marine protected area
NBSAP – National Biodiversity Strategy and Action Plan
NGO – Non-government organisation
NP – National Park
NWCD – Nature and Wildlife Conservation Division (of MONREC)
PA – Protected area
RECOFTC – The Centre for People and Forests
REDD – Reducing Emissions from Deforestation and forest Degradation
SMART – specific, measurable, agreed, realistic, and time-based (refers to management objectives)
UNDP – United Nations Development Programme
WCS – Wildlife Conservation Society
WHS – World Heritage Site
WWF – World Wide Fund for Nature

Executive Summary

The CBD requires that Parties report on progress towards the conservation of biodiversity in their country every 4 years. This 6th National Report (6NR) of Myanmar was prepared with the assistance of a GEF grant to UNDP and was submitted using the online format at the CBD Clearing House Mechanism website, in December 2018. This executive summary is not a part of the online format and is provided here as an overview to the printed version of the 6NR.

The 6NR has the following format: 1. The 61 National Targets; 2. An accounting of the implementation of each of the 163 actions, or measures, taken by Myanmar under its National Targets; 3. An assessment of progress towards each of the 61 National Targets; 4. An accounting and assessment of Myanmar's contribution to the 20 global Aichi Biodiversity Targets (ABT); and 5. An updated section on the status of biodiversity in Myanmar. Although not a part of the online format, a series of recommendations are included in this printed version to assist Myanmar in the future implementation of its NBSAP and, more generally, in the conservation of biodiversity.

Responsibility for implementation of the NBSAP lies primarily with the Forest Department of MONREC (62% of the 163 measures), but several other government departments and ministries are also implicated: Environmental Conservation Division (MONREC) for 12%, Agriculture (MOALI) for 13%, Fisheries Department (MOALI) for 9%, and the Ministry of Budgeting and Planning for 3% of the measures (i.e., actions) in the NBSAP.

Data were gathered on the implementation of the NBSAP actions from government, NGOs, IGOs, foreign aid agencies, web-based searches, and scientific journal publications. Many reports were made available, primarily from the NGOs and most were attached to the report either as links to a website or the full report. Global databases were used to provide data and maps for as many actions as possible. These databases included the Global Forest Change dataset (<https://lcluc.umd.edu/content/global-forest-change>), Intact Forest Landscapes (<https://www.intactforests.org>), and a suite of databases that were uploaded to the UN Biodiversity Lab website (<https://www.unbiodiversitylab.org/>) including FAO ecosystems, global ocean impact, IUCN species rarity index, Biodiversity Intactness Index, and Threatened Species Index, Global Protected Areas, and Global Coral Reef Distribution. Other maps were provided by WCS for key biodiversity areas (KBAs) and NWCD (updated protected areas).

Among the most well-implemented of the actions were those pertaining to improving the legislative and policy framework for biodiversity conservation, public education about biodiversity, increased knowledge about species, collection of genetic materials, and listing of Ramsar and World Heritage sites. Most actions had some advances over the past 4 years, although some, such as reducing pollution, dealing with invasive species, and reducing forest loss and marine harvests, were not acted on. Each individual action is covered in detail in the report and the most useful summary is found in the section on how well the actions have led to achieving the National Targets.

Where implementing of certain actions was not done, the main obstacles were lack of time, lack of capacity (people or knowledge), lack of funding, or low priority. In some cases, difficult negotiations with local groups with respect to particular projects has slowed progress, especially for developing new protected areas. There was also a lack of awareness about commitments under NBSAP at the Fisheries Department in particular, but by some other departments as well. The lack of mapping for many aspects, such as species distributions and abundance, ecosystem types, and values provided by ecosystems hinders delivery, as does the lack of consistent monitoring and long-term datasets. For fisheries and fisheries enforcement, the long coastline and large number of stakeholders makes management difficult, as does the lack of enforcement, but it appears that economic development is taking precedence over sustainable fishing.

Summarizing the implementation of actions allowed an assessment of how Myanmar is progressing towards achieving its 61 National Targets defined in the NBSAP. Overall, about 5% of targets were exceeded, 34% were or will be fully achieved, 33% were partially achieved but were unlikely to be completed by 2020, for 26% there was no change or no data were provided, and for 3% of the cases (i.e., 2 targets), results suggested that Myanmar is moving away from achieving the target. The category 'partial achievement' is very broad however, and so few of these measures are likely to be fully implemented under the plan period.

Of the 61 targets, 21 were fully achieved 2 years prior to the 2020 planned date. The targets relating to increased knowledge of biodiversity have been a clear focus of effort, resulting in a large number of species studies and monitoring of migratory birds and key mammals such as elephants. In addition, the development of successful breeding colonies for several of the IUCN red-listed turtles has resulted in the beginnings of a population recoveries. Other completed targets relate to successfully improving the national legal framework for conservation, with the passing of Conservation of Biodiversity and Protected Areas Law, the revised Forest Law, and a lands policy; an increased effort to combat illegal logging; completing a hydro-power strategic environmental assessment (SEA) and planning an SEA for the mining sector; greatly improved funding for biodiversity-related work; and improved dissemination of information to many sectors about biodiversity.

Particular success was achieved for two closely-related targets: Target 5.3 - By 2020, all wetland areas surveyed and prioritized for conservation value; and Target 11.4 - By 2020, Myanmar's sites of premier conservation value are recognized by relevant international designations, through the designation of one World Heritage Site, three additional Ramsar sites, and one Biosphere Reserve. A report by Davidson et al. (2018) entitled "Conservation of protected areas: Provisional list of Myanmar wetlands qualifying as Ramsar sites", provided a framework for prioritising important wetlands and helped to result in the global approval of four new Ramsar sites, bringing the country's total to five sites. In addition, two new Biosphere Reserves at Inlay Lake region and Indawgyi Lake were also registered. Also exceeded was Target 15.1 – By 2020, 130,000 ha of forest are under community forestry. From 2014 to 2018, the target was exceeded and currently >230,000 ha are managed by communities.

The two targets that have had negative results were: Target 5.1 - By 2020, at least 10% of DMDF and mangrove forest has been put under some form of protection, including SFM; and Target 6.2 - By 2020, total commercial marine catch is reduced to more sustainable levels. For Target 5.1, a small area of mangrove was protected at one Ramsar site but Myanmar continues to lose mangrove forest at a rate of 13 km²/year. No dry mixed deciduous forest was protected, while the deforestation rate climbed to nearly 2%/year, with the loss of nearly 335,000 ha of forest/year since 2014, including 8,000 ha/yr inside protected areas. For Target 6.2, the marine catch has increased by 152,000 tonnes/yr and has risen by more than 23% since the revised NBSAP began in 2014. A recent study by Tezzo et al. (2018) from Worldfish shows excessive fishing pressure in the Rakhine area, at the Ayeyawady Delta and in the Myeik Archipelago area.

There are 20 Aichi Biodiversity Targets (ABTs) that were agreed to at the Nagoya CBD Conference of the Parties in 2010. A fourth section of this 6NR asks each country to "describe how and to what extent your country has contributed to the achievement of [each] Aichi Biodiversity Target and summarize the evidence used to support this description". For Myanmar, there has been substantial progress towards six of the Aichi Targets, some progress on four more, no developments for six targets and, for four others, the country is moving away from the global target.

The six ABTs with strong contribution in Myanmar include: Increased awareness of biodiversity (ABT 1); Improved conservation status of species (ABT 12); Protecting the genetic diversity of crops and wild relatives (ABT 13); Enacting policies and laws to implement the NBSAP (ABT 17); Increased knowledge of biodiversity (ABT 19); and Increased funding for biodiversity (ABT 20). For Targets 12 and 19, for example, there are now more than 4400 species that have been

assessed for listing on the IUCN Red List, and the number of species listed has increased each year since 2014, primarily owing to better knowledge and effort (see graph at Target 12).

ABTs with minimal or no contribution included: Sustainable management of resources (ABTs 5, 6, and 7), because of the high deforestation rate and elevated marine harvest; Pollution (ABT 8) because of the continued aquatic pollution, especially from the mining sector; Invasive alien species (ABT 9), where although a plan is being prepared, there has been no implementation; and Habitat restoration (ABT 15), with a strong need to implement the national forest restoration plan.

CBD asked countries to consider gender aspects wherever data permitted and to report on how women are involved in the implementation of the NBSAP or benefit from it. A separate report on gender issues in Myanmar is included as an appendix to the report. Several women's groups were interviewed and the data were disaggregated by gender whenever possible. About 2000 people were trained under various activities associated with the NBSAP and, of these, 50% were women (mostly in agriculture and forestry). The data show women have prominent roles in organized community user groups, for example occupying key roles in maintaining equipment, gathering wood, and tending nets especially in the inshore fisheries. Nevertheless, especially among rural women many gender differences remain. For example, there are cultural biases for travel and attending meetings, and there are wage differences in some sectors, such as aquaculture employment.

As a general summary of the implementation of the NBSAP, there was:

- A large, ongoing, and impressive effort in Myanmar towards conservation of biodiversity since 2014.
- A large improvement in knowledge on which to base future actions.
- Strong partnerships among government, funding agencies, IGOs, and NGOs.
- Apparently less strong, however, are inter-department collaborations. For example, Fisheries Department seemed unaware of its commitments in the NBSAP.
- Some targets had significant effort; others were lower priority.
- A loss of forest habitats continues at a very high rate and the marine fish catch is unsustainable and rising.
- Important contribution by women in several sectors, and with increased training opportunities; but social impediments continue to exist
- 10 ABTs are well-addressed, while 10 others require greater attention over the next 2 years.

Considerable guidance for sustainable use and conservation of biodiversity is now available in Myanmar, as the result of large efforts by the many actors over the past 4 years, including a marine spatial plan, action plans for elephants and tigers, a REDD+ Roadmap, as well as a reforestation plan. The results of this assessment suggested several areas that could be the focus of efforts over the next 2 years and longer:

1. Improved coordination among Ministries and within Departments in the same Ministry would make implementing the NBSAP more effective. This could be done by holding quarterly meetings of the NBCC and developing a short-term action plan for implementing the remaining NBSAP measures over the next 2 years.
2. Ministries and Departments could be reminded of their commitments under the NBSAP, as a work plan. This is especially the case for Fisheries Department, where they did not seem to understand that NBSAP commitments were made and were unaware of the commitment to create a large number of community management user groups.
3. The evidence clearly indicates that the illegal harvesting of timber and wildlife continues to be a major source of biodiversity loss in Myanmar. A plan could be developed to lobby cabinet and parliament for an increased enforcement budget for both terrestrial and aquatic resources, and

begin to modernize enforcement staff through training and more advanced equipment. This could be done by raising the profile of the effects that illegal activities are having on natural resources in Myanmar. A part of a revised enforcement plan should be the implementation of chain-of-custody laws for timber and valuable wildlife, supported by DNA-based technologies.

4. For the conservation of biodiversity in Myanmar, the two most important issues to address moving forward are 1.) deforestation and 2.) the ever-increasing marine harvest. Both of these issues must be strongly and rapidly addressed to enable sustainability of ecosystem services. To do this, the key elements are improved enforcement (especially at borders), a national forest inventory, more sustainable harvest levels established for wood and fish, continued development of community-based management systems (with training and certification), data collection and modelling populations of important marine species, and a more focused and coordinated effort among stakeholders. For forestry, there needs to be a closer relationship between the timber management arm of MONREC and the NWCD in terms of developing sustainable forest management plans and for large landscape-scale planning. The high deforestation rate and loss of intact forests suggests a 'development' priority over 'sustainable development' as a priority. Some of this could involve capacity training on setting timber quotas under a true SFM regime and landscape-level planning.

5. It seems reasonable and effective to move the Fisheries Department out of MoALI, where it apparently has a low priority, and into MONREC with the other natural resource management agencies, as is the case for resource management departments world-wide. This might change the apparent emphasis on fisheries management from development to one of conservation and sustainable use.

6. As the the implementation of the National Reforestation Programme moves ahead, it will be important to fully coordinate among all participants to ensure the best possible outcome. Currently, there are disparate and somewhat unrelated efforts by NGOs, IGOs, REDD+, FLEGT, and government that are ongoing and that might be better coordinated.

7. The mining sector SEA should be completed as soon as possible, and consideration given to conducting SEAs for other large sectors as well, for example the forestry, agriculture, oil and gas, and aquaculture industries. All of these contribute to large landscape-level planning.

8. Invasive species need much greater attention, through research, inspections of shipments at borders, and development of eradication plans for existing species. A specific section within MONREC could be created with the sole objective of dealing with this issue.

9. The protected areas network can be improved by planning new areas in under-represented ecoregions, including especially in the Ayeyawady forest types and the Indo-China Subtropical Forest Zone. A network of large protected areas that enable representation of the complete fauna associated with a given ecoregion could be a focus.

10. Negotiations for the Taninthayi NP need to be continued, in order to maintain the ecological integrity of this highly biodiverse area before it is entirely lost to development. This seems to be a case where too many disparate efforts lack coordination, resulting in different agendas for the area.

11. A regular monitoring program needs to be developed for umbrella, migratory, and rare species. For this, MONREC would need a monitoring division and an action plan that coordinates among actors (NGOs, university, government) with a clear set of objectives, common methods, and a means to collate and analyze the data.

12. The community resource management programs seem to be working well in Myanmar. Emphasis should be given to expanding the area managed by communities, especially for marine fisheries.

13. Fuelwood harvesting is a key driver of forest degradation in all of Southeast Asia. While some work has been ongoing, there is a need to reduce reliance on fuelwood by improving the network of natural gas distribution for heating and cooking and for the increased availability of high efficiency woodstoves. Consideration should also be given to investigating a plan for the use of geothermal and solar energy sources.

14. An aspect of the NBSAP that has not been well implemented yet is the actions pertaining to pollution. There is a need to conduct the intended study of pollution impacts on biodiversity; and then develop a plan to work to reducing the key sources of pollutants, such as from the mining industry in particular.

15. Recovery planning for important flagship (landscape) species will be key to protecting biodiversity in Myanmar. Remaining intact forest areas should be protected and action plans for key species, including elephants and tigers, be implemented. Plans should also be developed for other landscape species that are also in serious decline, including banteng and Eld's deer.

16. Down-loading greater responsibility to the States in the form of local BSAPs could help to achieve greater success at this point. National staff needs to work with State staff to develop plans at the State level that mirror the NBSAP and ultimately contribute to the national effort. This is likely a capacity issue in terms of time and staff available from the national office.

17. One key issue is that much of the budget for conservation is external to MONREC, and given directly to NGOs by donors. Implementation of the NBSAP requires more effective coordination between all NGOs and government to ensure that government priorities are being met. This seems especially true of work being done by some of the smaller NGOs and through universities. Forming partnerships with government enables a unified, coordinated directional approach to important issues.

Section I. Targets

The National Targets and rationales for this 6th National Report were taken directly from the Myanmar NBSAP (<https://www.cbd.int/doc/world/mm/mm-nbsap-v2-en.pdf>). The 6th National Report online reporting website allowed two options: either a country adopted the Aichi Targets and reported against those, or the country defined and reported on its own national targets. For Myanmar, the latter choice was made to use the 61 National Targets (i.e., 1.1, 1.2,etc.) in this report. Under each target, the online report required discussion of “measures” taken to achieve a target (i.e., Implementation), which were equivalent to the “Actions” described under each target in the Myanmar NBSAP (i.e., 1.1.1, 1.1.2, 1.1.3 ,... etc.); hence the report covers each of the 163 measures (actions).

The original (2014-15) baseline information and data that were used for target development were provided by government departments, NGOs, and academic institutions, as well as derived from national and regional reports of biodiversity projects, as was explained in the NBSAP. Issues related to biodiversity and ecosystems were identified and prioritized through consultations at the central level, as well as at state and regional levels, and they were considered in setting national targets and linking these with global targets. Consultations on the formation of national targets and actions were conducted with central government departments, NGOs, research institutes and academic institutions, as was also explained in the NBSAP.

The 61 National Targets are also listed as headings for Section III Assessment:

Target 1.1 By 2018, awareness of biodiversity values in key decision makers and line agencies has been improved.

Target 1.2 By 2018, the private sector has an enhanced understanding of the value of biodiversity and relation to business practices

Target 1.3 By 2017, the media have an improved understanding of and capacity to communicate topics related to biodiversity

Target 1.4 By 2020, local communities in and around PAs have enhanced opportunities to share knowledge and participate in management activities

Target 1.5 By 2020, primary and secondary curricula have incorporated biodiversity values

Target 2.1 By 2018, Myanmar has made a formal commitment to natural capital accounting and has taken significant steps to integrate the value of biodiversity and ecosystem services into national accounts

Target 2.2 By 2018, significant steps have been taken to incorporate biodiversity and ecosystem services into state/region planning

Target 2.3 By 2018, the government has significantly enhanced its capacity to review and assess EIAs and monitor and enforce EMPs.

Target 2.4 By 2017, Myanmar has been assessed as an EITI compliant country

Target 3.1 By 2020, the national legal framework on tenure encourages conservation and sustainable management

Target 3.2 By 2020, positive incentives are established for the sustainable use of nature

Target 4.1 By 2020, SEA conducted and guidelines prepared for mining and energy sectors.

Target 4.2 By 2020, sustainable production and consumption of natural resources is mainstreamed in development planning

Target 5.1 By 2020, at least 10% of 'dry mixed deciduous forest' (DMDF) and mangrove forest has been put under some form of protection, including sustainable use and management.

Target 5.2 By 2018, the PFE will have been re-assessed

Target 5.3 By 2020, all wetland areas surveyed and prioritized for conservation value.

Target 5.4 By 2020, there has been an increased effort to combat and reduce illegal logging.

Target 5.5 By 2020, negotiation phase to sign Forest Law Enforcement Governance and Trade (FLEGT) and Voluntary Partnership Agreement (VPA) has been conducted

Target 6.1 By 2020, states/regions have approved laws allowing for community and/ or co-managed fisheries.

Target 6.2 By 2020, total commercial marine catch is reduced to more sustainable levels.

Target 7.1 By 2020, SRI and other forms of environmentally friendly rice production have been implemented in 10% of rice paddy area.

Target 7.2 By 2020, 5% of fish and shrimp aquaculture by volume follows international best practices for sustainable management

Target 8.1 By 2020, understanding of the extent and severity of pollution in Myanmar and its impacts on biodiversity are significantly enhanced

Target 8.2 By 2017, the EIA Procedure, NEQG, and NEQS include adequate provisions to ensure protection of biodiversity and ecosystem services

Target 8.3 By 2020, a water pollution monitoring network involving both government and local communities is operational at three critical freshwater sites and at existing or proposed Special Economic Zones

Target 8.4 By 2020, informal and artisanal miners have an enhanced understanding of pollution and toxicity of mercury and methods to reduce its use

Target 8.5 By 2020, the sale and use of fuel additives, agrochemicals and veterinary drugs that are known to have significant negative impacts on biodiversity and ecosystem services are effectively controlled and, where appropriate, banned.

Target 9.1 By 2019, NIASP has been developed and approved, and is under active implementation with the support of civil society, local communities, the private sector and the international community

Target 10.1 By 2020, 15 per cent of Myanmar's coral reefs conserved within MPAs, including LMMAs and other area-based conservation measures

Target 10.2 By 2018, destructive fishing practices in coral reef areas banned and effectively enforced

Target 11.1 By 2020, 8% of Myanmar's land area is conserved within Protected Areas (PAs), including Indigenous Community Conservation Areas (ICCAs).

Target 11.2 IUCN governance categories and management categories are recognized in policy and practice

Target 11.3 By 2020, the management effectiveness of Myanmar's PA system has significantly improved, with 15 PAs implementing SMART, at least five PAs implementing management plans, and local communities are involved in management activities in at least five PAs.

Target 11.4 By 2020, Myanmar's sites of premier conservation value are recognized by relevant international designations, through the designation of one natural WHS, three additional Ramsar sites, and one Biosphere Reserve

Target 11.5 By 2020, a Marine Spatial Plan with nested MPAs is prepared for the Myeik Archipelago.

Target 12.1 By 2020, the conservation status of priority, globally threatened species in Myanmar has improved

Target 12.2 By 2020, the illegal wildlife trade in Myanmar has been substantially reduced

Target 12.3 By 2020, a National Red List of selected taxa has been produced

Target 12.4 By 2020, conservation status of migratory species has been improved

Target 13.1 By 2020, priorities for the conservation of plant genetic resources have been identified and are addressed by programmes to promote in situ conservation.

Target 13.2 By 2020, ex situ conservation gaps have been addressed through collaborative research and collection programmes.

Target 13.3 By 2020, a crop wild relative action plan has been initiated

Target 13.4 By 2020, incentives and programmes to conserve the genetic diversity of livestock are established to address current gaps

Target 14.1 By 2020, a rapid national ecosystem assessment has been carried out, identifying the status, values and trends of key ecosystems and the services they provide.

Target 15.1 By 2020, over 130,000 hectares of forest have been placed are under community forestry

Target 15.2 By 2018, guidelines for a national forest restoration programme that incorporates best international practice formally adopted by government and pilot project initiated

Target 15.3 By 2020, REDD+ Readiness Road Map is actively being implemented

Target 16.1 By 2020, the Nagoya Protocol Is actively implemented in Myanmar

Target 17.1 By 2016, the NBSAP is adopted by Cabinet as the nation's over-arching policy framework for the conservation and sustainable use of biodiversity

Target 17.2 By 2016, the institutional mechanisms to ensure effective implementation and monitoring of the NBSAP are in place and functioning effectively

Target 17.3 By 2020, BSAPs are under preparation in at least three states/regions

Target 17.4 There is an improved national awareness of the NBSAP as a result of the application of a communications plan

Target 18.1 By 2020, customary land use tenure systems has been recognized in Myanmar's legal framework and a mechanism for recognizing communal tenure Is operational

Target 18.2 By 2020, FPIC principles are institutionalized in government, private sector, and donor programmes

Target 18.3 By 2020, traditional knowledge documented, recognized, promoted, and protected through incorporation into education and conservation outreach education

Target 18.4 By 2020, traditional knowledge, practices, and beliefs are documented, recognized, protected, and promoted in formal and informal education

Target 19.1 By 2016, a clearing-house mechanism web portal is established

Target 19.2 By 2020, a national forest cover change 2015-2020 database developed using international standard methods, and made publicly available online

Target 19.3 By 2020, leading Myanmar universities have established post-graduate courses in conservation biology

Target 20.1 By 2020, the funding available for biodiversity from all sources is increased by 50%

Target 20.2 By 2018, donor and partner funding for biodiversity is better coordinated and implemented

Section II. Implementation

This section of the report is where information pertaining to each of the measures (i.e., Myanmar NBSAP 'Actions') is reported. These measures cover progress for the period since the revised NBSAP was published in 2015 (i.e., 2015-2018). The 'Implementation' section in this Word version of the report is abbreviated somewhat from the online version, because some sections where little was reported, or where the answer was generally uniform throughout, have not been included. For example, there is an online section that asks about "Obstacles to implementation". For that case, the answer was almost always "lack of capacity, lack of time, and/or lack of sufficient funding". Where the answer to 'obstacles' was unique for a particular measure, it is included in this Word version.

For Section II, the information reported came from interviews with government officials, NGOs, donor agencies, and IGOs, blank data tables provided as questions to Departments and NGOs, and web-based searches for information. Global datasets were used for indicators wherever possible. For several of the targets and measures, there is a considerable amount of information, for example for Targets 5, 7, 11, 12, 14, and 15, reflecting priority areas for conservation work in Myanmar. For some Targets, however, very little information was collected, such as for Targets 8, 9, 18, and 20, suggesting that these targets have a low priority. Most measures are reported individually but, in a few cases, two measures were combined. The format requires that an estimate of effectiveness be reported. In most cases the ranking reported was a subjective estimate because no clear numerical objective was established. In other cases, where a numerical target was specified, the assessment was quantitative.

Target 1.

Title of measure (termed an 'Action' in the NBSAP)

1.1.1 Draft and disseminate briefing documents to national and state/region parliaments

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Numerous briefings were given to national politicians over the past 3 years to assist in understanding biodiversity issues related to a new conservation law. This law was enacted in 2018 through the national parliament entitled the "The Conservation of Biodiversity and Protected Areas Law". There is also a 'National Environmental Policy' in draft form for discussion (attached) and a revised Forest Law was enacted in 2018

Biodiversity briefings were conducted, with materials supplied in Myanmar language, by the Ministry of Natural Resources and Environmental Conservation (MONREC) to Regional Governments from Kachin, Mon, and Kayin States and Sagaing, Magwe, and Mandalay Region. The purpose of these briefings was to raise the awareness of regional politicians and governments about the NBSAP, efforts towards conservation, and the values that the country derives from biodiversity.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

There are no data by which to assess the effectiveness of the presentations to regional governments. However, at the national level, the successful passing of the new biodiversity and protected areas law (2018) and newly revised Forest Law (2018) indicate a high awareness of biodiversity issues among national politicians.

Relevant websites or documents

[national-environmental-policy-statement-2016_eng_nov20_final.pdf](#)

Title of measure

1.1.2 Establish a national working group chaired by MONREC and state/regional working groups to share information and communicate activities related to biodiversity and the natural environment.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The National Biodiversity Conservation Committee (NBCC) was established in 2016 to coordinate activities. This committee chaired by MONREC meets as required and has been a successful committee. There is also a National Coastal and Marine Resources Management Committee that was recently established to oversee management of coastal marine areas.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

The committee has been established at the national level but some state committees are lacking.

Title of measure

1.1.3 Strengthen capacity of MONREC's outreach unit to communicate biodiversity values

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Materials have been developed to educate protected areas staffs and one training session for 'Strengthening Capacity of Environmental Education Staff of Protected Areas' was held in November 2015, at Popa Mountain Park. The training was organized with the following objectives;

- Strengthen the skills of education staff from PAs, particularly in the community participatory education program. Learning the AI and APPA methodology.
- Understanding, identify, and relate to the values and benefits of ecosystem services and local and traditional knowledge.
- Working and building alliances with local communities. Community participatory education. Raising awareness through effective communication and interpretation

Total participants were 35, including 11 women.

Nature and Wildlife Conservation Division (NWCD) of the Forest Department (FD) is opening 6-week capacity building training sessions for PA staff, and public education is one of the core elements of the training. There are public information centres in Hkakaborazi National Park, Popa Mountain Park, Chatthin Wildlife Sanctuary, Lampi Marine National Park, Hukaung Valley Wildlife Sanctuary and in four wetland protected areas such as Moeyungyi, Meinmahla Kyun, Indawgyi Lake and Inlay Lake, which are also Ramsar Sites. In addition, some protected areas such as

Shwesettaw Wildlife Sanctuary and Alaungdaw Kathapa National Park are opening temporary public education centres during their respective pagoda festivals. Also, at Hkakaborazi National Park, there is a Community Information Resource Centre that has been developed to strengthen the capacity of the local community to co-manage the park and contribute to biodiversity conservation (see attached).

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

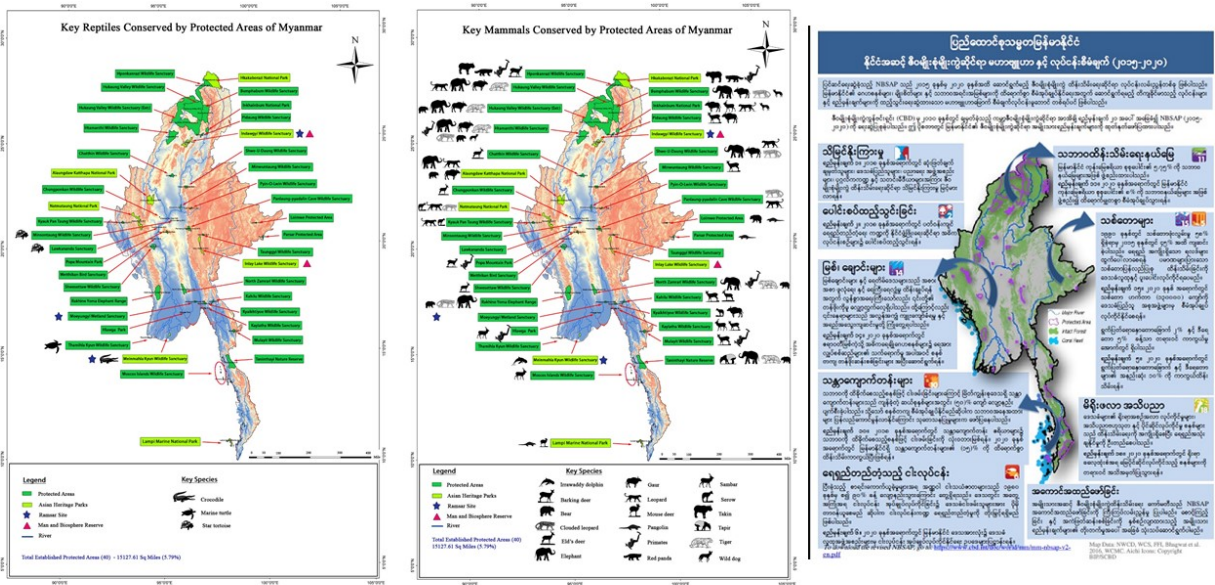
Explanation:

So far only one training session has been held at one PA and there was no work with the public reported. However, as the work expands as noted above much more training will be provided during the next 2 years.

Links or documents included

- Public maps provided for reptiles and mammals associated with each protected area.
- NBSAP flyer in Myanmar language (see attached) and in English
- CIRC Hkakaborazi brochure

Public documents available:



Brochure for Hkakaborazi PA:



Supporting Community Action for Achieving the Aichi Biodiversity Targets

A new Community Information Resource Centre (CIRC) in Myanmar is being developed as a platform to bring a range of stakeholders – the government, communities, and other partners – together to strengthen the link between biodiversity conservation and livelihoods. This participatory platform will raise awareness of the value of natural landscapes and the sustainable practices needed to minimize biodiversity loss and degradation. It will also help communities in remote parts of Myanmar contribute to the nation's commitment to achieving the Aichi Biodiversity Targets set out by the Convention on Biological Diversity.

The CIRC – located in Putao District in Kachin State – caters to the Hkakabo Razi Landscape, which is rich in biodiversity and a high-priority conservation area.

A new Community Information and Resource Centre in Myanmar will act as a platform for multi-stakeholder engagement and community participation in achieving the Aichi Biodiversity Targets

For further information:
 Win Naing Thaw | mwcdinfo@gmail.com
 Nature Wildlife Conservation Division – Forest Department,
 Ministry of Natural Resources and Environmental Conservation, Myanmar

ICIMOD
 The Community Information Resource Centre is being developed in partnership with the International Centre for Integrated Mountain Development (ICIMOD) and other institutions in Myanmar.

How does the Community Information Resource Centre work?



The Community Information Resource Centre (CIRC) helps communities contribute directly to the following Aichi Biodiversity Targets

- TARGET 1** Increase awareness of biodiversity and conservation values
CIRC is a platform for increasing conservation awareness and generating benefits from conservation-related activities
- TARGET 3** Develop positive incentives for conservation and sustainable use
Additional income from ecotourism and conservation practices will increase interest in the sustainable use of biodiversity resources
- TARGET 5** Reduce habitat loss and degradation
Providing an alternative source of livelihood helps reduce dependence on resources and creates conservation awareness
- TARGET 7** Manage forests and agriculture sustainably
Sharing effective land management techniques supports sustainable management of agriculture and helps farmers optimize production
- TARGET 13** Safeguard the genetic diversity of cultivated plants and domesticated animals
Displaying cultivation techniques for agriculture and maximizing their productivity of local crops would help maintain their identities
- TARGET 14** Safeguard essential ecosystem services for local communities
Building capacity and awareness on sustainable fishing practices supports conservation as well as income generation and diversification
- TARGET 18** Recognize and respect traditional knowledge and local innovations
Demonstration and promotion of local innovations and traditional knowledge that support sustainable resource management
- TARGET 19** Share knowledge on biodiversity, its values, and its functions
Display of conservation-related awareness materials and biodiversity data and geospatial maps of the surrounding landscape

COMMUNITY AND VISITOR INFORMATION CENTRE
 Promotes conservation education and awareness by providing information on the region's biodiversity and cultural assets

HOMOTEL
 Engages local communities in ecotourism enterprises through community-managed accommodation for visitors

DEMONSTRATION SITE
 Promotes sustainable land and water management by demonstrating simple, low-cost, and easily replicable technologies

COMMUNITY MART
 Provides a market space for local produce and handicrafts to support enterprise development

DIRECT CONTRIBUTION TO ACHI BIODIVERSITY TARGETS:

Title of measure

1.2.1 Work with business associations in relevant sectors, business education providers, and international and local networks such as the UN Global Compact Local Network and Green Economy Green Growth to raise awareness of biodiversity through Business Ecosystem Training (BET).

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan:

Most work to date has been with the ecotourism industry but see Target 2 for new measures taken for environmental impact assessment. For the ecotourism industry in Myanmar, Myanmar Ecotourism Policy and Management Strategy (2015-2025), was developed by the MONREC and Ministry Tourism and Hotels (MOHT) under the financial and technical support of the International Centre for Integrated Mountain Development (ICIMOD). The Myanmar Ecotourism Policy and Management Strategy on strengthening protected area management is aligned with the National Forest Master Plan (2001-2030), the National Biodiversity Strategy and Action Plan 2015-2020, and the Biodiversity Conservation Investment Vision (WCS 2013). Building on the Government's socioeconomic, tourism, biodiversity, forestry and climate change frameworks, this Policy and Strategy focuses specifically on the relationship between tourism and protected areas relationship. Its recommendations are based on an extensive review of strategic issues currently shaping this policy arena, including an assessment of destinations designated for ecotourism by the Union Government. Recognizing the critical importance of 'getting ecotourism right from the outset', the Policy and Strategy sets out a long-term vision for the sector, together with a 10-year management strategy that establishes the foundations for managing the tourism and protected areas sector. Special consideration is given to tourism in and around Myanmar's protected areas due to the critical role that these special areas have in promoting local, national and global sustainability. Individual protected areas are part of national protected area networks, which are formed to conserve representative examples of nature-based assets and ecosystems. The document provides a list of 22 officially designated ecotourism sites, with a separate document that provides a status and update on conditions for each of the designated sites.

MCRB and FFI conducted 3 multi-stakeholder workshops on sustainable tourism in Taninthayi (2017) attended by representatives from the regional government, local people involved in the tourism industry, and international and Myanmar tourism experts (60, 90, and 120 participants per each workshop). In addition, MCRB and Hans Seidel Foundation (HSF) and Myanmar Responsible Tourism Institute (MRTI) held two multi-stakeholder workshops on sustainable tourism in Ngapali in 2016 and 2017 attended by 170 people in total. Guidelines for ecolodges were developed by MONREC and ICIMOD, and disseminated at these meetings. In total 76 people have been trained on conducting tourism related to conservation and biodiversity.

The Biodiversity and Nature Conservation Association (BANCA) together with NWCD did a report for the Mount Popa area entitled "Report on the ecotourism assessment of Popa Mountain Park" to help develop community-based ecotourism" in that park.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

We have no data as yet to assess the effectiveness of the ecotourism efforts. Little work has been conducted in other sectors.

Links or documents included

- FFI. 2017. Responsible Tourism Strategy for Taninthayi.
- Gov't of Myanmar. 2015. MYANMAR-Ecotourism-Policy-and-Management-Strategy-for-Protected-Areas-2015-2025.
- NWCD and BANCA. 2017. Ecotourism report - Mt. Popa
- Gov't of Myanmar. 2015. Status Report on Myanmar Designated Ecotourism Sites 2015 (official ecotourism sites status)

Title of measure

1.3.1 Hold media training events focused on environmental issues and reporting

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Two events have been held to train media personnel on biodiversity issues, both by Wildlife Conservation Society in 2018. One on wildlife trade problems and one on environmental issues:

- Media training in Lasho with 22 people: male 15, female 5.
- Media training in Mandalay with 21 people: male 14, female 7.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

There are no data to assess effectiveness of the training, but both sessions were well-attended.

Title of measure

1.4.1 Increase number of annual discussions, outreach, and extension activities with local communities living in and around PAs

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Up to May of 2018, 13 workshops have been held by Wildlife Conservation Society, along with 31 training sessions. These efforts were designed to educate people living near protected areas on alternative livelihoods and conserving ecosystem values in protected areas. In addition these workshops explored ecotourism opportunities. A very large number of people attended these workshops over the past 5 years (Table below). The Biodiversity and Nature Conservation Association (BANCA) has started working at Kelatha Wildlife Sanctuary where ecosystem services were identified in order to implement a co-management system where local communities from nearby villages participate for conservation of the Sanctuary. As a next step, capacity building on conservation education and organization development for sustainability will be provided for the local community management group. Under the Popa Mountain Park Management Plan, Biodiversity and Nature Conservation Association together with Popa Mountain Park under Nature and Wildlife Conservation Division (NWCD) studies and surveys were conducted to understand gaps in knowledge of local communities near this protected area and possible opportunities for knowledge sharing, local community's dependence on the area, and to identify short-term and long-term plans for development of local communities. The EU has a project to reduce the poverty of 5 communities near the Chatthin Wildlife Sanctuary and the impact of local people on the resources of vulnerable dry dipterocarp forest and its associated endemic-species Eld's deer (*Rucervus eldi thamin*). The specific objectives of the project are to strengthen the capacity of local communities in environmental conservation and food productivity, and (2) to introduce the new livelihood practices and sustainable use of natural resources.

The various training sessions are aimed at various aspects of co-management of protected areas (see Target 12 for more information with respect to co-management).

Year	Number	Attend
2013/14	184	
2014/15	176	12828
2015/16	163	13799
2016/17	199	15803
2017/18	273	25556
2018/19	273	4378 (to May 2018)

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

We have no data as yet to assess effectiveness, however, the very large number of attendees to these events suggests very strong community interest. (See Target 12)

Title of measure

1.4.2 Ap point well-known Myanmar artists as 'biodiversity ambassadors' to raise awareness of biodiversity values and Culture share information with communities through art and entertainment

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

An artist has been designated as the "wild elephant ambassador" in an effort to raise the profile of this declining species. This is a coordinated effort in the 'Voices for Momos (elephants)' campaign organized by a coalition of conservation organizations including World Wide Fund for Nature (WWF), Wildlife Conservation Society (WCS) and Fauna and Flora International (FFI), to raise awareness for elephant conservation. Most elephant poaching in Myanmar occurs in the Ayeyawady and Bago region, where populations are declining (see Target 12 for data).

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

There is no information on effectiveness but this is part of the overall effort to raise public awareness of declining biodiversity in Myanmar.

Title of measure

1.5.1 Improve curricula covering biodiversity-related topics and integrate into educational activities.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

There is little information available as to how many school curricula have been altered to incorporate biodiversity values, or that make use of translated references. In the case of Yangon,

for example, a UNDP survey indicated that no state-owned primary and secondary school has environmental conservation (or related) subjects in their curriculum.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No progress

Title of measure

1.5.2 Translate and make available key existing biodiversity references in Myanmar language

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

As a part of the effort to educate the public, especially the student population about wildlife and conservation, The Forest Department (FD) of MONREC has had several key references on conservation issues translated into Myanmar language. These include:

- NBSAP policy brief
- NBSAP
- Myanmar Elephant Conservation Action Plan (2018-2027)
- National Wetland Policy and Strategic Actions (Draft)
- Myanmar Ecotourism Policy Management Strategy
- National Tiger Action Plan (draft 2018)
- ASEAN Center for Biodiversity (ACB)'s Policy Brief Series (2018): Inland Waters: ASEAN's most threatened ecosystems
- ACB's Policy Brief Series (2018): Access and Benefit Sharing: Ensuring the fair and equitable sharing of benefits from the utilization of genetic resources

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

There are no data to assess the influence of this measure as yet, however, it is important to translate as much material on conservation as possible into Myanmar language to disseminate to the public.

Links or documents included

- NBSAP brochure in English and in Myanmar language



Target 2.

Title of measure

2.1.1 By 2018, Myanmar has made a formal commitment to natural capital accounting and has taken significant steps to integrate the value of biodiversity and ecosystem services into its national accounts.

Describe a measure taken to contribute to the implementation of your country’s national biodiversity strategy and action plan

While this target has not been met yet, WWF and the Planning Department of Ministry of Planning and Finance have organized some capacity building training for introducing and assessment of natural capital. Further, there have been some attempts to quantify the values associated with ecosystem services and capacity development. One study assessed the value of ecosystem services at the Moeyungyi Wetland on valuation of ecological services (done by Banca, Peh et al. 2015), which is included in this report as a case study. There is a current ecosystem service study on the Chindwin River Basin (see attached link),

A second study from 2013 valued ecosystem services from forests, with projections to 2031 for Myanmar forests (Emerton and Yan Ming Aung 2013). This study indicated that there are considerable economic benefits to be gained from investing in forest conservation and sustainable use rather than continuing to degrade and deforest, as in the past. The authors evaluated multiple ecosystem services including wood and non-wood products, tourism, pollination, carbon, mangrove shoreline protection, watershed protection, and mangrove fisheries. Over the next 20 years, the net gain or value-added to the economy from choosing to invest in forest conservation, rather than to allow forests to continue to be degraded was estimated to be around MMK 21 trillion (US\$ 22 billion) by 2031, with a Net Present Value of MMK 9 trillion (US\$ 10 billion). Scenarios of continued forest degradation indicated possible losses of scenario could incur losses to 2031 of more than MMK 16 trillion (US\$ 17 billion), with short-term gains realised until about 2017, with linear decline after that. With Wildlife Conservation Society, the government has a natural capital account for forest that is well underway and expected to be completed in June 2018. This is in parallel with the Government’s Green Economy Policy Framework, designed with WWF’s support, which provides guidance on green investments. WWF provided technical training on natural capital accounting to 30 government officials. Prior to this review period, the BOBLME project evaluated marine and coastal services at US\$8.5 billion/year

Case Study for Moeyungyi Wetland (Biodiversity and Nature Conservation Association and Birdlife International)

The Moeyungyi Wetland is a 10,360 ha wildlife sanctuary in the southern Bago region of Myanmar, and is a reservoir that was constructed more than 100 years ago to store water for irrigation. Over

the past decades the lake and associated wetlands have become an important habitat for resident and migratory birds and, as a result, it was declared a Ramsar site in 2004. The area is occupied more than 65,000 people in 17 villages, with more than 70% of these people dependent on the wetland for their livelihoods. These livelihoods consist of fishing, water buffalo and cattle grazing, cultivation of rice for subsistence, harvesting of padoma lotus, duck-rearing, rice milling, and industry for Ngapi (fish paste), cheroot (tobacco), lotus textiles and dried stalks of pein (taro). More recently, a wildlife viewing and tourism industry has developed, including several hotels catering to bird-watchers on the lake and area.

The Moeyungyi Wetland Sanctuary provides numerous ecosystem services, including fresh water and water for irrigation of rice paddies, fish and lotus harvesting, food for domestic ducks and water buffalo, tourism, and climate regulation through carbon storage. The value of these services was measured using the 'Toolkit for Ecosystem Site-based Assessment (TESSA), in a study published in 2015. This research project found the following results for ecosystem service values: water: \$8.5 million, food and other harvests: \$16.2 million, cultivated goods (rice): \$0.4 million, tourism: \$0.07 million, and carbon: \$91.6 million. This was offset by emissions of \$3.1 million and management costs of \$0.2 million; for a net conservative total value of \$22.1 million in direct value (>\$2000/ha/yr), plus \$91.6 million in carbon stored. The authors recognized that their study did not include all ecosystem services and needs to be also viewed in the broader landscape scale context owing to downstream affects as well. Nevertheless, this work illustrates well the role of natural system in providing livelihoods for local communities while benefitting wildlife and biodiversity more generally.

Reference: Peh, K.S-H., Merriman, J.C., Dae We Aung, T., Theint, S.M., Murata, N., Suzue, K. 2015. Economic valuation of Moeyungyi Wetland, Myanmar. BirdLife International, Tokyo, Japan.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective X
- Unknown

Explanation:

The two studies as well as the interest from the Department of Planning and Budgeting indicate that capacity has increased. The objective to national account ting has not been accomplished, however.

Obstacles

Obstacles include data on the value of ecosystem services, a mechanism to incorporate ecosystem services into national accounting, and funding to support the initiative.

Links or documents included

- Peh, K.S-H., Merriman, J.C., Dae We Aung, T., Theint, S.M., Murata, N., Suzue, K. 2015. Economic valuation of Moeyungyi Wetland, Myanmar. BirdLife International, Tokyo, Japan.
- WWF. 2016. Natural connections: How natural capital supports Myanmar's people and economy.
- Emerton and Yan Ming Aung. 2013. http://www.burmalibrary.org/docs22/IMG_2013_Myanmar_forest_valuation_-_full_report.pdf
- Chindwin study <https://www.myanmarwaterportal.com/repository/915-chindwin-biodiversity-and-ecosystem-services.html>

Title of measure

2.1.2 Implement the necessary steps to become an EITI compliant country

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

2.1.2 duplicates 2.4.1 - see information below.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

See 2.4.1

Title of measure

2.1.3 Incorporation of biodiversity and ecosystem services assessment in development plans.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

FD and Shwe Taung Cement Co., Ltd. are preparing a draft agreement to implement a biodiversity offset program for cement and coal mine concessions. This is a very important initiative to involve the private sector in conservation, as well as a good demonstration for complying with the environmental management plan of the Environmental Impact Assessment Report.

FD leased about 100 acres of land from Lampi Marine National Park to Benchmade Asia (Myanmar) Ltd. for ecotourism. Benchmade Asia (Myanmar) Ltd. allocates 20% of the profits to the protection of Lampi Marine National Park.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

A first agreement has been established, setting a precedent for future agreements.

Links and reports included

- <http://www.shwetaunggroup.com/wp-content/uploads/2017/04/Supplementary-ESIA-Report.pdf>

Title of measure

2.2.1 Identify and start to work with at least two states/regions on incorporating biodiversity into integrated land use plans

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Title of measure

2.2.2 Prepare non-binding guidelines for incorporating biodiversity into land use plans and key sectors in at least two states/regions and provide capacity training to increase their use

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Title of measure

2.3.1 Review the implementation of the EIA Procedures with a focus on improving effective regulation, enforcement, transparency and community participation, particularly in environmental monitoring, and the assessment of cumulative impacts.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

There is an EIA Procedure governing EIA processes that was revised in 2015 and sector-wide impact assessment guidelines are being prepared. To promote participation of local communities in EIA, guidelines on public participation (now in draft form) were developed in cooperation with Vermont Law School (VLS). Further, Environmental and Social Impact Assessment Guidelines for Hydropower Projects in Myanmar is being prepared by Environmental Conservation Department and International Finance Corporation (IFC). Capacity increases within government to review and assess EIAs have been made, but overall capacity remains low and so monitoring and enforcement of EMPs does not yet happen. There are amended rules for mining to address environmental impacts and contribute to a remediation fund, and a consultation process for EIA in the mining sector was started in 2018. JICA provided support for the EIA process development and development of guidelines (see attached)

Myanmar Environmental Assessment Association (MEAA), founded in 2018, is a non-political and non-profit organisation for Myanmar consultants engaged in Environmental Impact Assessment procedure. MEAA's members currently include registered EIA agencies, national consultants, academics and others. The Myanmar Impact Assessment Association provides assistance to businesses for developing their EIAs.

Recently the Myanmar Centre for Responsible Business published a review of biodiversity as it pertains to several industries in Myanmar and is in the process of preparing a series of guidelines for oil and gas, tourism, mining, and agriculture. The aim of these guidelines is to assist these industries in consideration of biodiversity issues and human rights in their business and development planning.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

There have been steps forward and the completion of some EIAs (see 2.1.3 for an example).

Links and documents provided

- http://www.myanmar-responsiblebusiness.org/pdf/resources/Briefing-Paper-Biodiversity_draft_en.pdf
- JICA supported brochure on EIA process in Myanmar : https://www.jica.go.jp/myanmar/english/office/topics/c8h0vm0000cnj6nv-att/press180406_05.pdf

Title of measure

2.3.2 Establish and hold annual or more frequent EIA training courses for staff responsible for EIA review, monitoring, and enforcement

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

A large effort has been made in Myanmar to improve government staff and local business knowledge about EIA requirements, report writing, report reviewing and enforcement as a result of efforts by the 'Environmental Conservation Division', with assistance and efforts from Japanese International Development Assistance (JICA), Asian Development Bank (ADB), Norwegian Environment Agency, WWF, and the Myanmar Centre for Responsible Business (MCRB). More than 36 training sessions have been delivered to national and regional staff and to businesses in Yangon and Mandalay. For the business training more than 100 people attended these two sessions. Training on the application of GIS to EIA was provided to national and regional government staff at three sessions. Other training to government staff included: environmental impact assessment reporting, how to review reports, enforcement, and marine data availability, including field visits to mines and oil and gas developments. As an example, a training session on 'Good Practices for Mine Waste Water & Waste Rock Management' was conducted in 2018 for 45 participants from all ECD divisions, ECD head office and regional/state offices of Department of Mines, along with business owners and third parties, with assistance from ADB, WWF and MCRB. MCRB has been seeking to build understanding of the links between business, biodiversity, and human rights in Myanmar, particularly the right to livelihood, with the aim of raising awareness of how to avoid, reduce, mitigate and offset these in business activity. In 2018, two biodiversity, business and human rights events were organised by MCRB in Yangon: a multi-stakeholder consultation on the draft Briefing Paper (attached), and a training session conducted by a number of international experts on biodiversity and environmental impact assessment (EIA) for around 70 representatives from companies, particularly EIA consultancies. The Briefing Paper (October 2018) aims to raise awareness amongst business, civil society and government, particularly regulators, of how business activities in Myanmar impact on biodiversity and how this is linked to human rights.

An Environmental Data Management (EDM) System was established to enable to understand and use environmental data of coastal areas in oil and gas sector.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X

- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

There have been more than 36 training sessions for national and regional staff and local businesses on various aspects of environmental impact assessment reporting, how to review reports, enforcement, data availability, and GIS improvement. More than 60 national and regional/state staff have been trained and information sessions were provided to more than 200 representatives of businesses on EIA reporting.

Documents and Links

- MCRB. 2017. Business and biodiversity. <http://www.myanmar-responsiblebusiness.org/news/comments-invited-briefing-paper-biodiversity.html>

Title of measure

2.3.3 Design and establish a national biodiversity database using the latest land cover, habitat, and species data.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Several maps are now available including; protected areas, key biodiversity areas, forest cover, corridors, and ecosystem types. In addition, forest cover and intact forest mapping is available from the global datasets, and the recent intact forests change map is included here. There are numerous databases for biodiversity among NGOs and government but these have not yet been consolidated into a national database.

Wildlife Conservation Society is in the process of developing an ecosystem classification (64 types) and mapping for Myanmar, but the project is not yet completed.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

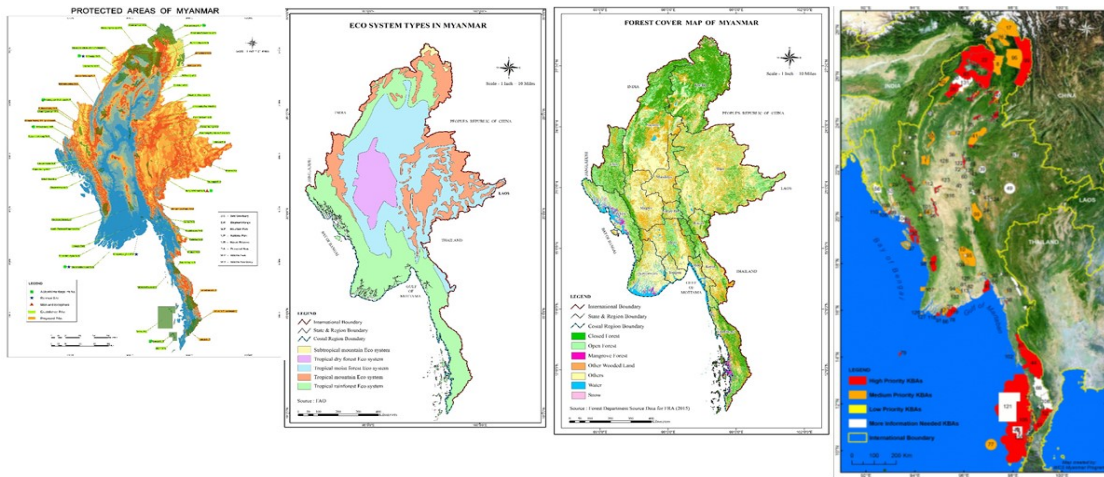
Explanation:

Some large scale maps are available in the Forest Department of MONREC, but data on species distribution mapping and fine-scale ecosystem mapping is not yet available.

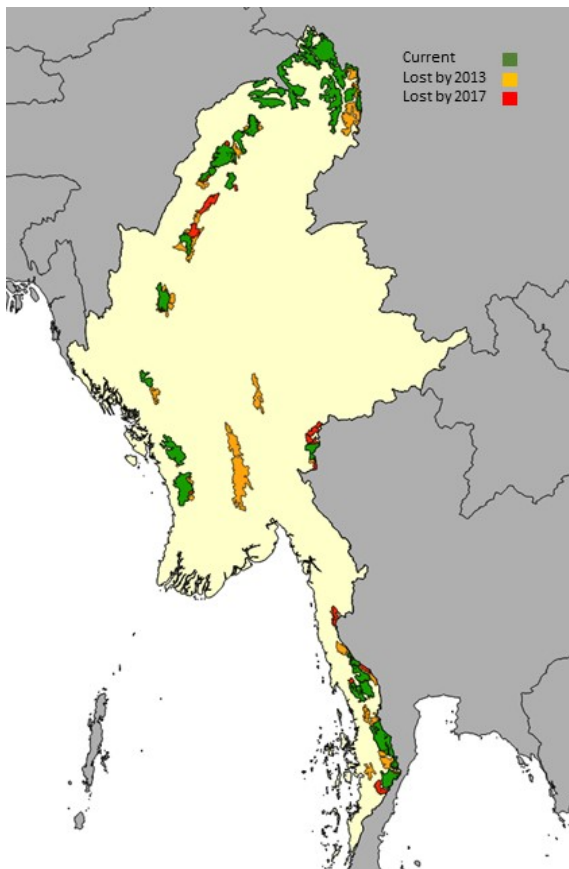
Links and documents included

- Myanmar_kba_map.pdf
- Myanmar protected areas map (English).JPG
- Myanmar intact forest 2018.jpg
- Myanmar Ecosystem Map from FAO.jpg
- Myanmar FRA2015.jpg (forest areas)
- Intact forest area decline to 2018 (P. Potopov, Univ. Maryland, 2018)

Maps included: Protected areas, ecoregions, forest cover, KBAs:



Intact forest area decline to 2018 (P. Potopov, Univ. Maryland, 2018)



Title of measure

2.4.1 Implement necessary steps to become an EITI compliant country.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Myanmar was granted EITI Candidate status in July 2014 and issued its first EITI report on revenue paid by companies and received by government, based on 2013/2014 FY data, in December 2015. Its current status in EITI is 'Yet to be Assessed' under the 2016 standard, since the second report was delayed, following the change of government. Myanmar is now committed to submitting reports in March 2018 for the 2014/2015 and 2015/2016 FYs. These will be assessed against the 2016 Standard after July 2018, then Myanmar will be validated against the Standard. There is an EITI Multi-stakeholder Group in the Mining Department.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

While not yet EITI certified, there have been significant advances.

Target 3.

Title of measure

3.1.1 Finalize a National Land Use Policy and Land Law that strengthen smallholder and customary tenure rights.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

A new 'National Land Use Policy' was agreed and published in 2016. This policy describes a bottom-up approach to land decisions including representations by ethnic groups and a dispute resolution mechanism. This policy represents the first step towards a land law, which is under development to protect land rights.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

The completion of an official policy has enabled the current discussions towards development of a land law. That land law is in the process of being prepared.

Title of measure

3.1.2 Develop implementing rules and regulations that recognize customary tenure of land, freshwater, and marine resources, including communal tenure and rotational and shifting taungya.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Customary tenure measures are being incorporated into the new land law. The Conservation of Biodiversity and Protected Areas Law, enacted on 21st May 2018 and repealed 1994 the Protection of Wildlife and Protected Areas Law, and consists of a new protected area category referred to as 'community conserved protected areas'. Community conserved protected area is mainly intended to support legal protection on areas protected, conserved, or managed by a local community or indigenous people for resource needs or traditional or spiritual beliefs.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown X

Explanation:

The law is only recently in place and no results are available

Title of measure
3.1.3 Mainstream conservation into national and district level land use planning, improve inter-ministerial coordination, and provide technical support to districts

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Aspects of this action have been ongoing including training of district staff and provision of technical support. This is done on a regular as well as on an as-needed basis. The national level NBCC is an inter-ministerial body dealing with biodiversity conservation among ministries at the national level.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

Training provided to districts and a national coordination committee established.

Title of measure

3.2.1 Commission a comprehensive review of laws, rules and other relevant incentives affecting biodiversity in Myanmar

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

While government has not yet done such a review, the previously noted MCRB document (see Measure 2.3.1) on development, biodiversity and human rights provides an excellent assessment of the laws pertaining to biodiversity in Myanmar.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

There is no information on effectiveness of this measure, in part because the document has just been completed.

Title of measure

3.2.2 Amend the Forest Law and Community Forestry instructions to enable sustainable, market-led community forestry and enable joint forest management

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Forest Law has been re-written to enable CF. There have been considerable advances for community forestry and these are highlighted under Target 5.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

There is no effect until the law is rewritten.

Target 4.

Title of measure

4.1.1 Conduct SEAs, in line with international best practices, of the mining and hydropower sectors.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

An SEA was completed in 2018 for the hydropower sector in Myanmar by the Ministry of Natural Resources and Environmental Conservation, Ministry of Electricity and Energy and International Finance Corporation (IFC). The SEA was an inclusive consultative process resulting in a report that provides information on the best locations in the country to develop future hydropower, following the study of 8 river basins. The SEA includes a clear indication of the preferable river stretches or sub-watersheds for medium/large-scale hydropower, as well as of those to retain in their existing state, enabling new projects to be sited to avoid significant adverse environmental and/or social impacts. An objective under the assessment was to enable protection of representative biodiversity or ecosystems within each basin in line with Myanmar's goal of permanently preserving representative biodiversity nationwide and its commitment to the Convention on Biological Diversity, which was established to conserve biological diversity and sustain the use of these resources. A key aspect to the report, and a key measure determining possible dam locations, is the potential effects of hydro developments on aquatic and terrestrial biodiversity. The SEA was clearly needed, with the current consideration of at least 50 hydropower plants with a combined capacity exceeding 40GW (Kattelus et al. 2015).

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

The SEA will play a role in the selection of future hydro developments. Uncertainty remains over the impact that the document will have over developments until they occur. For example, there is currently considerable local and national concern over proposed hydro dam developments on the upper Ayeyawady River, as indicated by local protests and concern about impacts on the endangered Ayeyawady Dolphin (See Forbes Magazine article attached).

Links and documents included

- https://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/hydro+advisory/news/events/myanmar+strategic+environmental+assessment+%28sea%29+expert+group+meetings
- <http://documents.worldbank.org/curated/en/316221489041628758/pdf/113257-WP-SEA-Stakeholder-Engagement-Plan-2017-PUBLIC.pdf>
- SEA hydro Myanmar Report: https://www.ifc.org/wps/wcm/connect/d31f99b4-4a2a-4fe3-a3c7-5c21a7904b18/SDF+Main+Report_May+21_For+Stakeholder+Review_English.pdf?MOD=AJPERES
- <https://www.forbes.com/sites/jeffopperman/2018/01/25/following-dam-cancellation-myanmar-can-lead-on-sustainable-energy/#21b952b42fbc>
- <http://www.inderscience.com/offer.php?id=68071> (Future hydro power, Kattelus et al. 2015)

Title of measure

4.1.2 Develop guidelines for the mining and hydropower sectors based on SEA recommendations.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Ministry of Natural Resources and Environmental Conservation, Ministry of Electricity and Energy and IFC have finalized the draft Guidelines for the Preparation of an Environmental Impact Assessment for Hydropower Projects in Myanmar. These guidelines will help in formulating Biodiversity Management Plans and to identify all potential risks for biodiversity and mitigation measure.

While an SEA for the mining sector has not been started, a new Mining Law (2015) and Mining Rules (2018) were revised to consider impacts on environment and contribute to a remediation fund. The new rules give more authority and responsibility to the respective levels of government to monitor the operations of mining companies, such as whether they are damaging the environment or if they have failed to conduct corporate social responsibility activities as promised. The MCRB reviewed the current laws for the mining sector in 2018 (link attached).

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

The guidelines and hydro-power SEA are very recent and so effects for biodiversity are unknown. Guidelines for mining are not complete.

Links documents included

- MCRB. 2018. Laws applicable to mining sector in Myanmar. <http://www.myanmar-responsiblebusiness.org/pdf/SWIA/Mining/Appendix-Main-Myanmar-E-and-S-Laws-for-Myanmar-Mining-Sector.pdf>

Title of measure

4.1.3 Assess the national energy master plan for opportunities to minimize environmental impacts and revise it accordingly

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

A new National Energy Policy is in the process of being formulated. The main objective of this policy is to contribute to the national economic policy, while minimizing social and environmental impacts

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

The policy has not been finalised.

Title of measure

4.2.1 Legislate that biodiversity action plans be prepared for any new large scale resource extraction or power generation project

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Following the SEA for the hydro power sector, any new hydro development is now required to undergo a full EIA prior to development. There are also new regulations in the mining sector requiring that EIAs be completed.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

No EIAs for these sectors have been completed.

Title of measure

4.2.2 Develop the authority and capacity of taskforces established by the ECL to advise on the sustainability of developments and development plans, particularly through consideration of impacts on biodiversity.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No progress.

Title of measure

4.2.3 Establish an energy production technology transfer programme with a focus on enhancing efficiency and increasing the proportion of renewable energy

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Myanmar Petrochemical Enterprise under Ministry of Electricity and Energy has been developing and implementing plans to promote using Liquefied Petroleum Gas (LPG) as cooking fuel. As LPG is clean fuel, it can help to reduce deforestation, environmental degradation and respiratory tract disease and by achieving more energy efficiency. In addition, Flora and Fauna International has a woodstove replacement program to provide communities with high efficiency woodstoves, reducing wood required.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

The programme has not yet been implemented.

Title of measure

4.2.4 Establish government green procurement programme and targets.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

With the support of WWF-Myanmar, the drafting of a Green Economy Policy has been finalized.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

Policy has not yet been implemented.

Links and documents

Target 5.**Title of measure**

5.1.1 By 2020, at least 10% of DMDF and mangrove forest has been put under some form of protection, including sustainable use and management

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Data show a continuing decline in area of mangrove forest at a rate of about 22 km² per year up to 2015 (data from: Hamilton and Casey 2016), including in the Myeik area (Flora and Fauna International, 2017), and in the Wunbaik area (Aye Aye Saw and Kanzaki 2015). The Global Forest dataset, although providing a different baseline, shows a decline of 13 km²/year over the period 2015-2018.

The Wunbaik Mangrove Forest Reserve was created in the 1930s but has lost about 40% of its area to development by 2011 (Saw and Kanzaki 2015).

Table (3): Changes of the mangrove cover in Wunbaik Reserve area from 1990 to 2013 from Landsat TM mapping (Aye, 2013).

Class	Area (ha)		Change (ha)
	1990	2013	
Dense Mangrove	16671.71	11893.19	- 4778.52
Sparse mangrove	6695.09	9158.17	+ 2463.08
Paddy field	1507.35	2921.49	+ 1414.14
Shrimp pond		1061.88	+ 1061.88
Road		326.32	+ 326.32
Water body	12043.40	11556.49	- 486.91

Further, land cover change data at the national level for 2005 to 2015, recently developed by the Forest Department GIS Department, showed that 136,500 ha (27%) of mangrove forests changed to 'Other Land Use' (mainly cropland), 90% of which occurred in the Ayeyarwady and Rakhine regions (Kissinger 2017).

A small area of mangrove forest was protected when the Gulf of Mottama Ramsar site was protected in 2017. DMDF area under sustainable management has improved but specific data are lacking. A large effort towards improving sustainable forest management through community forests (CF) has been undertaken in Myanmar since about 2013. This effort has involved government (Forest Department), FAO, and several NGOs including Biodiversity and Nature Conservation Association and Flora and Fauna International (Flora and Fauna International). Flora and Fauna International is working in many areas for community forestry, with about 60 village CFs by forming Community Forest User Groups (CFUGs) that are either certified or working on certification, with Flora and Fauna International assistance for certification from the Forest Department of MONREC. Among these, 21 CFs are in the Taninthayi region and 16 are in the Kachin area, and most CFs are in mangroves and central lowland DMDF forests. More information on the efforts to improve community forest management is reported under National Targets 7.2 and 15.1. A new certification project has been started with PEFC, but no information on advances is available yet.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

The available data show a continuing decline in area of mangrove forest at a rate of about 13 km² per year up to 2018, including in the Myeik area (FFI, 2017), and 22 km²/year in the Wunbaik area (Aye Aye Saw and Kanzaki 2015). Further, land cover change data at the national level for 2005 to 2015, recently developed by the Forest Department GIS Department, showed that 136,500 ha (27%) of mangrove forests changed to 'Other Land Use' (mainly cropland), 90% of which occurred in the Ayeyarwady and Rakhine regions (Kissinger 2017). A small area of mangrove forest was protected when the Gulf of Mottama Ramsar site was protected in 2017. DMDF area under sustainable management has improved but specific data are lacking. A large effort towards improving sustainable forest management through community forests (CF) has been undertaken in Myanmar since about 2013. This effort has involved government (Forest Department), FAO, and several NGOs including BANCA and Flora and Fauna International (FFI). FFI is working in many areas for community forestry, with about 60 village CFs by forming Community Forest User Groups (CFUGs) that are either certified or working on certification, with FFI assistance for certification from the Forest Department of MONREC. Among these, 21 CFs are in the Taninthayi region and 16 are in the Kachin area, and many CFs are in mangroves and central lowland DMDF forests. More information on the efforts to improve community forest management is reported under National Target 15.1.

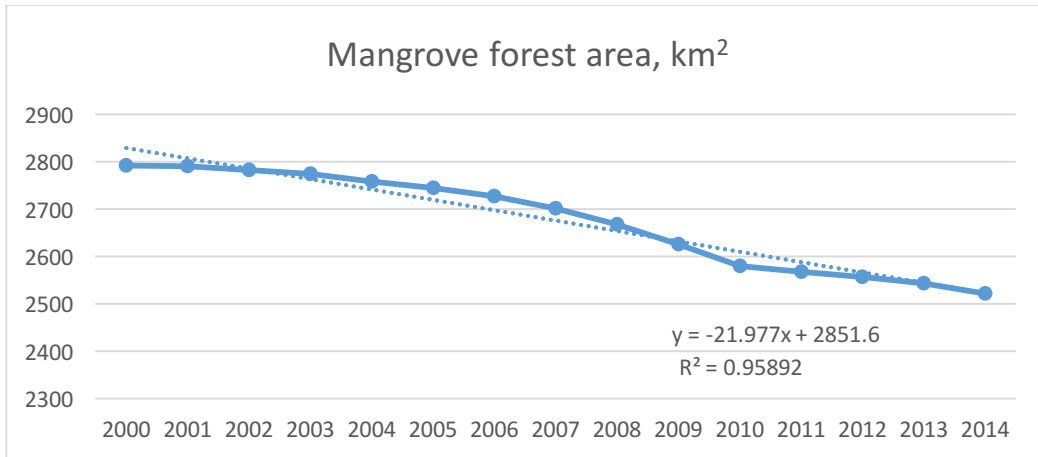
Obstacles and scientific and technical needs related to the measure taken: Please describe what obstacles have been encountered and any scientific and technical needs for addressing these, including technical and scientific cooperation, capacity development activities or the need for guidance materials.

Achieving this target is constrained by lack of capacity to regularly monitor (especially in real time) and map these two forest types, personnel to enforce regulations in protected areas, and capacity to train community forest users on sustainable forest management within a short timeframe. Nevertheless, considerable advances have been made towards achieving the community forests aspect of the target by government and NGOs, including certification of some areas (see Target 15).

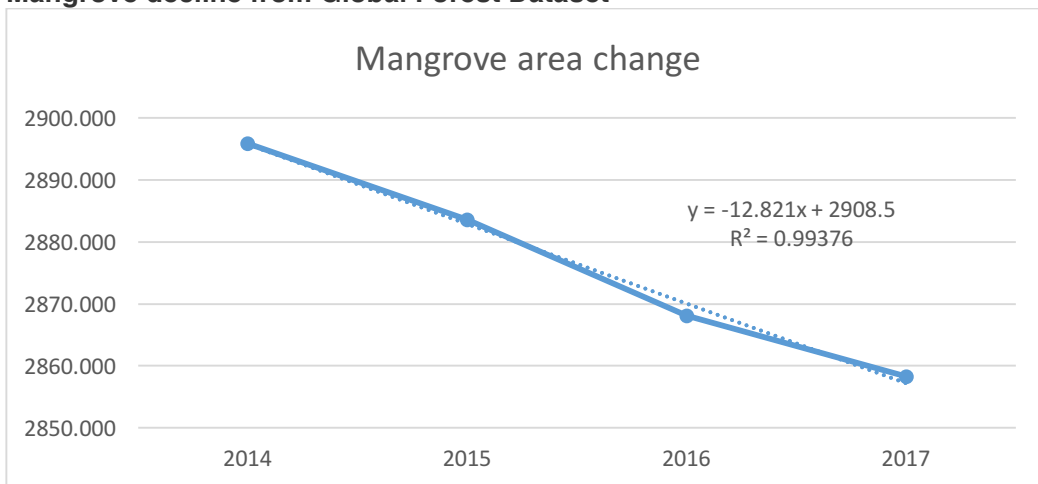
Links and documents included

- A.A. Saw and M. Kanzaki. Wunbaik mangrove reserve change to 2015. <https://www.sciencedirect.com/science/article/pii/S1878029615002704>
- FFI. 2017. Mangrove threat assessment. Unpubl. manuscript.
- Clark University mangrove mapping SE Asia: <https://clarklabs.org/aquaculture/>
- Kissinger (Forest loss and degradation assessment) 2017 <https://static1.squarespace.com/static/58d6cc1e17bffcff801edde/t/5970ed2cdb29d61b7a95b450/1500572980265/Background+report+Identifying+the+drivers+of+deforestation+and+forest+degradation+in+Myanmar.pdf>
- Wunbaik mangrove reserve change to 2015.pdf
- Coastal habitat types - SE Asia/ Myanmar <https://clarklabs.org/aquaculture/>
- <https://pefc.org/projects/forest/national-system-of-myanmar>

Mangrove decline (Global dataset)



Mangrove decline from Global Forest Dataset



Title of measure

5.1.2 Draft and begin to implement a national mangrove action plan, including CFs and LMMAs

Describe a measure taken to contribute to the implementation of your country’s national biodiversity strategy and action plan

The National Strategy and Action Plan for mangrove forests is being implemented: a National Coordination Committee has been organized and held meetings, and some capacity building programs have been conducted in local areas. Flora and Fauna International, working with Forest Department has established LMMAs as well as community forests in the Taninthayi and Kachin areas.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Only the first steps under the plan have been implemented.

Links and documents included

- IUCN and MONREC. 2017. Myanmar mangrove action plan.
- FFI. 2017. TCP Report 55, EU Project Final Narrative Report 2014-2017 (EuropeAid132763CACTMulti).pdf (Taninthayi CFs)
- FFI. 2018. TCP Report 60, Mangrove Inventory & Training.

Title of measure

5.2.1 Assess the status of forest cover in the PFE, unclassified forest areas for potential inclusion in PFE, and areas of PFE overlapping with agricultural concessions

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

This target is incomplete, but Myanmar is working on forest inventory with FAO and plans to achieve this measure by 2019 in time for the Global Forest Resources Assessment.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

Will be completed by 2019.

Title of measure

5.3.1 Establish a national wetlands classification and update the wetlands inventory.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The revised classification and inventory are completed but not yet published, but the report on possible Ramsar sites is in draft form (attached). That report considers a provisional working list of potentially internationally important wetlands, identifies 98 wetland areas, of which 54 are inland natural wetland localities, 33 are marine/coastal natural wetland localities, and 11 are human-made wetlands. The report provides detailed information on each of the 98 wetlands identified.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

Not yet published.

Links and documents

- McInnes et al. 2016. Conservation of biodiversity and improved management of protected areas in Myanmar: An action plan for the delivery of improved management of valuable wetlands.

https://www.ramsar.org/sites/default/files/documents/library/myanmar_action_plan_2016_e.pdf

Title of measure

5.3.2 Nominate three additional Ramsar sites to Ramsar Secretariat

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Myanmar had four Ramsar sites approved between 2015 and 2018, and so exceeded target and adding an additional 1403.8 km² of at least partly protected area, plus Inlay Lake has an area of 1546.4 km², but is heavily used. All have management plans completed. Information for each can be found at:

- Indawgyi Ramsar Site (2016) : <https://rsis.ramsar.org/ris/2256>
- Gulf of Mottama (Mon State) Ramsar Site (2017): <https://rsis.ramsar.org/ris/2299>
- Meinmahla Kyun Ramsar Site (2017): <https://rsis.ramsar.org/ris/2280>
- Inlay Lake Ramsar Site (2018): <https://rsis.ramsar.org/ris/2356>

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

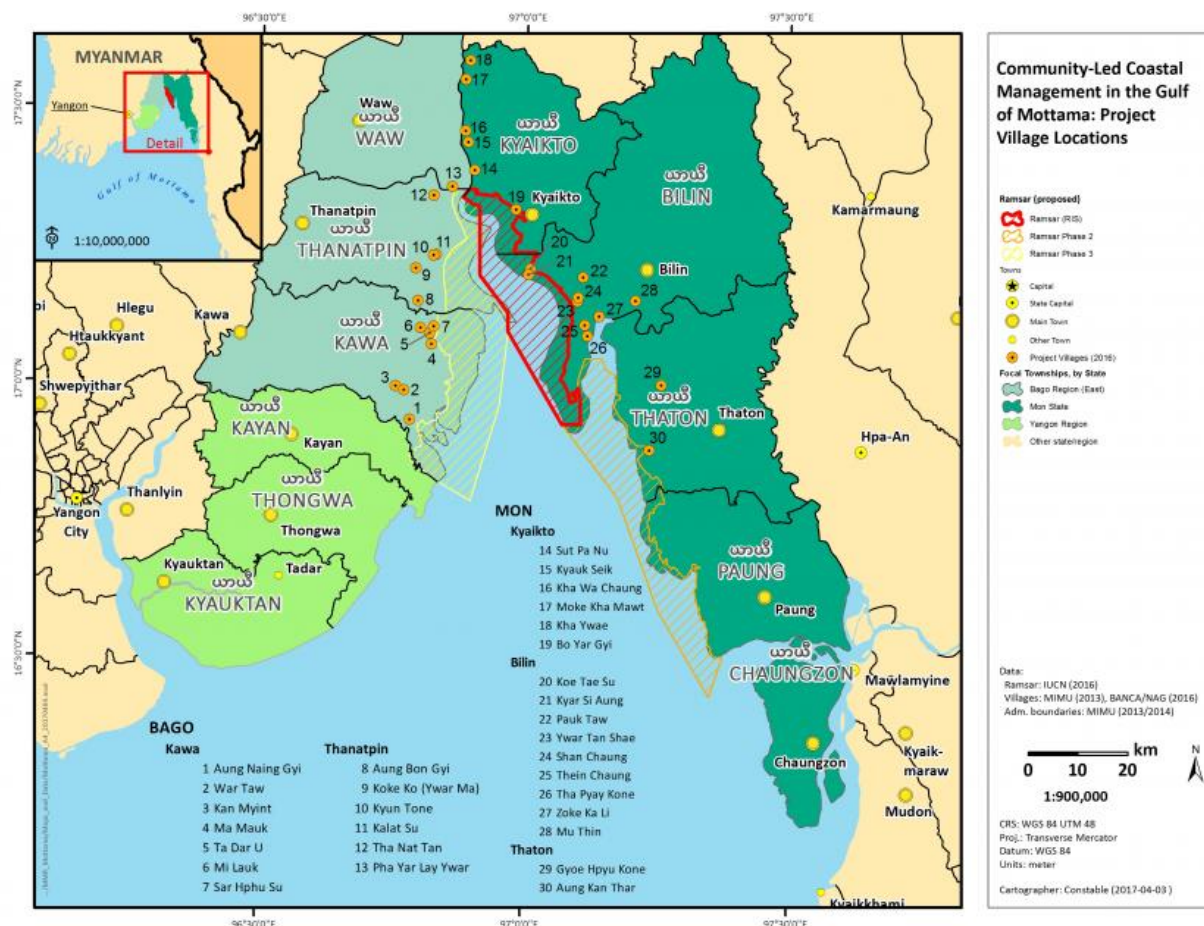
Explanation

The acceptance of these areas affords a level of protection not present before the formal recognition. Each of these areas is important for various wildlife species, including endangered species of shorebirds and waterfowl. In addition, the Gulf of Mottama area has mangrove forest within its boundaries. There remains uncertainty about the level of protection achieved owing to a lack of enforcement capacity. However, working with local communities to improve management may help solve the issue.

Links and documents included

- Gulf of Mottama Ramsar site.docx (map attached)
- IUCN Gulf Mottama mngt plan.docx
- <https://www.ramsar.org/news/150000-migratory-water-birds-protected-as-myanmars-gulf-of-mottama-designated-as-a-wetland-of>

Gulf of Mottama (IUCN, 2017)



Title of measure

5.3.3 Establish community-based participatory monitoring and management programme in Ramsar sites and potential Ramsar wetlands

Describe a measure taken to contribute to the implementation of your country’s national biodiversity strategy and action plan

Community participatory monitoring is being practised in three Ramsar Sites in Myanmar: Gulf of Mottama, Meinmahla Kyun and Indawgyi Lake. All three sites have management plans. For example at the Gulf of Mottama, Biodiversity and Nature Conservation Association has helped to establish Local Conservation Groups (LCGs) to support shorebird conservation, including monitoring of shorebirds as well as illegal fishing. The groups are voluntary and have been established in known bird hunting sites.

Other relevant information, including case studies to illustrate how the measure taken has resulted in (or is expected to result in) outcomes that contribute to the implementation of the NBSAP.

The following is from the Gulf of Mottama Management plan: Inclusiveness, Gender, and Social Equity:

To promote a true sense of ownership of the management process, and to ensure benefits to the most vulnerable population, the management of the GoM should be inclusive, with equitable representation and active participation of stakeholder groups throughout the management process. This encompasses gender inclusiveness; women must be meaningfully included in the

management process to ensure that their needs, rights, and contributions are fully valued. The benefits and costs of managing the GoM should not be concentrated only in certain stakeholder groups, but should be distributed in a more equitable manner. Capacity building can prepare stakeholders for active participation in and leadership of management processes. Monitoring and evaluation should ensure that positive and negative impacts from management are not disproportionately borne by any group of stakeholders.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

These programs are only a year old and so no data are yet available.

Links and documents included

- IUCN. 2018. Gulf Mottama management plan. Word doc unpublished.

Title of measure

5.4.1 Establish national-level mechanism for combating illegal logging.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Protection and Inspection Division of the FD has developed and implemented action plan for combating illegal logging. This plan includes a component whereby community monitoring and reporting is being emphasized in combating timber trafficking. In 2014, the Forestry Police were added to the Myanmar Police Force, with a staff of approximately 300. Its role is to support the Forest Department and uphold its policies to protect Myanmar's forests and investigate illegal logging, and also to protect wildlife from illicit trafficking.

The Forest Department uses the following approaches to combat illegal logging:

- 1.) Investigations, searching, illegal logs seizing in the form of surprise checks by Forest Department special squads at places, where illegal timber and forest products are usually collected and stored, every month in regions/states;
- 2.) Seizure through Community Monitoring and Reporting System (CMRS);
- 3.) Seizure by cooperating with forest police in 19 districts in 8 regions/states;
- 4.) Seizure by cooperating with forest police and military units and other related organizations and agencies;
- 5.) Searching, detection and seizure of illegal logs in main rivers like Ayeyawady River and Chindwin River in the form of military crackdown to control riverine routes;
- 6.) Surprise raids upon receiving information or regular investigations in townships/districts;
- 7.) Field inspection and seizure upon receiving information by the Director General Office of Forest Department.

Myanmar seizes an average of 40,000 tonnes a year over the past 10 years, with the amount increasing each year since 2014:

Illegal wood seized (tons)

2013-14: 45466 (baseline)

2014-15: 51726 (+13.8% vs. 2014)

2015-16: 46154 (+2%)

2016-17: 50027 (+9%)

2017-18: 48682 (+7%) (8000 arrests)

2018 (Jan-May): 21106 (5 mo., 6244 total cases)

Value of seized wood has increased from \$US 122,000 to >US\$7 million in 2017.

Recognizing the important role of people living close to wildlife in combating poaching and illegal wildlife trade, Myanmar is initiating a community monitoring and reporting system (CMRS). CMRS is potentially a very effective tool, and can result in significantly reducing wild elephant poaching in hotspots. Mr. Kyaw Myint Tun and Mr Tun Lay, elephant conservationist and the head of administration in Tin Chaung Village Tract from Ayeyarwady Region, an elephant poaching hotspot in Myanmar, was selected for the State Counsellor's gratitude of honour in July, 2018 for his remarkable efforts and enthusiasm to protect and conserve the wild elephants from being killed and to expose and apprehend the poachers.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

There has been annual increase in the amount of illegal wood seized (vs. 2014), although we cannot know if this also reflects an increase in illegal logging or better enforcement. Illegal logging continues owing in large part to a willing market north and west of Myanmar and to insufficient capacity for enforcement.

Title of measure

5.4.2 Increase budget allocation for combating illegal logging

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No budget increase has been allocated.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective X
- Unknown

Explanation:

The budget allocation was not achieved.

Title of measure

5.5.1 Develop a FLEGT process

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Part of the national planning to reduce illegal timber harvesting and move to a more sustainable harvest has been planning with the European Union (EU) to develop a Forest Law Enforcement, Governance and Trade (FLEGT) process for Myanmar. The FLEGT-VPA (Volunteer Partnership Agreement) facility helps members to combat illegal logging and strengthen forest governance, while encouraging sustainable economic development in countries that produce or process timber

and export it to the EU. Myanmar is currently in phase 1 and an inception workshop took place in 2015. As a part of this process, the Myanmar Forest Certification Committee (MFCC) commissioned a gap analysis report in 2016, with technical support from the FAO-EU-FLEGT Programme. This was presented to a consultative workshop with 150 national and international stakeholders in Yangon in 2017. The FLEGT process has been agreed, with annual workplans that started in 2016. The country is now negotiating a roadmap internally and with EU.

Under FLEGT the objectives are:

1. To eradicate the illegal timber and trade to EU.
2. To get the good forest governance and manage the forest sustainably.
3. To export Myanmar legal timber to EU.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The FLEGT process has been completed and the negotiations and planning have moved to the next phase.

Links and documents included

- FLEGT Myanmar - Overview of Forest Governance, Markets and Trade.pdf (http://www.euflegt.efi.int/documents/-/asset_publisher/ltjOjWpjtTO1/document/id/162913)

Title of measure

5.5.2 Form a FLEGT Task Force with relevant organizations, private sector, and civil society organisations

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

A multi-stakeholder taskforce was formed including government, civil society organisations and private industry with 24 members in 2018. There are also regional multi-stakeholder groups. The role of these groups is to formulate and implement workplans. Early in the process Interim taskforce teams presented FLEGT VPA activities to both members of Regional Government and Parliament including relevant stakeholders from civil society groups and the Private Sector in States and Regions; Sagaing, Thanintharyi, Kayin, Mon, Mandalay, Bago, Magwe, Ayeyarwady, Chin, Rakhine, Kachin, Kayah, Shan, and Yangon during December 2016 to July 2017. A multi-stakeholder group (MSG) was formed including government, civil society organisations and private industry with 24 members in 2018. There are also now regional multi-stakeholder groups, whose role it is to formulate and implement workplans.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The national taskforce and regional planning groups are in place with annual workplans.

Title of measure

5.5.3 Integrate the tasks of FLEGT in the annual work plans of concerned organizations

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

All participating organisations have begun taking account of the FLEGT in workplans. To that end, there has been extensive training: 200 people within Forest Department and more than 2000 across country among civil society and in the private sector.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The organisational structure of FLEGT in Myanmar has succeeded in involving a large number of regional actors and in training a large number of people.

Title of measure

5.5.4 Amend laws, procedures and rules to support the implementation of FLEGT

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Forest Law has been rewritten, in part to enable FLEGT, by including private sector planted forests and CFS.

The national taskforce is still working on a definition of legal wood and they are in the process of also modifying the ASEAN standards for chain of custody for specific use in Myanmar.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

The law has yet to be completed.

Target 6.

Title of measure

6.1.1 Amend state/regional legislation to create legal support for locally-managed freshwater fisheries and establish legal status for CFIUGS.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

This initiative is just beginning. In one case, however, a partnership called the Rakhine Fisheries Partnership (RFP) was formed in 2012, comprising the State Government, Department of Fisheries, the private sector, universities, Civil Society Organizations (CSOs) and fishermen to support the development of fisheries legislation and governance, based on shared interests and the recognition of history, structure, and political relationships on which traditional coastal fisheries

are based. This initiative resulted in the development and passing of the Rakhine State Freshwater Fisheries Law in November 2014, and has the potential to establish a landmark for rights-based co-management approaches to coastal fishing in Myanmar.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

One state now has appropriate legislation.

Links and documents included

Title of measure

6.1.2 Register 400 additional CFIUGs and explore further capacity development, including through partnerships

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

EU has funded the Myanmar Sustainable Aquaculture Programme (MYSAP) to improve sustainable aquaculture with Myanmar Fisheries Department. Myanmar has initiated work on a National Aquaculture Development Plan, which includes provisions for community management.

Wildlife Conservation Society helped to establish a Co-management Group of Kyeintali Onshore Fishery, comprised of 1,500 fishermen/women from 10 villages and traders. Training was provided on a Co-management Plan for those fishermen/women in cooperation with a partner organization, the Rakhine Coastal Region Conservation Association.

At Myeik, long-term management of marine areas has been granted to three local fishing communities (LMMAs). The three communities received exclusive fishing rights, while taking responsibility for protecting local marine habitats and biodiversity and managing harvest levels. This work including management planning for each groups was accomplished with the assistance of Flora and Fauna International. At the Myeik area, the local management groups for the inshore fishery are almost entirely women. Together with the Smithsonian Institute, Flora and Fauna International and the LMMAs have begun monitoring offshore fish catch and registering boats to start a management program.

In the Gulf of Mottama, Biodiversity and Nature Conservation Association provided Indigenous Community Conservation Areas training at three ethnic areas for conservation of migratory birds and fisheries that Biodiversity and Nature Conservation Association is co-managing, including for the action plan for spoon-billed sandpipers. These groups have about 25-30% women involved in 8 Local Conservation Groups and there were nearly equal of women in participants in awareness raising of environmental conservation talks and activities.

Note: Fisheries officials believe that this target was erroneously set far too high and that a number like 5 or 10 CFIUGs would have been more reasonable.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X

- Measure taken has been ineffective
- Unknown

Explanation:

There are 4 Community Fishery User Groups (CFiUGs), but the successful implementation of the Myeik local management areas indicates that the community approach is positive.

Links and documents included

- FFI and MONREC. 2015. Implementation of LMMAs in the Myeik Archipelago. TCP Report 09,
- FFI. 2017. Draft LMMA Management Plans: Don Pale, Lin Long/Parawa, and Langann LMMAs. TCP Report 43,

Title of measure

6.1.3 Expand area under CFiUG management to cover 10,000 hectares through establishment of locally-managed fishery management zones.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Wildlife Conservation Society and Department of Fisheries have designated an area of 725.2 km² as a co-management area for inshore fishery in Kyeintali of Gwa Township, Thandwe District, of Rakhine State. Along the Ayeyawady River, the Ayeyawady Dolphin Protected Zone was extended by 119 km (Htee Chaik – Katha – Shwegu) in Kachin State and the Sagaing Region. The 3 LMMAs in the Myeik Archipelago cover about 10,000 ha in total.

In July 2018, talks on pond aquaculture and ecology on Inle Lake will be held jointly by Taunggi University, Department of Zoology, GIZ MYASP (Inland Program), and Department of Fisheries, Shan State. Moreover, the faculty members from Department of Zoology are reviewing biodiversity research every year as a regional development research activity. This can benefit local communities by contributing to sustainable conservation and management.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

This target has been exceeded with >10,000 ha under co-management by local communities, NGOs, and government.

Obstacles and scientific and technical needs related to the measure taken: Please describe what obstacles have been encountered and any scientific and technical needs for addressing these, including technical and scientific cooperation, capacity development activities or the need for guidance materials.

The main obstacles are the isolation of fishing villages, the extensive coastline with thousands of islands, and the long distances needed to travel to organize LMMAs and community groups, especially relative to the capacity available. What has been accomplished was done with targeted donated funding.

Links and documents included

- FFI. 2016. METT Baseline for Langann LMMA. TCP Report 42,
- FFI. 2016. METT for Lin Long-Parawa LMMA. TCP Report 41,
- FFI. 2016. METT for Don Pale LMMA. TCP Report 40,

Title of measure

6.1.4 Develop guidelines for sustainable management of CFIUG and provide support to communities in following the guidelines.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress was reported for marine fishery groups, but for inland fishery groups, guidelines were produced for leased area fisheries. These guidelines require lease-holders to improve fish habitats and to manage the local resource sustainably.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

There are no guidelines as yet for marine fisheries, but these were developed for inland lease-holders.

Documents

- Kywe et al. 2015. <http://repository.seafdec.org/bitstream/handle/20.500.12066/970/SP13-3%20inland%20fr%20myanmar.pdf?sequence=1>

Obstacles:

Unknown.

Title of measure

6.1.5 Implement projects demonstrating benefits of integrated mangrove aquaculture

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Forest Department has launched a program, in 2018, entitled "Integrated Planning and Practices for Mangrove Management Associated with Agriculture and Aquaculture in Myanmar", implemented in partnership with Queensland University in Australia and APFNet. Under this plan, 200 ha of mangrove will be recovered, in part, to enhance shrimp aquaculture.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

There are no data to assess projects as yet.

Links and documents included

- APFnet site describing a mangrove project <http://www.apfnet.cn/en/show-model6-986.html>

Title of measure

6.2.1 Develop an ecosystem-based fishery management plan for the Myeik Archipelago and begin to establish LMMAs at key sites

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Local fishing communities in the Myeik Archipelago have been granted long-term management of marine areas (LMMAs). Through the work of Flora and Fauna International together with Department of Fisheries, three communities received exclusive fishing rights, while taking responsibility for protecting local marine habitats and biodiversity. The designation of these three LMMAs on Thayawthadangi Island and the Langan Island group is meant to protect diverse coral reefs and important fish and crab nursery grounds, while supporting local livelihoods.

Department of Fisheries, Forest Department, and Marine Science Association as well as Mawlamyine University (Department of Marine Science) are working together in establishing a new LMMA in Pulaw Township, Taninthayi Region.

As an important step to support the ecosystem conservation of Myanmar's Southern Coastal Zone, FAO has initiated with the Dept. of Fisheries the formulation process of a GEF funded project: "MyCoast: Ecosystem Based Conservation of Myanmar's Southern Coastal Zone" in 2018. Focusing primarily on the Taninthayi Region and the Myeik Archipelago, the project will support within fisheries and forestry communities to improve local management of the precious coastal and marine in the area. The MyCoast Project is intended to bring improved conservation of hundreds of thousands ha of mangroves, seagrass, and other coastal zone resources.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

These LMMAs were only recently established.

Links and documents included

- FFI. 2015. Assessment of the Crab Fishery in Thayawthadangi Island. TCP Report 22a,
- FFI. 2015. Shark and Ray Fisheries: Status and Socio-Economic Importance. TCP Report 12.

Title of measure

6.2.2 Identify and establish species- and site-specific closed seasons through coordination of government and private sector

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Mawlamyine University (Marine Science) is conducting research on habitats of fingerlings, their migration and distribution at estuaries of Sittaung River and Then Lwin River to identify and establish species- and site- specific closed seasons. Other work through the Department of Zoology of Monywa University is studying fish species in wetlands and along Chindwin River in

Monywa Township, Sagaing Region in Upper Myanmar. A key objective is to understand populations sufficiently well to enable site-specific closed seasons to be established in these areas. Other objectives are more local awareness-raising of concerns related to fisheries in this area, in cooperation with private fishery businesses.

Elsewhere, the Wildlife Conservation Society (WCS) has developed no-fishing zones, closed season fishing zones, sea turtle protected areas, and gear-restricted areas in the co-managed area with the Kyeintali Onshore Fishery Co-management Group.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

The work is too recent to enable assessment of success.

Obstacles

Insufficient data on individual species or areas to establish closed seasons. Closed seasons only exist for the spawning periods.

Target 7.

Title of measure

7.1.1 Develop sustainable rice cultivation guidelines and implement across 10% of rice cultivation area, including SRI, IPM and improved soil and water management.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Myanmar agriculture development strategy (ADS) and investment plan (2018 to 2023), includes seven principles to improve environmental and social sustainability, and promote sustainable good agriculture practices that enhance farmer incomes. The plan is to improve food production through adoption of new practices and technologies that ensure sustainable use of natural resources, primarily land, soil, water and forestry. Methodology included are integrated water resources management (IWRM), system of rice intensification (SRI), green water management, nitrogen use efficiency, conservation agriculture, agroforestry and organic agriculture.

The Rice Division (Department of Agriculture, Ministry of Agriculture, Livestock and Irrigation), conducted training in 15 States and Regions, including demonstrations, and model farms to increase rice yield per acre. Techniques included using good seeds, organic and inorganic fertilizer use, reducing harvesting waste related training. This resulted in the training of several thousand farmers. In 2016-2017, rice sowing techniques trials such as SRI, raising in nursery before transplanting, direct seeding by machine and broadcasting methods were conducted at 164 locations across Myanmar. In addition, in 2016-2017, 300 summer rice trials were conducted at 14 Regions and States. Rice cultivation using SRI was carried out in farm fields totalling 500 ac. in 14 States at 104 villages while training 196 farmers.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X

- Measure taken has been ineffective
- Unknown

Explanation:

There are no data on success of these programs, but a large number of farmers have been trained, including through the use of demonstration areas in sustainable rice production.

Obstacles

The key obstacles for this target is the very large number of rural farmers who must be trained and the lack of mechanisation.

Title of measure

7.1.2 Hold agricultural extension events to train farmers in sustainable rice cultivation techniques and certification

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

As noted under 7.1.1, a large number of farmers across Myanmar have been trained in sustainable rice production. The Department of Agriculture conducts regular training in numerous areas to improve general farming techniques, reduce the use of pesticides, and climate-based cropping. Between 2010 and 2017, 631 men and 707 women attended 38 workshops. Other training has included education and training on vegetable pest management, such as by releasing parasitic wasps to greengram, chili and tomato field, education, sharing Pamphlets, insect traps practical utilization, distinguishing beneficial insects and pests, were conducted at Let Pan Nan Ka Le village, Thongwa Township, Yangon region. Plant clinics are operated under the "Plantwise Project" (2014-2020), whereby plant protection staff from the states and region are trained by plant health advisors. A total of 23 plant clinics were opened in Bago (3), Yangon (2), Ayeyarwady (3), Naypyitaw (5), Sagaing (2), Mandalay (7), Mon (1), respectively, and solved farmers problems regarding with pest and diseases

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

There are no data to quantify success. Rice production in Myanmar has generally risen since 2014, except for flooding in 2015, but it is uncertain if this is weather, area, or training related.

Obstacles

These include the large number of small holding farmers who need training and the lack of sufficient staff at M.Ag to conduct the training.

Links and documents included

- Sustainable rice case study <http://www.asiapacificfarmersforum.net/saw-htoo-baw-a-small-farmer-with-big-dreams/>

Title of measure

7.2.1 Establish extension programme for sustainable aquaculture management

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Department of Fisheries with JICA has established an extension program for small-scale aquaculture which began in 2009 and is still active. The JICA project trains farmers and enables them to train others in the same regions. Training is also key initiative under the MYSAP program funded by the EU and in the National Aquaculture Development Plan. Another program run through World fish with the DoF, called Myfish2, is improving fishery management in the Ayeyawady Delta.

The Department of Fisheries has established the Good Aquaculture Practices Extension Team in 2016, to improve techniques of fish-farmers at all of the aquaculture sites in the country and to provide other extension activities and auditing practices at certified farms. The Department is in the process of upgrading the shrimp hatchery in Rakhine state.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

The JICA programme has been ongoing for several years. The MYSAP program has just started and no assessment can yet be made.

Links and documents included

- Description of the MYSAP programme https://www.hs-fulda.de/fileadmin/user_upload/FB_Lebensmitteltechnologie/Mitarbeiterfotos/Voegler_Heike_-_EU-Projekt_Myanmar_2017-04-27.pdf
- YOU TUBE on the DoF JICA programme (<https://www.youtube.com/watch?v=os3fRIqJZnM>)
- http://pubs.iclarm.net/resource_centre/2017-39.pdf (Myfish2)

Title of measure

7.2.2 Develop pilot shrimp aquaculture projects meeting international certification standards for sustainable aquaculture and food safety export standards

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Fisheries Department has established best practices at 17 shrimp farms under the MYSAP Programme, but acknowledges the need for much more work. The MYSAP Programme has just started.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

A relative few farms have been improved.

Title of measure

7.2.3 Develop alternatives to fish feed for domestic aquaculture, including soy-based feed

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No work completed. This needs research.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No data.

Target 8.

Title of measure

8.1.1 Undertake a desktop study of existing pollution issues in Myanmar and compile a priority list of ecosystems and species at risk

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No information was available for a national study, but several local studies have been completed since 2015, including a study on effects of mining water pollution on agriculture, amounts of surface water pollution, waste management, mercury pollution, and plastics in waterways (attached). WWF and consultants are conducting a current study of pollution along the Ayeyawady River under the World Bank funded Ayeyawady Integrated River Basin Management (AIRBM) Project, slated for completion in 2020. Most studies did not specifically refer to an individual species at risk, although AIRBM study takes special interest in the Ayeyawady dolphins. A report by the Myanmar Centre for Responsible Business (2014) identifies that the main sources of land-based coastal pollution include: sewage; excess nutrients from agriculture and aquaculture; chemical fertilizer residue; persistent organic pollutants (POPs) from used pesticide residue; used household materials like plastic bags; and medical waste and excreted pharmaceuticals. Sufficient understanding exists for the ECD to have enacted an Environmental Management Plan for polluting industries in 2018, which required nine major industries, including the textiles business, to adopt wastewater and solid waste management systems; this was the first such regulation in the country.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

There is no national-level analysis of pollution burden and its effects on biodiversity but work on the Ayeyawady River by several agencies has provided some data.

Links and documents included

- Industrial pollution effects on agriculture Myanmar 2018. <http://www.eepseapartners.org/economic-losses-agricultural-sector-industrial-waste-water-pollution-study-myanmar/>
- Surface water pollution <https://myanmarsurfacewater weblog.tudelft.nl/2016/09/19/surface-water-pollution-in-myanmar-burma/>
- Mercury pollution from gold mining <https://www.norway.no/en/myanmar/norway-myanmar/news-events/news2/gold-mining/>
- Local mercury investigation <https://frontiermyanmar.net/en/the-mercury-menace>
- Ayeyawady River and the economy. WWF. http://d2ouvy59p0dg6k.cloudfront.net/downloads/Ayeyawady_risks_and_opportunities_report_v1_en_web.pdf
- The AIRBM study of the Ayeyawady River basin. <https://ejatlas.org/conflict/myanmar-Ayeyawady-integrated-river-basin-management-project-airbmp>
- Status of the Ayeyawady River <https://ejatlas.org/conflict/myanmar-Ayeyawady-integrated-river-basin-management-project-airbmp>

MCRB oil and gas environmental issues 2014.pdf (Causes of coastal pollution) <http://www.myanmar-responsiblebusiness.org/pdf/SWIA/Oil-Gas/00-Myanmar-Oil-and-Gas-Sector-Wide-Assessment.pdf>

Title of measure

8.1.2 Undertake targeted field research to determine the condition of sensitive ecosystems (such as rivers and lakes) at particular risk of being impacted by pollution (e.g. near industrial sites and mining operations) and for which only limited information is currently available

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Noted in 8.1.1, several studies have been completed since 2015, including a study on effects of mining water pollution on agriculture, amounts of surface water pollution, waste management, mercury pollution, and plastics in waterways. In addition, there is a current study on the relationship between fish and physical parameters of water along Chindwin River (from Ahlone to Nyaungpingine). Chemical parameters as a result of illegal gold mining are being studied and the impacts on fish species and on terrestrial systems will be further researched. The Ayeyawady is an especially important river and the World Wide Fund for Nature (WWF) completed a study on the completed a study on the Ayeyawady Delta coastal geomorphology and Delta stability and also mapped the drivers of change on the River. They initiated a water stewardship approach, launched the Ayeyawady in the Economy project and formed a multi-stakeholder water stewardship working group and wastewater working group. A study on aquatic habitats along the Ayeyawady River by Lee et al. (2018) found extreme pressure from developments on all habitat types, including pollution, soil runoff following deforestation and agriculture, fishing pressure, and suggested the need for greater protection. A study on industrial pollution in agricultural area in the central dry zone revealed a reduction of about 40% rice yield as a result of wastewater pollution from textile industry (Tin Tin Htwe 2017). More information on water resources planning and pollution abatement is dealt with under 14.1.1.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

No data.

Links and documents included

- Agriculture effects of wastewater pollution. <http://www.eepseapartners.org/economic-losses-agricultural-sector-industrial-waste-water-pollution-study-myanmar/>
- Lee et al. 2018. <https://digitalarchive.worldfishcenter.org/bitstream/handle/123456789/680/4257.pdf?sequence=1&isAllowed=y>

Title of measure

8.2.1 Ensure draft EIA Procedure and NEQS are reviewed by independent biodiversity experts

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

EIA procedures and NEQ Guidelines for Emissions were approved and circulated in December 2015. Asian Development Bank and JICA have provided technical support

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No information on reviews by biodiversity experts was available.

Links and documents included

- NEQ guidelines for emissions (English) <https://www.scribd.com/document/323501198/Myanmar-Emission-Guidelines-English-Translation>

Title of Measure

8.2.2 Conduct training on the potential impacts of pollution on biodiversity to ensure that the regulators responsible for review of EIA documentation and application of NEQG or NEQS have adequate understanding of biodiversity to assess the potential impacts of development.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

There has been considerable training activities and capacity development including: Capacity Development in cooperation with Vermont Law School starting from 2014, 16 people received on the job training on EIA report reviewing; JICA organised a seminar on Environmental Impact Assessment was organized in Yangon, in 2017, for about 150 representatives from local businesses, Japanese businesses based in Myanmar, and other organizations; JICA also provided a seminar on Environmental Impact Assessment in Mandalay in 2018 for about 100 representatives from local businesses, Japanese businesses based in Myanmar, and other organizations; and JICA provided a capacity development program in Nay Pyi Taw in 2018, as a component under the "Plan on Capacity Enhancement in Basic Water Environment Management and EIA system in Myanmar". ADB provided training for ECD staff for reviewing mining sector EMP reports, capacity development activities were implemented in 6 regional/state ECD offices (Shan, Mandalay, Sagaing, Bago, Taninthayi, Kachin); training on Environmental Management Planning in EIA for 30 staff members from ECD head office and regional/state offices in 2016.

Together with WWF and MCRB, ADB helped to provide a training Course on Good Practices for Mine Waste Water & Waste Rock Management in 2018, for 45 participants from all divisions, head office and regional/state offices of Department of Mines, business owners, and third parties. WWF and MCRB provided training on Environmental and Social Planning and Management in the Mining Sector in 2017 for 30 staff members from head office of the Department and regional/state offices. On the job training and capacity development on EIA report reviewing in the mining sector was conducted for 40 staff members from head office of the Department and regional/state offices in 2017. To enable more expeditious and comprehensive feedback and approval, capacity development and on the job training, as well as field trips to project areas, were conducted for staff members and officers from regional/state level Environmental Conservation Department three times during 2017-18.

The Norwegian Environment Agency (NEA) helped to establish an Environmental Data Management (EDM) System to enable to understand and use environmental data of coastal areas in oil and gas sector. With the support of Forest Department, GIS training was conducted at Environmental Conservation Department in 2017. To enable more expeditious and comprehensive feedback and approval, capacity development and on the job training as well as field trips to project areas were conducted for staff members and officers from regional/state level Environmental Conservation Department three times during 2017-18. A “Workshop on Biodiversity in Coastal Areas and Their Data Availability and GIS” was organized at ECD in 2017. ECD staff visited Pathein University in 2018 to assess the availability of data on biodiversity in coastal areas.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The many measures have considerably improved the capacity of a large number of ECD staff with respect to EIA.

Title of Measure

8.3.1 Establish and enhance network of water pollution monitoring stations around Inlay Lake, Indawgyi Lake, and along the Ayeyawady River (particularly stretches frequented by the Ayeyawady dolphin).

Describe a measure taken to contribute to the implementation of your country’s national biodiversity strategy and action plan

Generally not done, although there has been a long-term monitoring program on the Ayeyawady River. ECD launched in 2018 an Environmental Management Plan for polluting industries, which required nine major industries including the textiles business to adopt wastewater and solid waste management systems. It was the first such regulation in the country. In 2016, the Norwegian Assistance Program started to increase water monitoring as a part of the Integrated Water Resources Management Program.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No data from the new programme were available.

Obstacles and scientific and technical needs related to the measure taken

Not a sufficiently high priority, given the capacity available, and insufficient funding available. Work involving Norway should improve the situation.

Links and Documents

- Norway – integrated water plan: <https://www.niva.no/en/projectweb/myanmar>
- Pilot project https://www.niva.no/nyheter/norsk-st%C3%B8tte-p%C3%A5-veien-mot-helhetlig-vannforvaltning-i-myanmar/_attachment/download/01453b12-7c29-402d-a8aa-8a3f2e93cad8:fb88f2d22d685ede55c6b85812ab39096a4ce6cb/watersolutions_01_2016-4.pdf

Title of Measure

8.3.2 Develop a community-based water quality monitoring programme and provide training to support the development of a community water monitoring network, including participatory monitoring in and around Special Economic Zones

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Not done.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

Not done.

Links and documents included

- Water cleaning technologies: <http://www.eco-business.com/news/how-japanese-technology-is-cleaning-myanmars-polluted-waterways/>

Title of Measure

8.3.3 Assist floating vegetable farmers in Inlay Lake to adopt ecologically-friendly practices that minimize the use of agrochemicals.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The International Finance Corporation (IFC), a member of the World Bank Group and Ministry of Agriculture, Livestock and Irrigation, Myanmar organized a one day workshop on Good Agriculture Practices (GAP) to 300 participants (including 200 tomato farmers). The seminar discussed how to improve practices and reduce the use of chemicals on floating farms on Inle Lake. The objectives were to support GAP and protect Inle Lake for improved sustainable agricultural practices and ensure the lake continues to be a leading source of income for local residents.

In June 2017, the good agricultural practices (GAP) system demonstration ceremony was jointly implemented by United Nilar Agribusiness and Shan State Agricultural Department, and mentioned that floating tomato cultivators in Inle Lake, Shan State are pleased with the GAP system. The United Nilar Agribusiness provided GAP technology assistance and use of bio-pesticide for 50

acres of land from five villages. The department provided Kyats 0.3 million per acre to 50 acres of land as well as the bio-pesticides, and products from these 50 acres are being sold in the local market.

Save Inle Lake, the Inle farmer agricultural and development community, established a floating garden (about 2 acre) in Inlay Lake in order to promote the region's tourism sector and agriculture industry, with the use of eco-friendly floating agriculture technology.

In 2017-18 fiscal year, Horticulture and Plant Biotechnology Division (MoALI) conducted good agricultural practices (GAP) training which related with In le Lake to adopt ecologically-friendly practices that minimize the use of agrochemicals as follow:

No.	Name	Location	training period	no. of trainees
1	Good agricultural practices(GAP) □ organic and pesticide usage	Center of agricultural research and training center (CARTC), Hlegu	May 2, 2017 to May 12, 2017	States/regions government employee (50) persons
2	Proper use of pesticide and environment conservation, and GAP training	Heho	May 5, 2017	Government employee (5) persons and farmers (55) persons
3	GAP, pesticide and fungicide application training	Heho	Jul 27, 2017	Government employee (10) persons and farmers (90) persons
4	GAP training to Inle lake Good Friend Association	Heho	Sept 29, 2017	farmers (50) persons
5	Safe Use Pesticide	Heho	Oct 17, 2017	farmers (40) persons
6	Training to In Le Sa Kar Villager	Heho	Dec 30, 2017	farmers (100) persons

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Uncertain of results, but large effort to improve floating vegetation farming.

Obstacles

Over-coming current practices by illustrating newer practices and techniques are better.

Title of Measure

8.4.1 Establish education and outreach programme for informal and artisanal minors on mercury and other pollutants in at least three priority states/regions

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

Not done

Title of Measure

8.5.1 Undertake a desktop study of known, internationally recognized, environmentally damaging chemicals to identify regulation gaps

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress on the review but the Pesticides Law was adopted in January 2016 (Law 14/2016) to replace the old law. The responsible agency is the Department of Agriculture, but there appears to be no specific restriction for pesticide use. Instead, users need to comply with departmental instructions/guidelines.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

The review was not done and the new law requires the completion of guidelines and enforcement.

Title of measure

8.5.2 Regulate use of organ chlorines and ban the veterinary use of diclofenac and other non-steroidal anti-inflammatory drugs known to kill vultures

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

Not done.

8.5.3 Ban use of tetraethyl lead as a fuel additive in Myanmar

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No data.

Target 9.

Title of Measure

9.1.1 Establish an IAS unit within the FD to help coordinate the activities of government, the private sector and non-governmental organisations

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No done yet

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

Not done.

Title of measure

9.1.2 Based on desk research, targeted surveys and stakeholder consultations, identify IAS that should be prioritized for prevention, control and eradication

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Fisheries Department has identified 14 species as invasive including African catfish and Tilapia. There are large numbers of ornamental species in Myanmar but no information is available on invasiveness. Forest Department has prepared a booklet for all recorded IAS species in Myanmar.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Only a few aquatic invasives have been identified and there is no action planning.

Title of measure

9.1.3 Identify the measures required to strengthen controls on potential transboundary movement of IAS

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Department of Agriculture has established a plant quarantine facility at Yangon Airport and there is a law in place to protect against entry of plant species especially those species used as crops.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No data available on numbers of plants seized at airport. No information for marine shipping or land crossings.

Title of measure

9.1.4 Identify the priority capacity building needs of land managers and government authorities, in relation to IAS identification, prevention and management

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Department of Agriculture, Plant Biotechnology Center (Yangon) regularly examines crop seeds from companies (both exports and imports) for presence/absence of GMOs and issues certificates of safety. In accordance with seed law, imported crops to be registered in Myanmar for cultivation require GMO testing and a non-GMO certificate issued as of from 2014-2015. Samples of 29 crops (rice (paddy, polished, broken), maize, sugarcane, cotton, blackgram, sunflower, chickpea, coffee, cowpea, rice bean, aubergine, tomato, chili (hot), chili (sweet), pumpkin, cucumber, musk melon, bottle gourd, long bean, cabbage, broccoli, cauliflower, papaya, onion, potato, okra, lily flower, carnation, eustoma flower are regularly examined for GMO testing and non-GMO certification. A new biosafety framework is in a third draft.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

More checkpoints are required at airports and border crossings, there has been limited training of enforcement personnel, and there is very limited capacity to identify species, especially in agricultural shipments. There is a need to develop guide materials with improved species lists for border personnel and need to strengthen laws to support border personnel.

Obstacles

There is a need for more staff and a need to assign some priority status to IAS in terms of attention by government.

Title of measure

9.1.5 Prepare a 10-year NIASP, through a participatory process involving government, civil society and the private sector.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Incomplete but is being prepared.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

Not complete yet

Target 10.

Title of measure

10.1.1 Carry out detailed feasibility assessments and public consultations at priority sites for establishing new LMMAs and MPAs

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Three LMMAs were established in the Myeik Archipelago with assistance from Flora and Fauna International (see Target 6.1). As a result of other work by Wildlife Conservation Society, the local communities in Kyeintali Onshore Fishery Co-management Area have proposed to the government to designate Nanttha Kyun as marine protected area, with an area of 725.2 km² for co-management of the onshore fishery in Kyeintali of Gwa Township, Thandwe District, of Rakhine State.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

There is progress towards local management of fisheries associated with reefs, although so far, few LMMAs have been established. However, success at these areas suggests that other LMMAs may seen also be approved. There is considerable support among the NGO community for the LMMA approach.

Links and documents

See 6.1 for documents

Title of measure

10.1.2 Enhance the capacity of Mawlamyine University as a national centre for marine excellence

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The capacity of Mawlamyine University is being enhanced as a National Centre for Marine Excellence by working together with several foreign universities in Europe and USA, as well as with local and international organizations. It is necessary to send more of the younger faculty members abroad to obtain international exposure and experience. A funding program with the EU is enabling greater international exposure.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

There is recognition that improvement at the university is required to become a national centre of excellence, however considerable work remains to be done.

Links and documents included

- Marine sciences at Mawlamyine University <https://www.myanmar-edu.org/mueucap-university-mawlamyine>

Title of measure

10.1.3 Establish a national coordination body to manage over-lapping jurisdictions and coordinate activities.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Within this 3 years, Myanmar has formed several national level bodies fully or partially related to biodiversity with mean purpose of promoting collaboration and addressing issue in collaborative manner: National Biodiversity Conservation Committee, National Coastal Resources Management Central Committee, National Environmental Conservation and Climate Change Central Committee, National Wetland Committee, National Land Council.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation

The agency has only begun its activities and so results and achievements are uncertain yet.

Links and documents included

- Myanmar-Thailand seminar on reef protection, IUCN 2017 https://www.iucn.org/sites/dev/files/content/documents/2017/thai-burmese_mpa_report.pdf

Title of measure

10.2.1 Develop an effective interagency law enforcement system for the marine environment and ensure adequate resources, funding and incentives and

10.2.2 Confiscate gear and issue appropriate fines engaging in illegal and destructive fishing practices

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No information

Target 11.

Title of measure

11.1.1 Approve proposed Lenya National Park, Lenya National FD Park Extension, Mahamyaing Wildlife Sanctuary and Inkhine Bum National Park

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Establishing a PA means the area is designated as a PA upon the approval of Government, after survey, negotiation with communities and concerned stake holders, and consensus on establishment. This is a long process and so far under the NBSAP, only Inkhain Bum National Park has been newly established to 2018, at 300.5 km². No management plan is available yet for that park. However, the gazetting of proposed Mahamyaing Wildlife Sanctuary is in the final stage. Gazetting of Lenya and Lenya N.P extension has been delayed.

In support of establishing proposed Lenya and Lenya extension National Park, Biodiversity and Nature Conservation Association studied habitats of Gurney's Pitta and other important species, and how a species becomes endangered in the areas around Lenya and Lenya (expanded) starting from 2011 to 2016. Currently, the Nature and Wildlife Conservation Division, Taninthayi Region Government, administrators from GAD, and Karen National Union are supporting conservation of Gurney's Pitta and their habitats, with the participation of local communities.

Though protected some areas could not be established as planned, in addition to Inkhain Bum National Park, two more protected areas, Phar-Baung-Taung Nature Reserve in Mon State and Htaung-Wee-Taung, a Geo-physically Significant Reserve in Kayin State, were established. The number of proposed protected areas has increased to 19 in 2018.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

The target date is 2020, and so more PA is planned but the process takes time. Myanmar successfully established one of these parks, and is close on another.

Obstacles

The key obstacles are time for the process, negotiating with local communities, availability of funding, and lack of capacity (sufficient staff).

Links and documents included

- Inkhain Bum NP GIS/GPS data <https://www.protectedplanet.net/inkhibum-national-park>

Title of measure

11.1.2 Establish Taninthayi National Park and Pan The Taung National Park

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Gazetting of Taninthayi NP is delayed and gazetting of Pan-the-taung NP is in process. However, WWF has corridor planning work that is ongoing; this includes the socio-economic survey in Pawklo (Banchaung area), village boundary and land use mapping, consultations on the wildlife sanctuary boundaries, and initial land use planning at the village level (14 villages for 152,533 ha), and there is considerable work on GIS mapping (forest types, elevation, water, soils, etc.), cataloguing of biodiversity resources and planning for park management that is proceeding or completed at Taninthayi by several groups and government working in the area (e.g., Flora and Fauna International, Wildlife Conservation Society, WWF, ITTO).

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

The process for both parks is advancing, only at a slower pace than expected. At Taninthayi negotiations with local stakeholders and with Thailand have been slow, while logging, roads and other developments are advancing within the area of the proposed park. Nevertheless, achievement of the target is expected by 2020. The international Tropical Timber Organisation (ITTO), Flora and Fauna International, Wildlife Conservation Society, WWF and others are working to protect and maintain the area as a Park.

Obstacles

Difficult negotiations and other demands for the lands within the proposed Taninthayi Reserve area have slowed development of the area as a park.

Links and documents included

- Review-of-the-Taninthayi-Nature-Reserve-Project:
<https://myanmarbiodiversity.org/portfolio-items/review-of-the-taninthayi-nature-reserve-project-as-a-conservation-model-in-myanmar/>
- Logging in Taninthayi proposed park and geckos
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0174432>
- ITTO taninthayi.pdf (ITTO project at Taninthayi):
[https://www.itto.int/files/itto_project_db_input/3083/Project/PD%20723-13%20Rev.2%20\(F\)_English.pdf](https://www.itto.int/files/itto_project_db_input/3083/Project/PD%20723-13%20Rev.2%20(F)_English.pdf)
- FFI. 2015 Atlas of Spatial Data for Forest Planning in Taninthayi. TCP Report 28c, (Maps of forest types and elevation included, in Myanmar language)
- FFI. 2015. Taninthayi Atlas (All spatial data for Taninthayi, Flora and Fauna International report)

Title of measure

11.1.3 Establish Hkakaborazi National Park SE, Imaw Bum National Park, and Za Loon Taung Protected Area

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Gazetting of Imaw Bum NP and Za Loon Taung PA is under the process, while the gazetting of Hkakabo Razi NP SE (part of the UNESCO World Heritage Site) is delayed due to local stakeholder objections related to land tenure. Myanmar's Forest Department has been working with UNESCO since 2013 to designate Hkakaborazi Region (consists of Hkakabo Razi National Park, Hponkan Razi Wildlife Sanctuary, and Hkakabo Razi Southern Extension) as a Natural World Heritage Site. The Forest Department and UNESCO are now undergoing an initiative to safeguard natural heritage in Myanmar. Community members from nearby villages have been appointed and trained as park guards in both the national park and the wildlife sanctuary to monitor and report on the illegal activities in the areas.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Two parks will soon be gazetted, while negotiations at Hkakaborazi NP SE continue.

Obstacles and scientific and technical needs related to the measure taken:

The main obstacle at Hkakaborazi NP SE is the time it takes to work with local communities on land tenure and land rights issues to obtain free and informed prior consent.

Title of measure

11.2.1 Conduct a review of opportunities for recognizing governance and management diversity, including ICCAs, within the current legal and governance framework, including forests, fisheries, protected area categories, and other area-based conservation approaches

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Under the "Conservation of Biodiversity and Protected Areas Law" enacted in 2018, there is a new protected area category, namely "Community Conserved Protected Area (CCPA)".

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation

There are ongoing negotiations – see 11.2.3

Obstacles and scientific and technical needs related to the measure taken:

The process is difficult because each case is different and parties need to decide how long is long enough and what resources were used vs. protected.

Title of measure

11.2.2 Recognize additional governance types and management FD categories using appropriate legal tools, including amendments of laws and revisions of implementing rules and regulations

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

In 2018, a new Conservation of Biodiversity and Protected Areas Law was enacted. This law provides increased flexibility for the government, especially with regards to enforcement while recognizing the rights of local communities.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

Passage of a new protected areas law was accomplished in 2018.

Links and documents

- New biodiversity and protected areas law (2018) <http://www.myanmar-redd.org/the-new-protected-areas-law-what-does-it-mean-for-redd.html>

Title of measure

11.2.3 Pilot governance types and management categories by establishing co-management PA systems, recognizing ICCAs, and developing PA zonation.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Under the "Conservation of Biodiversity and Protected Areas Law", there is a new protected area category called "Community Conserved Protected Area (CCPA)". CCPA is mainly intended to provide legal provisions for any local community who have protected resources and areas for their needs or spiritual belief for long time. The details of the management arrangement for CCPA is being prepared in the draft Conservation of Biodiversity and Protected Areas Law Rules.

Recently, a concerned local community proposed to change the Phar-Baung-Taung Nature Reserve, established on 7th August 2018 in Mon State, with an area of 188.6 ha, in to Phar-Baung-Taung Community Conserved Protected Area. The Forest Department submitted the community's proposal to the Minister's Office with a recommendation to allow.

The new Law also allows to co-management on PAs between the community and the Government. Furthermore, according to Section 13 (g) of the Law, the Director General may, with the approval of the Ministry: "designate buffer zones in the Protected Areas for regional development activities, socio-economic development of local community and ecotourism development without having any adverse impact on the core zone, if necessary. Within the designated buffer zone, community forestry, community-based tourism and management of locally managed marine area may be permitted, after stipulating regulations, in accordance with procedures".

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation The process has just been initiated and so progress is uncertain.

Obstacles

Lack of capacity but also difficulties in determining a definition for an LCCA.

Title of measure

11.3.1 Complete METT surveys in at least 20 protected areas.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

METT surveys were completed for 7 areas since 2015: Flora and Fauna International (2 areas), Biodiversity Consultancy (1), and Wildlife Conservation Society (4) (see Table attached).

In collaboration with IUCN and Norwegian Environment Agency, NWCD will organize a training workshop in 3-7 December 2018 in order to promote capacity as well as to develop new METT that would be fully suitable for the specific Myanmar conditions.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

A third of the target has been achieved and future surveys are planned but it is uncertain if the proposed target of 20 surveys can be met by 2020.

Links and documents included

- TCP Report 34, METT for Lenya Proposed NP Extension (Jun 2016).pdf
- METT survey results (see below)

METT survey results (Flora and Fauna International, Wildlife Conservation Society, Biodiversity and Nature Conservation Association)

Park/reserve	Who did survey	year	Score (%)
Lenya proposed PA	Flora and Fauna International	2016	20
Lenya proposed PA extension	Flora and Fauna International	2016	21
Taninthayi Nature Reserve	The Biodiversity Consultancy	2014	75
Indawgyi Wildlife Sanctuary	Biodiversity and Nature Conservation Association, Flora and Fauna International, PRCF	2012	32
Hkakaborazi	Wildlife Conservation Society	2013, 2017	51, 58
Hponkanrazi	Wildlife Conservation Society	2013, 2017	12, 39
Hukaung	Wildlife Conservation Society	2013, 2017	52, 48
Htamanthi	Wildlife Conservation Society	2013, 2017	49, 61

Title of measure

11.3.2 Implement SMART in at least 15 PAs.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Forest Department and WCS are working to implement park patrols using SMART in 20 PAs including: Hkakabo Razi National Park, Hponkan Razi Wildlife Sanctuary, Hukaung Valley Wildlife Sanctuary and Htamanthi Wildlife Sanctuary, Natmataung National Park, Alaungdaw Kathapa National Park, Rakhine Yoma Elephant Range, Minsontaung Wildlife Sanctuary, Shwesettaw Wildlife Reserve, Indawgyi Wildlife Sanctuary, Chatthin Wildlife Sanctuary, Poppa Mountain National Park, Shwe U Daung Wildlife Sanctuary, Pan Laung and Pyada-Lin Cave Wildlife Sanctuary, Inlay Lake Wildlife Sanctuary, Moeyungyii Wetland Sanctuary, Meinmahla Kyun Wildlife Sanctuary and Lampi Marine National Park. Several capacity building trainings and field exercises were conducted, in collaboration with WCS, to enhance practices using SMART in these Protected Areas. Each PA is submitting monthly reports on SMART activities to the NWD's Director Office.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The target has been exceeded and has proved to be a very effective tool to guide management activities in the 20 PAs.

Title of measure

11.3.3 Implement management plans addressing conservation priorities and investment in at least five PAs

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The number of protected areas with completed park management plans increased from 2 in 2015 to 6 in 2018; Lampi Marine NP (2014-2018), Taninthayi Nature Reserve (2013-2017, 2018-2022), Alaungdaw Kathapa National Park (2018-2023), Natmataung National Park (2018-2023), Indawgyi WS (2018-2023), Meinmahla Kyun WS (2018-2023). Forest Department, ASEAN Centre for Biodiversity and WCS have cooperated on developing 5-year management plans (2018-23) for Alaungdaw Kathapa National Park (AKNP) and Natmataung National Park (NMTNP). In addition, management plans are being prepared for 7 seven more PAs: Hkakabo Razi NP, Hponkan Razi WS, Htamanthi WS, Poppa Mountain Park, Chatthin WS, Shwesettaw WS and Moeyungyii Wetland Sanctuary. The Management Plan for Lampi MNP is being revised. WCS has recently finalized a Strategy and Road Map for Capacity Development on Effective Management of Protected Areas in Myanmar.

A project to improve the sustainability of protected areas management is being carried out by WCS focussing on Hkakabo Razi National Park, Hponkan Razi National Park WS, Hukaung Valley Wildlife Sanctuary and Htamanthi Wildlife Sanctuary. The project is being implemented to improve implementation of biodiversity conservation and promoting national policies of Protected Area Management, enhance buffer zone management in protected area, and to enhance socio economic development of local communities.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The target was exceeded. The aim of these plans is to improve the management of the parks by providing guidance and methods to local area staffs. The broad cooperation among NGOs and government has been highly beneficial in delivering a key need for PAs in Myanmar.

Links and documents

- Lampi Marine PA Management Plan <http://www.lampipark.org/wp-content/uploads/2015/10/General-management-plan.pdf>
- WCS. 2016. Steps Towards Establishment of Protected Area Management Plans in Alaungdaw Kathapa National Park and Natmataung National Park.

Title of measure

11.3.4 Implement pilot projects in at least five PAs involving local communities in designating buffer zones and co-management providing incentives for conservation and compensation for restricted access.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

WCS has been working with local organizations and local communities during the process of developing management plans for Natmataung National Park and Alaungdaw Kathapa National Parks. WCS is currently training interested young people from the villages around Natmataung National Park, Alaungdaw Kathapa National Park, Htamanthi Wildlife Sanctuary, Hkakabo Razi National Park, and Hponkan Razi Wildlife Sanctuary in conserving the parks and sanctuaries.

Under the FD-ACB's Small Grant Programme for ASEAN Heritage Parks project, young people from the community near Natmataung and Alaungdaw Kathapa National Parks, Indawgyi and Meinmahla Kyun WS were trained as community rangers and participated in patrolling.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Local communities are involved in management of two park management plans and are being trained at five other parks. Success has not been measured as the projects are very early in implementation.

Title of measure

11.3.5 Expand community-based participatory biodiversity monitoring in and around PAs

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Under the FD-ACB's Small Grant Programme for ASEAN Heritage Parks project, trained community rangers are participating in community-based in law enforcement activities being conducted in Meinmahla Kyun WS, and Indawgyi WS, Alaungdaw Kathapa NP and Natmataung NPs. This is a part of implementing the respective management plans. WCS is initiating community based participatory biodiversity monitoring in Mount Victoria National Park. Oikos and NWCD monitor sea turtles and provided 1 local training session in 2018 in Lampi Park (25 people, with 8 women). BANCA has carried out biodiversity monitoring in Kelatha Wildlife Sanctuary with Kelatha Forever and local village support.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

There are no data to assess effectiveness, nevertheless, several communities are now actively involved in protecting their local PAs.

Title of measure

11.4.1 Nominate at least one natural site for inclusion on the UNESCO World Heritage list

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

In 2013, Forest Department (FD), WCS, and UNESCO worked together to nominate Hkakabo Razi area and landscape as the first natural heritage site in Myanmar for inclusion on the "UNESCO World Heritage List". The area has yet to be approved, however, owing to local opposition. WCS contributed by supporting the preparation of the Hkakabo Razi Landscape Management Plan and Putao District Ecotourism Action Plan, which are important in nomination for inclusion on the List. Hkakabo Razi area is nominated because it meets two criteria for inclusion on World Heritage List: Criteria ix (outstanding ecological and biological processes) and Criteria x (outstanding biological diversity).

The current list of possible Natural World Heritage Sites in Myanmar include: the Hkakabo Razi landscape, Hukawng Valley Wildlife Sanctuary, Indawgyi Wildlife Sanctuary, Natmataung National Park, Myeik Archipelago, the Ayeyawady River Corridor and the Taninthayi Forest Corridor. Among these tentative sites, Hkakabo Razi landscape Mt. Hkakabo Razi has been given top priority.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Several sites have been nominated but none has gained acceptance.

Links and documents

- UNESCO sites Myanmar <https://whc.unesco.org/en/statesparties/mm>
- UNDP. 2015. Inle Lake final report

Title of measure

11.4.2 Nominate at least two additional Ramsar sites

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

See Target 5.3.2 for Ramsar data

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The target was exceeded.

Links and documents

- McInnes et al. 2016. Conservation of biodiversity and improved management of protected areas in Myanmar https://www.ramsar.org/sites/default/files/documents/library/myanmar_action_plan_2016_e.pdf

Title of measure

11.4.3 Nominate at least one additional Biosphere Reserve

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Inlay Lake region and Indawgyi Lake region were designated as MAB in 2015 and 2016, respectively.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The target was exceeded with acceptance of two sites as MAB Reserves.

Links and documents

- Inlay Lake MAB (<http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/asia-and-the-pacific/myanmar/inlay-lake/>)
- Indawgyi Lake (<http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/asia-and-the-pacific/myanmar/indawgyi/>)
- Inle Lake Conservation and Rehabilitation Project: Final Report. 2015. UNDP and Norway For. Affairs.

Title of measure

11.5.1 Pilot marine spatial planning by developing a spatial plan for the Myeik Archipelago through a multi-stakeholder process

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

There is some progress at Myeik with Flora and Fauna International towards developing more marine protected area. Elsewhere, Wildlife Conservation Society produced an advice document on marine spatial planning in 2016. Wildlife Conservation Society trained 30 people in marine planning in 2017, 6 of whom were women and Flora and Fauna International trained 174 people, mostly women, on marine protected areas management and conservation for the inshore fishery at Taninthayi. A Village Fishing Society has been formed with various subcommittees and overseen by leaders to assist in planning development. The government has made a commitment to have a marine spatial plan by 2121.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Work at Myeik has been started but there is no spatial plan used for managing the area as yet.

Links and documents included

- FFI. 2017. Marine Protected Area Training, Myeik. TCP Report 47.
- WCS. 2016. Marine spatial planning advice. <https://myanmarbiodiversity.org/wp-content/uploads/2016/10/2015MSP-web2.pdf>
- WCS. 2014. Myanmar Marine Conservation Review. <https://myanmar.wcs.org/Wild-Places/Marine-Ecosystems.aspx>

Title of measure

11.5.2 Establish at least one new MPA that can together with Lampi Marine National Park serve as a model and pilot for future MPA management

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

There has been considerable work in the area of Lampi with the establishment of LMMAs, and there is a plan for these to lead to an MPA eventually.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation

Work is proceeding.

Target 12.

Title of measure

12.1.1 Pilot and scale up conservation and research initiatives for priority species

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

There has been a very large increase in the number of species for which conservation and research programs have been instituted. These programs are generally cooperative among government, NGOs, museums, and/or universities. Myanmar has many globally endangered species as well as several globally recognized 'flagship' species, such as tigers, Asian elephants, gaur, and Eld's deer, hence understanding populations and habitats is important to improve conservation. In some cases, work is done to understand populations, for others range descriptions and habitat use information is being developed, and for some others, conservation programs are being, or have been, developed.

Following is a list in bullet form of the species for which various groups are studying and/or monitoring:

- Asian Elephant – Smithsonian and Wildlife Conservation Society (population dynamics see Sampson et al. 2018, genetics, Yangon University); FFI; elephant management plan (2018)
- Flying foxes - Smithsonian
- Hoolock gibbon – Flora and Fauna International and Wildlife Conservation Society
- Snub-nosed monkey - Flora and Fauna International
- Tiger (at Taninthayi) – Flora and Fauna International and Wildlife Conservation Society
- Tiger (at Htamanthi) – Wildlife Conservation Society , IUCN
- Baer's pochard – Biodiversity and Nature Conservation Association and Wildlife Conservation Society
- Gurney's Pitta – Biodiversity and Nature Conservation Association and Flora and Fauna International
- Green peafowl – Biodiversity and Nature Conservation Association
- Turtle and tortoise – Wildlife Conservation Society, Oikos
- White-bellied Heron – Wildlife Conservation Society
- White-rumped vulture – Wildlife Conservation Society
- Black-bellied tern – Wildlife Conservation Society
- River tern - Wildlife Conservation Society
- Plain-pouched hornbill – Wildlife Conservation Society
- Jerdon's babbler - Wildlife Conservation Society
- Sun Bear – Oikos and Wildlife Conservation Society
- Clouded leopard – Wildlife Conservation Society
- Small cat species - WCS
- Ayeyawadydolphin – Wildlife Conservation Society
- Spoon-billed sandpiper - Biodiversity and Nature Conservation Association
- Sarus Crane – Wildlife Conservation Society
- Yellow-breasted Bunting - Wildlife Conservation Society
- Shorebird monitoring (2 sites) – Biodiversity and Nature Conservation Association
- Seagrasses – Flora and Fauna International, FD, Univ.
- Conservation of Moyingyi Wetland Ramsar Site,
- Endangered Sea Turtle in Mein-ma-hla Kyun.
- Helmeted hornbill – Biodiversity and Nature Conservation Association
- Dugong – Dept. Fisheries

For specific areas

- Habitat, distribution and genetics for Conserving Eld's Deer in Chatthin Wildlife Sanctuary and Shwesettaw Wildlife Reserve
- At Tamanthi Wildlife Sanctuary: tigers, White-Winged Duck (*Asarcornis scutulata*), Hornbill species, Black-Necked Stork, and River Tern (*Sterna aurantia*). Also Guar (*Bos gaurus*), Sambar Deer (*Rusa unicolor*), Barking Deer (*Muntiacus vaginalis*) and Eurasian Wild Pig (*Sus scrofa*) are monitored
- Myanmar Roofed Turtle (*Batagur trivittata* – Wildlife Conservation Society, Chindwin Basin
- Khakaborazi National Park and Phonkanrazi Wildlife Sanctuary, the following species are under specific protection and management: Black Musk Deer (*Moschus*), Shortridge's Langur (*Trachypithecus shortridgei*), Chinese Pangolin (*Manis pentadactyla*), Dhole (*Cuon alpinus*), Red Panda (*Ailurus fulgens*), Tarkin (*Budorcas taxicolor*), Hoolock Gibbon (*Hoolock* spp.), Himalayan Black Bear (*Ursus thibetanus*), Sun Bear (*Helarctos malayanus*), Clouded Leopard (*Neofelis nebulosa*), Marbled Cat (*Pardofelis marmorata*), Bengal Slow Loris (*Nycticebus bengalensis*), Sambar (*Rusa unicolor*), Stump-tailed Macaque (*Macaca arctoides*)
- Conservation of high altitude mountain areas in Natmataung NP, Hukaung Valley WS, Hponkanrazi WS, Hkakaborazi NP - University of Philip-Marburg, Germany
- Plant Species in the Sagaing Region and Kachin State - Xishuangbanna Tropical Botanical Garden (XTBG), Chinese Academy of Science
- Trout species – Yangon University and IIED, Ayeyarwaddy River and Delta area
- Short-headed catfish – Yangon Univ., Tokyo University of Marine Science and Technology
- 3 new gecko species reported – Flora and Fauna International, FD, University, Taninthayi area
- Sea turtle species monitoring – Oikos, NWCD, Lampi Park
- A new Marine Biodiversity Atlas (Wildlife Conservation Society, Birch et al. 2016), primarily deals with non-fish (sharks, rays, turtles, cephalopods and shrimp), but also provides data for fish catch
- habitats of fish fingerlings, their migration and distribution at estuaries of to identify and establish species - Mawlamyine University, Sittaung River and Than Lwin River
- fish species - Monywa University, wetlands and along Chindwin River in Monywa Township, Sagaing Region
- fish species in the Chindwin and Ayeyawady Rivers – University of Yangon, University of Mandalay (thesis studies)
- 22 freshwater wetland sites for monitoring of migratory waterbird species especially for Baer's Pochard in Mandalay and Sagaing Region, central Myanmar.
- Regular EAAFP fly way survey of Spoon-billed Sandpiper at the Gulf of Mottama.
- Regular monitoring survey of Spoon-billed Sandpiper in Nanthary Island, Sittwe, Rakhine.

A recent study (Sampson et al. 2018) found that the rate of poaching of elephants in Myanmar was far higher than previously suspected, and projected a rapid population decline in the Bago Yoma mountain area as a result. Elephants in the Taninthayi region appeared less affected but the sample there was only based on four collared animals. These data suggest that elephants in the wild may soon be extinct in Myanmar, if current rates of poaching continue. As a result of the declining population, Myanmar has instituted a 10-year action plan (in 2018) to halt and reverse the population decline.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

There has been a large recent effort through a combination of university, NGO and government projects to compile data for individual species of importance in Myanmar. This effort is reflected in the list provided above and in the amount of data now available for many species, for which data were entirely lacking in 2014.

Links and documents

- Sampson.C. et al.2018 Elephant poaching Myanmar. PLOS ONE <https://doi.org/10.1371/journal.pone.0194113>
- BANCA and WCS. 2017. Community - based Conservation of Baer's Pochard Aythya baeri in Pyu Lake, central Myanmar.
- BANCA and IUCN. 2017. MONITORING OF MIGRATORY SHORE BIRDS SURVEY IN THE GULF OF MOTTAMA.
- FFI. 2015. Bird Fauna of the Northern Myeik Archipelago. TCP Report 18,
- FFI. 2015. Survey of the Coral Reef Fishes of the Myeik Archipelago. TCP Report 13,
- FFI. 2016. Bird Fauna of the Southern Myeik Coast. TCP Report 32,
- Flora and Fauna International. 2016. Taninthayi Elephant Project, First Annual Report to USFW. TCP Report 35,
- FFI. 2016. Fish Species in the Lenya River Basin. TCP Report 29,
- Wildlife Conservation Society. 2016. Marine Biodiversity Atlas. <https://myanmarbiodiversity.org/wp-content/uploads/2017/02/Myanmar-Marine-Biodiversity-Atlas-HD6s.pdf>
- OIKOS and MONREC. No date. Malayan Sun Bear recorded in video in South Rakhine State: steps towards the updated checklist of the mammals of Rakhine State.
- "Voices for Momos" (elephants) WWF campaign. <https://www.youtube.com/watch?v=84yCKOx-3EI&feature=youtu.be>
- OIKOS and MONREC. 2018. Sea turtle awareness campaign contributes to biodiversity conservation in Lampi Marine National Park
- WCS, MONREC, IUCN and UNDP. 2017. Breeding of Tigers in Htamanthi Wildlife Sanctuary: Source Site for Tiger Population in Myanmar.
- Information site for threatened species in Myanmar <https://myanmarbiodiversity.org/#about>
- Forest species composition vs. rainfall, Khaine et al Forests 2017 <http://www.mdpi.com/1999-4907/8/8/282/htm>
- Karen State camera-trapping study (Flora and Fauna International) <https://www.cambridge.org/core/journals/oryx/article/first-structured-cameratrap-surveys-in-karen-state-myanmar-reveal-high-diversity-of-globally-threatened-mammals/7C11FE39FB3887E33066EB252741610C>
- U Soe Htun et al. 2018. Seagrass surveys in the southern Rakhine coastal region, Myanmar: biodiversity, distribution and coverage. J Aquac Mar Biol. 7(2):103-110
- U Soe Htun et al. 2017. Biodiversity, Distribution and Coverage of Seagrasses in the Myeik Archipelago and Rakhine Coastal Areas, in Myanmar. J. Aqua. Mar. Biol. 6(4): 00164
- https://www.cms.int/sites/default/files/document/cms-dugong_mos3_inf12-12_nr-mm.pdf
- <https://nationalzoo.si.edu/global-health-program/news/field-notes-myanmars-flying-foxes>
- Saw Htoo Tha Po et al. 2014. Small cats distribution. https://www.researchgate.net/publication/264057613_Status_and_distribution_of_smaller_cats_in_Myanmar

Title of measure

12.1.2 Expand programmes to establish assurance colonies, captive breeding and wild release programmes of threatened tortoises and freshwater turtles

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Wildlife Conservation Society, Oikos, Flora and Fauna International, and government has been working since the early 2000s on turtles because many of these species were being over-harvesting and populations were declining. Work on conserving Myanmar Roof Turtle, which is only endemic in Myanmar and the second rarest species all over the world, started through Wildlife Conservation Society in 2016, and 900 Myanmar Roof Turtle were successfully bred in captivity in 2017. From these, 60 turtles have been released into rivers and creeks which are their natural habitats.

Captive breeding of Myanmar Star Tortoise started in 2018 and the number has increased to 5,575 and wild release is also being done. Wild release of Star Tortoise from Minsontaung Wildlife Sanctuary has been done for four times, with a total of 1050 tortoises released into wild. Likewise, captive breeding of Star Tortoise from Shwesettaw Wildlife Sanctuary started in 2014 and a total of 950 tortoises have been released into wild for second time in 2018.

A Turtle Rescue Center was established at the Zeepin Forest Reserve in Bantbway Village of Naung Cho Township, Shan State, in December 2012. Since then, fresh water species of turtles have been continuously rescued from illegal markets, treated at the centre, and released back into into wild. Captive breeding is also carried out at the Centre.

Yangon University, Department of Zoology cooperates with Flora and Fauna International (Flora Fauna International) and Department of Fisheries to implement conservation of Myanmar Sea Turtle. In October 2017, two workshops were organized in Kadone Kalay Island of Bogalay Township, Ayeyawady Region and Dawei, Taninthayi Region to raise awareness with the local people about the turtles. Field studies were also conducted. Oikos, another NGO, is also working on sea turtles Lampi Marine National Park, including Green Turtle (*Chelonia mydas*), Hawksbill Turtle (*Eretmochelys imbricata*) and Leatherback Turtle (*Dermochelys coriacea*). In 2018, Istituto Oikos conducted training, surveys and awareness-raising activities on the monitoring, conservation and protection of sea turtles at the park. A sea turtle monitoring protocol was developed by a biodiversity expert from Insubria University (Italy), provided training to the Park Staff, and as a result, sea turtle monitoring activities are now regularly carried out in three key nesting sites in the Park.

Overall, there are now 10 assurance colonies for turtles and tortoises in Myanmar and a success story from Wildlife Conservation Society is included in this report.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

Several key species are recovering thanks to the large efforts by NGOs and government that focussed on these species.

Other relevant information, including case studies to illustrate how the measure taken has resulted in (or is expected to result in) outcomes that contribute to the implementation of the NBSAP

Case study from Wildlife Conservation Society:

The Burmese Star Tortoise was once common in the dry zone of central Myanmar, a desert-like region formed by the rain shadow of the western mountains. Centuries of subsistence harvesting by rural villagers depressed populations in many areas, but the death kneel for this species was

sounded when intensive illegal collecting for the high-end international pet trade began in the mid-to late 1990s. Populations declined precipitously over the span of just a few years and by the early 2000s, Star Tortoises had disappeared from the wild. Demand from illegal wildlife traffickers was so high that even tortoises housed in government-owned facilities were liable to theft. Fortunately, the Myanmar Forest Department working closely with Turtle Survival Alliance (TSA) and the Wildlife Conservation Society-Myanmar Program (Wildlife Conservation Society) had the foresight to establish several captive-breeding colonies (assurance colonies) using about 175 tortoises confiscated from wildlife traffickers. Heavily guarded assurance colonies were established at secure locations where the husbandry techniques necessary to propagate this species were pioneered.

The captive Star Tortoises proved to be prolific breeders and numbers increased rapidly. Indeed, by 2017, the colonies had swelled to over 14000 tortoises and 2018 promises to yield another bumper crop of hatchlings. But ex-situ conservation is about more than simply producing and then stockpiling large numbers of animals in captivity. Ultimately these animals must be returned to areas of secure habitat with the objective of establishing viable populations in the wild. With this goal in mind, the Star Tortoise Recovery Task Force – a joint effort between the Forest Department and TSA/Wildlife Conservation Society – initiated an ambitious reintroduction program at Minzontaung Wildlife Sanctuary in 2013. Captive-bred and head-started tortoises were transferred to “soft-release” pens in the sanctuary and allowed to acclimate to their new surroundings for periods of up to one year before being released. Most tortoises were out-fitted with VHF radio telemetry packages making it possible for field researchers to monitor post-release survival and dispersal. The initial results were encouraging; survival was high and most turtles remained near the acclimation pens rather than wandering out of the sanctuary where they might fall victim to illegal poachers. Additionally, the recovery task force worked closely with villagers living around the sanctuary to insure the support of local communities. In light of the success of the original release, subsequent years saw a string of additional reintroductions and now almost 900 tortoises roam freely in the sanctuary. Even more promising, the reintroduced tortoises have begun to breed and several instances of reproduction in the wild have been documented. During the 2017-18 breeding season, a program of experimental egg transplants was launched, in which eggs deposited by females in the assurance colonies were excavated and reburied in the wild.

Based on lessons learned at Minzontaung Wildlife Sanctuary, reintroductions of captive-bred Star Tortoises are now underway at Shwe Settaw Wildlife Sanctuary, an extensive protected area that could ultimately host a wild population numbering in the tens of thousands. Additionally, Chattin Wildlife Sanctuary will soon be assessed as a potential reintroduction site in keeping with long-term goals out-lined in the National Star Tortoise Action Plan developed as part of a workshop held in 2012.

The Burmese Roofed Turtle is another species that came perilously close to joining the ranks of the dinosaurs in the catalog of extinct species. Found only in the larger rivers of Myanmar (Ayeyawady, Chindwin, and Then Lwin), this large species of aquatic turtle had long been subjected to egg-harvest by riverside communities. So important was this egg harvest that local communities along the upper Chindwin River even enacted conservation measures to safeguard this valuable resource. Unfortunately, these measures were not enough and populations of the Roofed Turtle slowly declined throughout Myanmar. By the late 1990s the species was feared extinct until rediscovered along the Dokthawady and Upper Chindwin Rivers during collaborative expeditions conducted by the Forest Department and Wildlife Conservation Society/TSA.

Tragically, the population of Roofed Turtles dwelling in the Dokthawady River was extirpated soon after being rediscovered by the construction of a large hydropower dam that submerged the only nesting areas along the river. The situation along the Upper Chindwin was more promising, with a handful of females continuing to nest on sandbars along the river. The early 2000s saw the implementation of an aggressive conservation program that relied on a combination of ex- and in-situ methodologies. First, an assurance colony – the first ever for this species – was established

at the Yadanabon Zoological Gardens in Mandalay using turtles recovered from pagoda ponds and others confiscated from fishermen. This effort was initially somewhat problematic with many authorities doubting that large river turtles such as the Burmese Roofed Turtle would even breed in captivity. The naysayers were soon proved wrong when the females began appearing on the artificial beaches every January-March and depositing their eggs, which were incubated naturally in the warm sand.

At the same time, an egg collection and head-starting program was implemented at all of the known nesting sites along the Chindwin River. Every year locally hired “beach wardens” monitor sandbanks during the nesting season. Immediately after laying, the eggs are excavated and transferred to a secure incubation area near Limpha Village. The hatchlings typically emerge from the nests days after the rains begin early June, and then are housed in a grow-out facility until reaching maturity. Two additional assurance colonies have been established at Lawkanandar and Htamanthi Wildlife Sanctuaries using head-started offspring from the Chindwin River. Neither colony has yet begun to reproduce as the turtles are only now approaching sexual maturity but reproduction is expected within the next few years.

Obstacles

Continued harvesting of turtles remains an issue and many more training exercises for awareness-raising and community level monitoring are needed to ensure survival of these species. Funding is the major limiting aspect.

Links and documents included

- <https://myanmar.wcs.org/Wildlife/Turtle-and-Tortoise.aspx>
- OIKOS and MONREC. 2018. Sea turtle awareness campaign contributes to biodiversity conservation in Lampi Marine National Park.

Title of measure

12.1.3 Integrate conservation of wide-ranging species and species with fragmented distributions into local regional and national landscape planning.

Describe a measure taken to contribute to the implementation of your country’s national biodiversity strategy and action plan

No progress

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation

No progress

Title of measure

12.2.1 Fully implement and enforce the requirements of the CITES Convention through national legislation.

Describe a measure taken to contribute to the implementation of your country’s national biodiversity strategy and action plan

The Conservation of Biodiversity and Protected Areas Law (2018) includes provisions for the CITES regulations, including enforcement and specifications for fines.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

A new law has been passed pertaining in part to the CITES regulations and with penalties described. How well it is being enforced is uncertain yet. There is a need for transfer of new DNA based technologies to Myanmar to assist enforcement efforts in species identification and assess chain of custody.

Obstacles

A key obstacle is insufficient enforcement staff and associated resources to enforce the wildlife laws. In addition, in the case of illegal timber, Myanmar has (as yet) no chain of custody rules or the means to ascribe seized wood to a specific location of origin within the country.

Title of measure

12.2.2 Build the capacity of law enforcement authorities to enforce wildlife trafficking regulations, including through involvement in ASEAN-WEN.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Wildlife crime continues to be a serious issue in Myanmar (see Section III. Assessment) especially affecting elephants, pangolins, orchids, turtles and felids. The inter-agency 'National Wildlife Law Enforcement Taskforce' has been established to improve enforcement of wildlife laws. A program called "Securing the Gateway: Reducing Wildlife Trafficking from Myanmar to China" has been slated for 2 years to train and increase the public understanding of the ongoing illegal use and trafficking of wildlife. Several programs were instituted over the past 4 years, including programs with WWF to "Address Illegal Wildlife Trade in the Greater Mekong" are underway; a program on CITES regulations with the EU has been completed; a program with India to reduce illegal trade called "Myanmar-India Wildlife Crime Control Nodal Points" (for which 5 of 15 members are women); and an initiative with Istituto Oikos on a Sun Bear Protection Project is being implemented in Southern Rakhine State and Sagaing Region. Other programs include a Wildlife Conservation Society effort called "Stopping Illegal Trade of Wildlife and Their Parts Meeting" was organized in Lashio, Southern Shan State, while another called "Training on Wildlife Species Analysis" was provided in Mandalay, Mandalay Region in September 2017 and in Moneywar, Sagaing Region in December 2017. Those meetings and training sessions gathered government staff and officials from the main law enforcement organizations that are involved in combatting illegal wildlife trade (Customs Department, Myanmar Police Force, Forest Security Unit, General Administration Department, Forest Department, Road Transport Administration Department, Anti-Narcotic Task Force, Advocate General Office, etc). In the Golden Triangle area of Tachileik, WWF provided induction training and follow-up training on Illegal wildlife trade for Government agencies. 22 participants joined both.

European Union (EU), through the Institutional Strengthening and Policy Dialogue Support "My Governance Europe Aid/136228/DH/SER/MM", is assisting the Forest Department to strengthen the implementation of CITES. The EU assigned two experts to assist the Forest Department to review gaps and necessary interlink ages between key laws relevant to CITES implementation.

Up until August of 2018, 25 charges for illegal wildlife trafficking have been laid and an additional 2 training programs have been conducted

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

It is not possible to assess real progress without data on numbers of cases investigated and charges laid. Nevertheless, there has been a considerably increased focus on wildlife enforcement, especially under focussed programmes and training events, increased public awareness, and the new 'Biodiversity and Protected Areas law includes very high penalties for convictions of wildlife crimes.

Obstacles

A key obstacle is insufficient enforcement staff and associated resources to enforce the wildlife laws. In addition, in the case of illegal timber, Myanmar has (as yet) no chain of custody rules or the means to ascribe seized wood to a specific location of origin within the country.

Title of measure

12.2.3 Implement alternative livelihood programmes to reduce the dependence of key communities on illegal wildlife trade.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

There are now 8 alternative livelihood programmes in place as a part of the effort to reduce illegal wildlife actions. Biodiversity and Nature Conservation Association is working with three indigenous groups (Kayan, Kayin, Rakhine) (CBOs) to create alternative livelihoods: at the KayLaTha wildlife sanctuary, with the Shwe Kantar (Kayin), Kayan Environmental Conservation Network (Kayan) and at Beca (Rakhine) they are establishing Community Business Organisations. In collaboration with, Friends of Wildlife (FoW), a Myanmar local NGO, a livelihood support program is being implemented for elephant poachers. This is the first activity for supporting livelihoods of hunters. But international technical and financial assistance are required to sustain, as well as to scale up that activity. Under the Sun Bear Protection Project with Oikos, one of the activities supports community guardians to promote community-based monitoring and reporting about poaching of wildlife, focused on sun bear but also for other wildlife species. Flora and Fauna International working with user (ethnic) groups at Dawei to reduce hunting pressure on wildlife (gibbons), by using walnut production and terraced rice-growing.

In Myanmar, illegal poaching on wild elephant has become very serious issue and the elephant population is declining, in large part because of poaching (See Sampson et al. 2018 under Measure 12.1.1). To help with this effort, WWF has put radio-collars on 18 elephants in the Bago Yoma region. Forest Department and WWF-Myanmar are planning to strengthen protection on wild elephant, and one of the main objectives is to establish a community-based monitoring and reporting system and create alternative livelihoods for poachers, and the following activities will be conducted:

- employ local community members as informants
- employ local communities, including poachers and ex-poachers as members of the patrol teams

Starting in 2017, Wildlife Conservation Society (WCS) has been implementing livelihood support programs for local communities living near protected areas in order to reduce their dependence on illegal wildlife trade and to provide them with alternative livelihoods. One of those efforts sponsored six local youths to attend Farmer Led Extension Training provided by the Mitta Foundation. The

training was conducted for 3 months in 2016. The lessons in that training included sustainable agricultural techniques, livestock and natural resources management.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

These alternative livelihood programmes are only recently implemented, as is the new Elephant Conservation Plan (2018). Determining success of the initiatives can only be determined after a few years. The key point though, is that there has been a recognition of working directly with local communities to reduce poaching at the grass-roots level.

Title of measure

12.3.1 Conduct Red List assessments for key taxa, with a particular focus on endemic species.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The total number of species evaluated up to July 2018 is 4473, with 624 species evaluated since 2015.

A national Red List working group established in 2018 to begin the preparation on National Red List of Threatened Species of Myanmar. Training to build capacity building for 25 experts from relevant departments, organizations, universities and research institutes with contributions IUCN, Wildlife Conservation Society and WWF was held in July 2017. That capacity building training exercise was followed by a consultation workshop, which decided on future activities for the working group for preparing the National Red List of threatened species, resulted in forming thematic taskforces for key species groups, with the Notification No. (34/2018), issued on 28th March 2018 by the Union Ministry Office of the Ministry of Natural Resources and Environmental Conservation (MONREC). The taskforces were formed for mammals, birds, reptiles and amphibians, plants and fishes. On 23-26th July 2018, 60 people attended a second training workshop was organized with the objectives to understand assessment methods to identify threatened species, to develop work plan for National Red List preparation, and to revise the list of protected endangered species. The July 2018 workshop added another 69 draft assessments including: 25 freshwater turtles, 5 marine turtles, 1 crocodile, 34 lizards, and 5 snakes for Myanmar's red list.

IUCN Red List data on total numbers of En and CR (to June 2018):

(Data are shown as year followed by number listed,)

- Plants (647 spp. assessed): (32 spp. listed), 7 before 2014, 2014 9, 2015 20, 2016 20, 2017 32.
- Mammals (298 sp): (25 spp. listed), 11 before 2014, 2014 13, 2015 20, 2016 24, and 2017 25.
- Birds (1029 sp): (25 spp. listed), 0 before 2016, 2016 9, 2017 16.
- Amphibs (84 sp): (2 spp. listed), both in 2015
- Reptiles (176 sp): (15 spp. listed), none new since 2013
(3 new gecko spp. in Taninthayi will be added once assessed formally)
- Chondrichthyes (56 sp.): (8 listed) 2014 5; 2015 5; 2016 8; 2017 8
- Actinopterygii (1176 sp.): (10 listed), none added 2014-2017
- Mollusca (231 spp.): (2 listed), none added 2014-2017

Six Myanmar species are listed in “Alliance for Zero Extinction” website, where there are maps showing entire known population ranges (<http://zeroextinction.org/site-identification/2018-global-aze-map/>):

- Natmattaung for White-browed nuthatch (*Sitta victoriae*)
- Taninthayi for Thin thin’s stream toad (*Ansonia thinthinae*)
- Inle Lake for two species of freshwater shrimp: (*Caridina annandalei*) and (*Macrobrachium naso*)
- Htamanthi for Burmese roofed turtle (*Batagur trivittata*)
- May Hka for Myanmar snub-nosed monkey (*Rhinopithecus strykeri*)

Reasons for red-listing of species in Myanmar are provided on the IBAT website (see graph and link attached), with the main factors being: over-exploitation, land clearing (agriculture and settlement), forest harvesting, and pollution.

The Department of Fisheries, with cooperating groups, are carrying out assessments, with a particular focus on endemic fish species, along the Chindwin River in Sagaing Region. Assessments of endemic bird species in Sagaing Region will also be done with team of faculty members from universities. Several universities, including Yezin Agricultural and Mandalay Universities, have already contributed assessments for numerous species.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The national taskforce has been formed, with thematic working groups, and species have been added to IUCN Red List assessments, while a National list has been compiled. Further, there are active research programmes to provide data for further listing assessments.

Links and documents

- Myanmar species on the AZE website with maps <http://zeroextinction.org/site-identification/2018-global-aze-map/>
- Myanmar Red listed species selected taxa to 2018 (below)

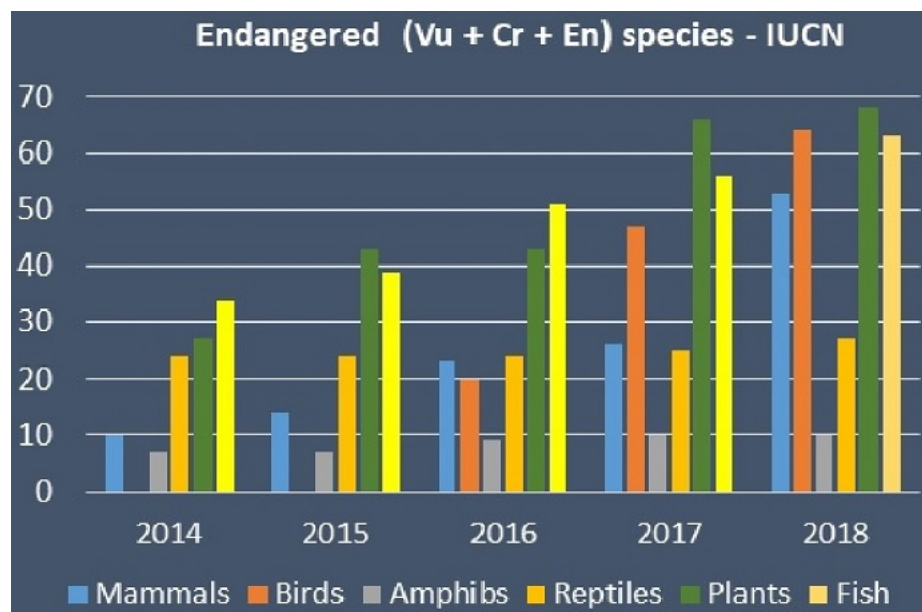
Obstacles

The key obstacle is sufficient funding to carry out the surveys necessary to verify population levels and ranges of species, including such flagship species as tigers and elephants.

Rare species limited to Myanmar



Selected Red list taxa in Myanmar, 2014-2018



Title of measure

12.3.2 Hold training workshops to build capacity on application of the Red List categories and criteria.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Forest Department, IUCN, and Wildlife Conservation Society held two training and organisational sessions on endangered species, in 2017 (40 people; 16 women) and another in 2018 (69 participants; 20 women). The first meeting of National taskforces was held in Nay Pyi Taw in July 2018. Yangon University, Department of Zoology hosted training workshops to build capacity on the application of the Red List categories and criteria, attended by faculty members and there is a plan to continue to work on developing species assessments.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

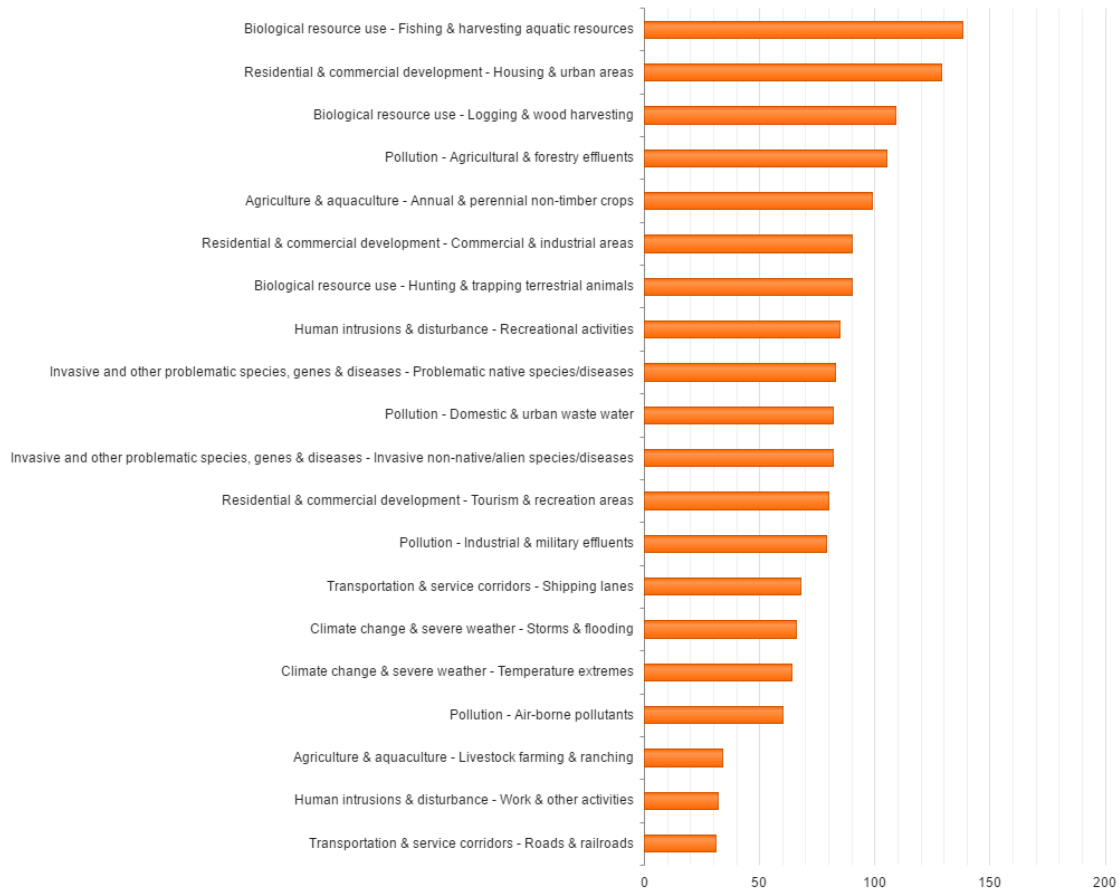
Explanation:

About 75 people have been trained on IUCN listing criteria and many are now actively participating on species assessment taskforces.

Links and documents

- Causes of species decline in Myanmar <https://www.ibat-alliance.org/ibat-conservation/>

Causes of species decline in Myanmar (IBAT 2018)



Title of measure

12.4.1 Increased documentation of transboundary species in Myanmar and increased collaboration with appropriate international agencies through exchange of information on migratory species between relevant in-country and international organizations.

Describe a measure taken to contribute to the implementation of your country’s national biodiversity strategy and action plan

Wildlife Conservation Society (Wildlife Conservation Society) cooperates with international organizations, such as Wetlands International, to research and document waterbird species (migratory and endemic species) in the Mandalay Region, Sagaing Region, and Kachin State for the Asian Waterbird Census. The latter census has been held annually in January and February for the past 2 years (2017 and 2018). The data have been sent to Wetlands International and BirdLife International. Some important findings included 6 Baer's Pochards (*Aythya baeri*), a critically endangered species (2 in Pyu Lake and 4 in Paleik Wetland) in Mandalay Region; 11 Black-bellied Terns (*Sterna acuticauda*), an endangered species in the Ayeyawady River in Sagaing Region, 2 Woolly-necked Storks (*Ciconia episcopus*), a vulnerable species, in Indawgyi Lake Wildlife Sanctuary and Oaksayae Lake near Myinmu in Sagaing Region, 6 Lesser Adjutants (*Leptoptilos javanicus*), a vulnerable species, and 3 Sarus Crane (*Grus antigone*), a vulnerable species, at the Indawgyi Wildlife Sanctuary in Kachin State.

Biodiversity and Nature Conservation Association participates with BirdLife and other international organisations in monitoring shorebirds, including the critically endangered spoon-billed sandpiper (*Calidris pygmaea*) in the Gulf of Mottama. The Gulf of Mottama is identified as the most extensive and significant intertidal mudflat system in Myanmar for shorebirds, fish and other biodiversity. Its

highly productive intertidal mudflats provide a wintering site for an estimated 150,000-200,000 migratory waterbirds. Aside from the important Spoon-billed Sandpiper, other key species include the endangered Nordmann's Greenshank (*Tringa guttifer*) and Great Knot (*Calidris tenuirostris*). Over 70 waterbird species have been recorded in the Gulf. There is a management plan by Biodiversity and Nature Conservation Association and IUCN for this important migratory bird area (see attached).

Nanthar Island is one of the most wintering ground for migratory birds species which includes Spoon-billed Sandpiper (CR), Nordmann's Greenshank (EN), Painted Stork (NT), Indian Skimmer (VU), Great knot (EN) and about 5000 small waders wintering on this island. The island is also an important habitat for sea turtle nesting area for Olive Ridley (VU) and Leatherback (VU) and Green Turtle (EN). Biodiversity and Nature Conservation Association's local partner Rakhine Biodiversity and Nature Conservation Association (Biodiversity and Nature Conservation Association) carried out monitoring for Spoon-billed Sandpiper survey on Nanthar Island, October 2016-April 2017.

For migratory ocean species, there is some research on turtle species as well as some information for sharks. (see 12.4.2)

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

There is ongoing collaboration among Forest Department, Wildlife Conservation Society, and international organisations, primarily for marsh and waterbirds, in some areas. Much work remains to be done including organised census for passerine birds and other species, migratory ocean species, and to expand the waterbirds surveys to other major wetlands within Myanmar. The important Gulf of Mottama has been named as a Ramsar site.

Obstacles

The main obstacle is lack of capacity to cover more areas during the limited period during which migrating species are present, inaccessibility of some areas along the coast, and funding to conduct the needed work.

Links and documents included

- IUCN. 2018. Gulf Mottama management plan
- BANCA and IUCN. 2017. MONITORING OF MIGRATORY SHORE BIRDS SURVEY IN THE GULF OF MOTTAMA.
- BANCA. 2018. MONITORING OF MIGRATORY SHORE BIRDS SURVEY IN NANTHAR ISLAND. <http://www.banca-env.org/wp-content/uploads/2018/05/monitoring-of-migratory-nanthar-island.pdf>

Title of measure

12.4.2 Prepare species conservation action plans to protect endangered migratory species, including marine turtles and mammals, migratory birds and sharks, and to sustain the ecological health of their corridors.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

There is a management plan primarily for some migratory bird species, including the spoon-billed sandpiper completed for the Gulf of Mottama (see 12.4.1) by Biodiversity and Nature Conservation

Association and IUCN. BANCA and Wildlife Conservation Society conducted a community awareness development effort for Baer's Pochard at Pyu Lake.

Wildlife Conservation Society is conducting research on sharks and ray species, most of which are migratory, in 6 townships along Rakhine coastline, from June 2017 to April 2018. The Shark and Ray Conservation Committee has held two meetings and another workshop will be organized in 2018. There is a plan to establish 15 monitoring systems on fishing boats in five townships, where the research was done, with 3 systems in each township, starting in September and October 2018. The aim of this work is to prepare coastal management plans for these species.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

Few species are the subject of planning and the plan for Mottama is new and has yet to be implemented, while no other plans have been completed yet.

Obstacles

To prepare a proper conservation plan, good background information is needed for the species. As a result, more funding, capacity and time is needed to conduct the background monitoring and research.

Links and documents included

- WCS and BANCA. 2017. Community - based Conservation of Baer's Pochard Aythya baeri in Pyu Lake, central Myanmar.

Title of measure

12.4.3 Provide field sites for research (wetland ecosystems), monitoring (migratory birds), education and training

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Field sites have been specifically established for migratory species monitoring programmes in the areas described in 12.4.1 and 12.4.2, including coastal areas such as Gulf of Mottama, and important wetlands, including Inle Lake and Pyu Lake for Baer's Pochard. Biodiversity and Nature Conservation Association did training for conservation of spoon-billed sandpiper at 8 Local Conservation Groups at Gulf of Mottoma in 3 ethnic areas (30% of the participants were women).

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Considering the size of Myanmar, the numerous wetlands and long coastline, much has been done but much more remains to be accomplished in terms of biodiversity monitoring and research within the country.

Target 13.

Title of measure

13.1.1 Conduct collaborative research to identify national priorities for conservation of genetic diversity of cultivated crops including underutilized crops, medicinal plants, and forest products.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

This target overlaps with targets 13.1.3, 13.2.1, 13.2.3, and 14.4.1 and is discussed further under those descriptions.

For unknown and underused useful species, the Ministry of Agriculture (MAg.) has a current research project with FAO on neglected or under-used species as future foods known as “Creating Enabling Environments for Nutrition-sensitive Food and Agriculture to Address Malnutrition” to implement the “Zero Hunger Challenge”. There is also ongoing research on crop gene diversity, described under other targets below. There is a recent publication on medicinal plants in Myanmar (see link). No work was recorded for forest plant genetic materials although ethnobotanical work is ongoing with some recent publications (links attached). For example, a project entitled “sustainable use of plant resources with particular emphasis on the medicinal plants of Shan State, Botanical inventory and subsequent evaluation” is being carried out by Markino Botanical Garden. Plant Biotechnology Center (Horticulture and Plant Biotechnology Division, Department of Agriculture) conducted research on: characterizing Pawsan rice (*Oryza sativa* L.) varieties collected from Ayeyawady region as revealed by morphological, physicochemical and molecular markers (2018); a morphological characterization on Sein Ta Lone Mango (*Mangifera indica* L.) accessions from five different regions in Myanmar (2018); and the genetic variability of Myanmar mango land races (*Mangifera indica* L. var. Sein Ta Lone) from different eco-regions, using microsatellite markers (2018).

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Many of these projects are recently started (April 2018) and results are unknown, but some current research has been published, especially for medicinal plants.

Links and documents included

- FAO/MinAg project on underused species 2018 <http://www.fao.org/myanmar/news/detail-events/en/c/1148017/>
- Future Smart Food – Asia <http://www.fao.org/3/I9136EN/i9136en.pdf>
- Medicinal plants of Myanmar, DeFillips and Krupnick 2018 <https://phytokeys.pensoft.net/article/24380/>
- Edible plant species in Shan State, Tant Shin et al, 2018 <https://ethnobiomed.biomedcentral.com/articles/10.1186/s13002-018-0248-1>
- HIV research medicinal plants Myanmar, Nwet Nwet Win et al., 2017 <https://link.springer.com/article/10.1007/s11418-017-1104-7>
- Medicinal Plant List of Myanmar, 2nd edition. Khin Maung Lwin and Myat Kay Thwe Lwin <http://famepharma.com/medicinal-plant-list/>

Title of measure

13.1.2 Establish seed saver networks and village seed banks for traditional seed varieties.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

In 2016-2017, a total of (313) seed banks of five crops (peanut, greengram, chick pea, blackgram, pigeon pea) have been established at 59 townships from five regions (Sagaing, Magwe, Mandalay, Bago, Ayeyarwaddy). These are managed as community seed banks together with seed multiplication system of IFAD (International Funds for Agriculture Development) project.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

A large number of local seed banks has been established.

Title of measure

13.1.3 Conduct collaborative research between MAg. and farmer organisations, extension agents, and farmer field schools for documentation and breeding of traditional crop varieties.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The MAg. conducts annual collections of crop seeds and wild relatives for both research and preservation. The following research initiatives are being carried out:

- a) Exploration and collection of plant genetic resources (PGRs),
- b) Characterization, evaluation and identification of traits for biotic and abiotic stress tolerance,
- c) Research on ex situ cold storage conservation of crop germplasm,
- d) Establishment of an agroforestry programme for conserving neglected and underused plant species (NUS), and
- e) Field conservation of vegetatively propagated crop species,

The characterization, pre-breeding, multiplication and regeneration activities are routine research objectives of the National Seed Bank. Training programs on crop genetic resources management are being carried out at the Seed Bank, through work directly with farmer organisations on an annual basis.

Ex situ conservation sites have been established for:

- 1) Medicinal orchids, banana (Plant Biotechnology Center, Department of Agriculture (DOA), Yangon).
- 2) Banana, potato, orchid, lily, aloe, strawberry, pine apple, blackberry, raspberry, elephant foot yam, patain-manaing (Globba species) and chrysanthemum (Vegetable and Fruit Research and Development Center (VFRDC), DOA, Hlegu).
- 3) Indigenous orchids (Dendrobium densiflorum, Dendrobium farmer, Dendrobium parishii, Dendrobium nobile, Dendrobium pulchellum, Vanda coerulea, Rhyncostylis retusa) (Mingalardon Farm ,DOA, Mingaladon)
- 4) Medicinal orchids(Cymbidium spp., Dendrobium fimbriatum, Dendrobium nobile, Dendrobium aphyllum, Dendrobium morchatum), strawberry (Doekwin Farm, DOA, Pyin Oo Lwin).

Department of Agriculture, Horticulture and Plant Biotechnology Division conducted research on traditional crop varieties were as followed.

- (1) rice, mango, maize, pea, medicinal orchid and banana (Plant Biotechnology Center, Department of Agriculture (DOA), Yangon).

- (2) banana, potato, pine apple, orchid, taro, elephant foot yam, anthurium, strawberry, blackberry, raspberry, aloe, papaya, lily, dragon fruit, patain manaing, bread fruit, okra, pumpkin, chili, aubergine (egg plant), tomato, water melon, musk melon, cucumber, snake gourd, bottle gourd, luffa, maize, long bean, soybean, black gram, lime, mango, guava, pumelo, plum, orange, sweet potato (Vegetable and Fruit Research and Development Center (VFRDC), DOA, Hlegu).
- (3) indigenous orchids (Dendrobium densiflorum, Dendrobium farmer, Dendrobium parishii, Dendrobium nobile, Dendrobium pulchellum, Vanda coerulea, Rhyncostylis retusa) (Mingalardon Farm ,DOA, Mingaladon)
- (4) medicinal orchids(Cymbidium spp., Dendrobium fimbriatum, Dendrobium nobile, Dendrobium aphyllum, Dendrobium morchatum), strawberry (Doekwin Farm, DOA, Pyin Oo Lwin).
- (5) Mango varieties (Sein Ta Lone, Shwe Hhin Thar, Mya Kyat, Tha La Phet, Yin Kywe, Thone Hnit Thee, Bote Sone, Chat Su, Sein Sar, Bo Ma, Wet Si, Pan Swe Hteike Ni, Yaw Khauk, Oo Shwe Ngo, Thone Lone Ta Htoun, Oo Shwe Wyne, Kan Kywin, Khong Choe, Man Kone Si, Nam-Dok-Mai Gold, Shwe Ni) Yat Thit Farm.
- (6) Soybean (Kyawe Bote Farm).
- (7) Rose, Sein Ta Lone/solitary diamond Mango (Nan Shae Farm).
- (8) Dragon fruit, pumelo, longan, bitter gourd, aubergine, cabbage, cauliflower, pumpkin, carrot (Htone Bo Farm).
- (9) Mango (Pa da Myar Nga Mauk/ ruby Nga Mauk, Sensation, R2E2, Cho Sa Wai, Sein Cho, Nam-Dok-Mai), grape vine (Miketilar farm).
- (10) Mango (Sein Ta Lone), grape vine, dragon fruit (Sé Pauk Farm).
- (11) Mango (Sein Ta Lone) (Mya Na Di Farm).
- (12) Pumelo (In Ga Po Farm).
- (13) Durian (Kyone Ka Farm).
- (14) Durian (Kan Ka Lay Farm).
- (15) Durian, rambutan, pineapple (Ah Zin Farm).
- (16) Guava, pomaranate (Kan Thar Yar Farm).
- (17) Medicinal orchids (Shwe Nant Thar, Balar Farm).
- (18) Tea (Pin Laung Farm).
- (19) Potato, China water chestnut (He Ho Farm).

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

Research, especially genetic research, requires a long-term time horizon. The work done by the National Seed Bank has been ongoing for several years resulting in internal reports and scientific publications suggesting considerable success. However, there is an extensive research program ongoing. See also publications under Measure 13.2.2 below.

Links and documents included

- Rice gene variation 2016 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5282748/>
- Hybrid rice development <http://www.davidpublisher.org/Public/uploads/Contribute/5af1120839210.pdf>
- Bacterial wilt <https://link.springer.com/article/10.1007/s10327-017-0720-0>
- DNA markers for rice types https://www.jstage.jst.go.jp/article/jsbbs/66/5/66_16033/article/-char/ja

Title of measure

13.1.4 Ensure that the intellectual property rights for traditional, crop varieties are recognized and protected through implementation of the Nagoya Protocol and in the national legislative framework for seeds and intellectual property

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Nagoya Protocol has not yet been fully implemented. However, the Nagoya Protocol on genetic resources access and benefit-sharing (ABS) is in part being implemented by using Standard Material Transfer Agreements (SMTA) for mobilizing of the resources. The Seed Bank distributes genetic materials as a provider and the collecting missions, plant breeders, researchers, students, etc., who request the germplasm are the recipients.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Standard Material Agreements are being used by the MAg, Seed Bank. Other aspects of the Nagoya Protocol are covered under Target 16.1.

Title of measure

13.1.5 Encourage incentives and programmes to promote farm conservation of plant genetic diversity

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Researchers from seed banks regularly speak to farmers about how to conserve gene diversity in crop species. For ongoing programs, MoALI has a specific border development programs which encourage on-farm conservation of genes, for a variety of crop and tree crop species in 6 states and regions; substitution of opium crop and raising youth programs, which encourage on-farm conservation of genes a 6 farms in 2 states; and the Horticulture and Plant Biotechnology Division, Department of Agriculture conducted on-farm conservation of genes at 15 farms for fruits and vegetables.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

There is a clear recognition of the importance of gene conservation through a wide range of programs.

Obstacles:

Funding and capacity to develop programs on a large number of farms.

Title of measure

13.2.1 Establish a programme of collaborative research and collection of biological material with seed networks, farmer organisations, village seed banks, and farmer field schools.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Ministry of Agriculture (MAg) Research Section and Seed Bank collaborates with several international institutions: Universities in Japan (Tokyo University of Agriculture, Tsukuba University and Seed Bank, Kyushu University, and Nagoya University). MAg. Research and Seed Bank also works directly with International organizations, including IPGRI (BI), FAO, CBD (Cartagena Protocol, Nagoya Protocol), and Banana MusaNet. (See 13.2.3 below)

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

Some of these collaborations have been long-term resulting in publications, application of new science to seed bank work, and improved gene preservation techniques (see publications under 13.1.1).

Title of measure

13.2.2 Collect accessions from crops and regions for the National Seed Bank that have been identified as priorities in national gap analysis

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Data are provided on accessions to the national and international seed banks by species and crop type (see table attached). In addition, there are research projects to maintain field conservation and in situ gene conservation of vegetatively cropped species, including mango, banana, and yam. In addition, Worldview Myanmar Limited (WML) is working with the Department of Forestry to help in the conservation of potentially endangered orchid species through seed collection for the world seed-bank in Norway.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The accompanying table and publications illustrate the large national and international collection of seed types. Further, as a result of the research programme with FAO on underused species and collaborations with international universities, this collection has been expanded to especially include new varieties.

Links and documents included

- Tables for Measure 13.2.2.docx (Seed collection data – see below)
- Value of seed collections to science
<https://www.frontiersin.org/articles/10.3389/fpls.2016.01982/full>

- Seed collections from remote villages [https://www.gene.affrc.go.jp/pdf/publications/plant-exp_2014\(31\)_p343.pdf](https://www.gene.affrc.go.jp/pdf/publications/plant-exp_2014(31)_p343.pdf)
- Characterization of Myanmar Paw San Hmwe Accessions Using Functional Genetic Markers.pdf <https://chm.cbd.int/api/v2013/documents/F7636AF4-F0E7-CAAE-ED0A-CE0E9F3A7F9C/attachments/Characterization%20of%20Myanmar%20Paw%20San%20Hmwe%20Accessions%20Using%20Functional%20Genetic%20Markers.pdf>

Ex situ conservation of crop germplasm in medium-term cold storage of Myanmar Seed Bank (Up to March 2017)

Sr. no	Crop group	No. of accessions
1.	Rice	7757
2.	Wild Rice	180
3.	Food legume crops	1578
4.	Cereal crops	2233
5.	Oilseed crops	797
6.	Other crop species	125
	Total	12670

Myanmar crop germplasm safety back-up in other gene banks (up to March 2017)

Crop	Global vault, Norway	Seed	Seed vault, Korea	IRRI gene bank, Philippines	Gene bank, Columbia	Total
Cultivated rice	470		500	470		1440
Wild rice	184			184		368
Lima bean	63				63	126
Soybean			30			30
Chickpea			110			110
Green gram			80			80
Black gram			60			60
Cowpea			50			50
wheat			80			80
Sesame			31			31
Jute			40			40
Vegetable			19			19
Total	717		1000	654	63	2434

Title of measure

13.2.3 Continue to expand collaboration with international research institutions and to further develop research programmes with national universities

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Seed Bank has at least 9 separate international collaborations for seed conservation and study with: Bioversity, ITGRFA, FAO, gene banks in Philippines, Norway, Korea, Japan, and work with

universities in Japan. (see 13.1.1). The Agricultural Research Department (DAR) collaborates at the international level with Biodiversity International, ITPGRFA, Regional FAO, International gene banks (IRRI genebank in Philippines, Korea genebank, Svalberg Global Seed Vault in Norway, Tsukuba genebank in Japan), Tokyo, Tsukuba, Kyushu, Nagoya universities in Japan, YAU, DOA, Botany and Biotechnology Departments of some universities in country.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation

There are numerous successful collaborations – see publications under 13.1.1 and 13.1.2.

Title of measure

13.2.4 Upgrade the national seed bank to enable cryopreservation techniques.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No progress

Title of measure

13.3.1 and 13.3.2 Number of centres of crop wild relative diversity identified; and develop an action plan for conservation of crop wild relatives.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No work has been done but this will be developed as a part of the new programme with FAO on underused species.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

The field component for the joint research programme has not yet begun.

Title of measure

13.4.1 Conduct collaborative research to identify priorities and opportunities for conservation of genetic diversity of livestock including semi-domesticated animals like Mithun cattle, including preservation of tissue samples.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

There is an ongoing program for Mithun breed improvement that includes the conservation of natural habitat of Mithuns, research on Mithun health, cultivation of the main natural Mithun foods, conservation of other biodiversity in the same areas, and community mobilization for a participatory approach.

A search on Google scholar for livestock genetic research produced >230 articles published in journals from 2015-18. These papers dealt with cattle, mithun cattle, goats, chickens, and other livestock. However, screening further revealed a very few dealt specifically with Myanmar and none covered tissue preservation.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Few publications are available but there is an active conservation program for Mithun and their habitat and foods.

Links and articles:

Goat genetics: <http://article.animalvetsci.org/pdf/10.11648.j.av.s.20170505.12.pdf>

Goat genetics: <https://www.sciencedirect.com/science/article/pii/S0921448816303790>

Cattle genetics: https://www.jstage.jst.go.jp/article/abgri/46/2/46_57/article/-char/ja/

Target 14.

Title of measure

14.1.1 Quantify trends and pressures in the status of ecosystems and species populations that provide key ecosystem services, including distinct ecological and hydrological units such as the Ayeyawady River Basin

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Most emphasis on this target pertains to river systems with major studies in some key river basins. Reasons for forest loss, including in mangroves, are documented under targets 5, 7, and 15 with referenced materials. For forests there is some mapping of specific areas of interest using satellite imagery (see map attached for Taninthayi area). Marine systems are discussed under Targets 6 and 12 including a map illustrating ocean impacts. However, no single report examining changes in ecosystem services associated with all of these ecosystems has been assembled. The IBAT website provides a list of pressures on species, which in fact is a list of pressures on ecosystems as well (see graph attached). There are very large and well-funded river basin and water quality studies currently ongoing in Myanmar, through MONREC, partnered with multiple international

donors. The Swedish Environmental Institute (SEI) is working with the Directorate of Water Resources and Improvement of River Systems (DWIR) and Myanmar Environment Institute (MEI) to build on its continuing work on environmental issues in Myanmar, especially on the Ayeyawady and Chindwin Rivers. On those two rivers, water quality has been monitored since 2000 at 52 stations. The Chindwin project is to build capacity of civil society and government agencies in assessing potential impacts of development and climate change on biodiversity and ecosystem services and on livelihoods. JICA has a project to monitor pollution in the Hlaing River at Yangon with a view to reducing pressures on that river basin. A project entitled "Myanmar Healthy Rivers Initiative", conducted by a consortium of NGOs (such as International Water Management Institute), an IGO, and Australian foreign aid is developing an assessment of major river basins (including the Ayeyawady) to document problems (pollution, flows, erosion, etc.) and improve water quality and river basin management. World Wildlife Fund with World Bank has also begun a study on the role that the services provided by the Ayeyawady River plays in the economy of Myanmar. Lee et al. (2018) studied and classified aquatic habitat along the Ayeyawady River, and provided data on several avian species and quantified habitat losses along the river. Their data showed declines in 22 of 36 waterbird species over a more than 10 year period. In 2015, the Delta Alliance, part of the BOBLME Project, published a report (see attached link) quantifying the important role of the Ayeyawady Delta to people of Myanmar. The Norwegian Institute for Water Research produced a recent report recommending guidelines for water quality and monitoring programme for lakes and rivers in Myanmar (see link).

Conclusions from the Chindwin River study show that: there are elevated levels of heavy metal contamination from mercury, copper and arsenic, which pose serious health risks to people and the river ecosystem, particularly in the Uru River, a tributary of the Chindwin; mining operations for gold, jade and copper are leading to heavy metal contamination of the river; and a major constraint to effective water quality monitoring is the number of different government bodies currently tasked with water quality monitoring, with limited integration of expertise and knowledge sharing arrangements.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

For the aquatic systems, there is considerable work but few reports available yet and no indicators of improved water quality have been adopted for regular monitoring. Data on forests and marine systems are provided under Targets 5, 6, 7, and 15.

Obstacles

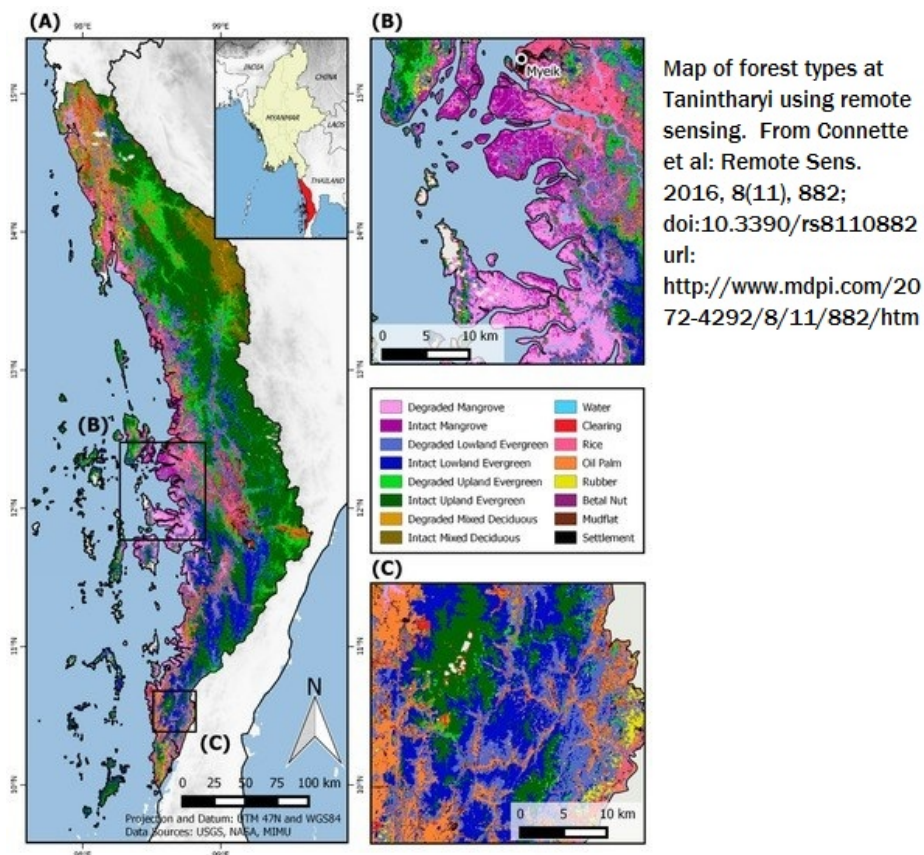
Capacity (training, people) to monitor aquatic systems limit progress. The main conclusion from work on the BOBLME project is that increased focus and capacity building is necessary to have a sound management of coastal ecosystems. Too many agencies with the same water mandates and the lack of data sharing.

Links and documents included

- Chindwin River video https://www.youtube.com/watch?v=2c2LrwwO_f4
- Chindwin Biodiversity Project Summary_June 2017. <https://www.cepf.net/grants/grantee-projects/empowering-civil-society-and-governmental-agencies-mainstream-biodiversity>

- BOBLME water quality monitoring.pdf (Bay of Bengal Project)
https://brage.bibsys.no/xmlui/bitstream/handle/11250/282228/6733-2014_200dpi.pdf?sequence=3
- watersolutions_01_2016-4.pdf (National Water Framework)
https://www.niva.no/nyheter/norsk-st%C3%B8tte-p%C3%A5-veien-mot-helhetlig-vannforvaltning-i-myanmar/_attachment/download/01453b12-7c29-402d-a8aa-8a3f2e93cad8:fb88f2d22d685ede55c6b85812ab39096a4ce6cb/watersolutions_01_2016-4.pdf
- JICA project Hlaing River, Yangon
https://www.jica.go.jp/myanmar/english/office/topics/c8h0vm0000d1y53i-att/press180509_ygn_06.pdf<https://www.hydrol-earth-syst-sci.net/20/4913/2016/hess-20-4913-2016.pdf>
- Study on Ayeyawady ecosystem services in Myanmar, Taft and Evers, 2016
<https://www.hydrol-earth-syst-sci.net/20/4913/2016/hess-20-4913-2016.pdf>
- BOBLME and Delta Alliance report on the Ayeyawady Delta, 2015 <http://www.delta-alliance.org/documentation>
- Background document for the Ayeyawady intergrated river basin project
http://www.dwir.gov.mm/images/dwir-data/worldbank/ESMFEExecutiveSummaryAIRBMProject_English_.pdf
- Norwegian Inst. Water Res., Integrated water management in Myanmar, 2017
<https://brage.bibsys.no/xmlui/handle/11250/2449892>
- Ranked major causes of species declines in Myanmar.docx (From IBAT website - link on graph)
- Taninthayi forest ecosystem mapping.jpg (From Connette et al. 2016 – see below)
- Water issues in Myanmar 2018 (Inter. Water Mngt. Inst.) <http://www.iwmi.cgiar.org/where-we-work/asia/southeast-asia/myanmar/key-water-issues/>
- Stockholm Envir. Inst. partnership with Myanmar for reducing water pollution
<https://www.sei.org/featured/seis-partnership-key-myanmar-water-agency-boost-environmental-research/>
- Chindwin River water quality report <https://www.myanmarwaterportal.com/repository/913-water-quality-monitoring-in-the-chindwin-river-basin.html>
- Lee et al. 2018.
<https://digitalarchive.worldfishcenter.org/bitstream/handle/123456789/680/4257.pdf?sequence=1&isAllowed=y>

Taninthayi forest ecosystem mapping



Title of measure

14.1.2 Identify and map (using GIS) key ecosystem services through desktop analyses and participatory consultations involving multiple stakeholder groups, including, marginalized, poor, and vulnerable groups.

Describe a measure taken to contribute to the implementation of your country’s national biodiversity strategy and action plan

A prerequisite to understanding ecosystem services, is to have a good understanding and classification system for the ecosystems that can be aggregated up to ecodistricts and regions. Currently, Wildlife Conservation Society and IUCN, together with the University of New South Wales, has begun a consultation program to develop a typology of Myanmar ecosystems. The first iteration of this typology has identified 64 ecosystem types, and GIS mapping has been initiated. The field truthing component of the program is beginning in 2018. One workshop has been held to develop a map with ecosystem services and 3 surveys were conducted. One component of the work is to identify endangered ecosystem types.

In 2016, WWF produced a report on some ecosystem services, mostly aquatic, based on a series of GIS mapping using existing data bases - see technical report attached. That mapping (see report attached at measure 2.1.1) included a 90 M digital elevation model, and mapping of sediment flow, and water flows. It identified areas at high risk of further degradation, especially under climate change. Two studies on the valuation ecosystem services, one on forests generally and the other on a specific wetland, were also reported under Target 2.1.1. Also, the Chindwin River project is using spatial ecosystem service mapping in their reports.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

This classification program has only recently started. However, past work from WWF, information from global databases on forests, and current mapping initiatives have greatly improved knowledge about ecosystem types in Myanmar.

Obstacles:

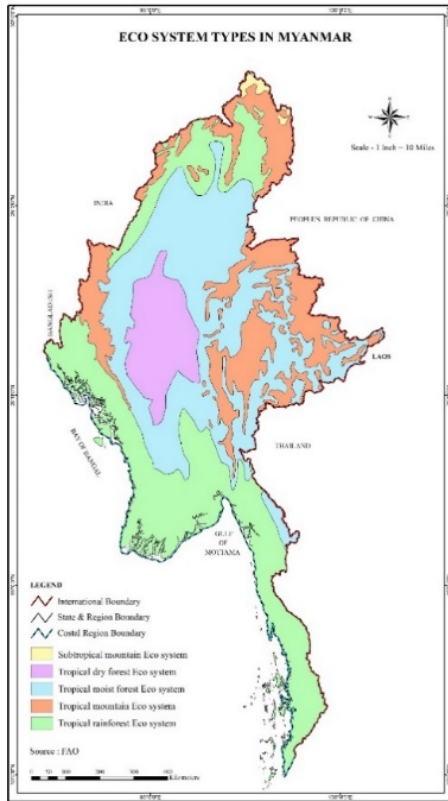
Lack of capacity to incorporate information into spatial mapping, lack of spatial information, and a general lack of capacity has hindered a small-scale ecosystem mapping program. The new joint effort will improve both the mapping and the ability to assign ecosystem services.

Links and documents included

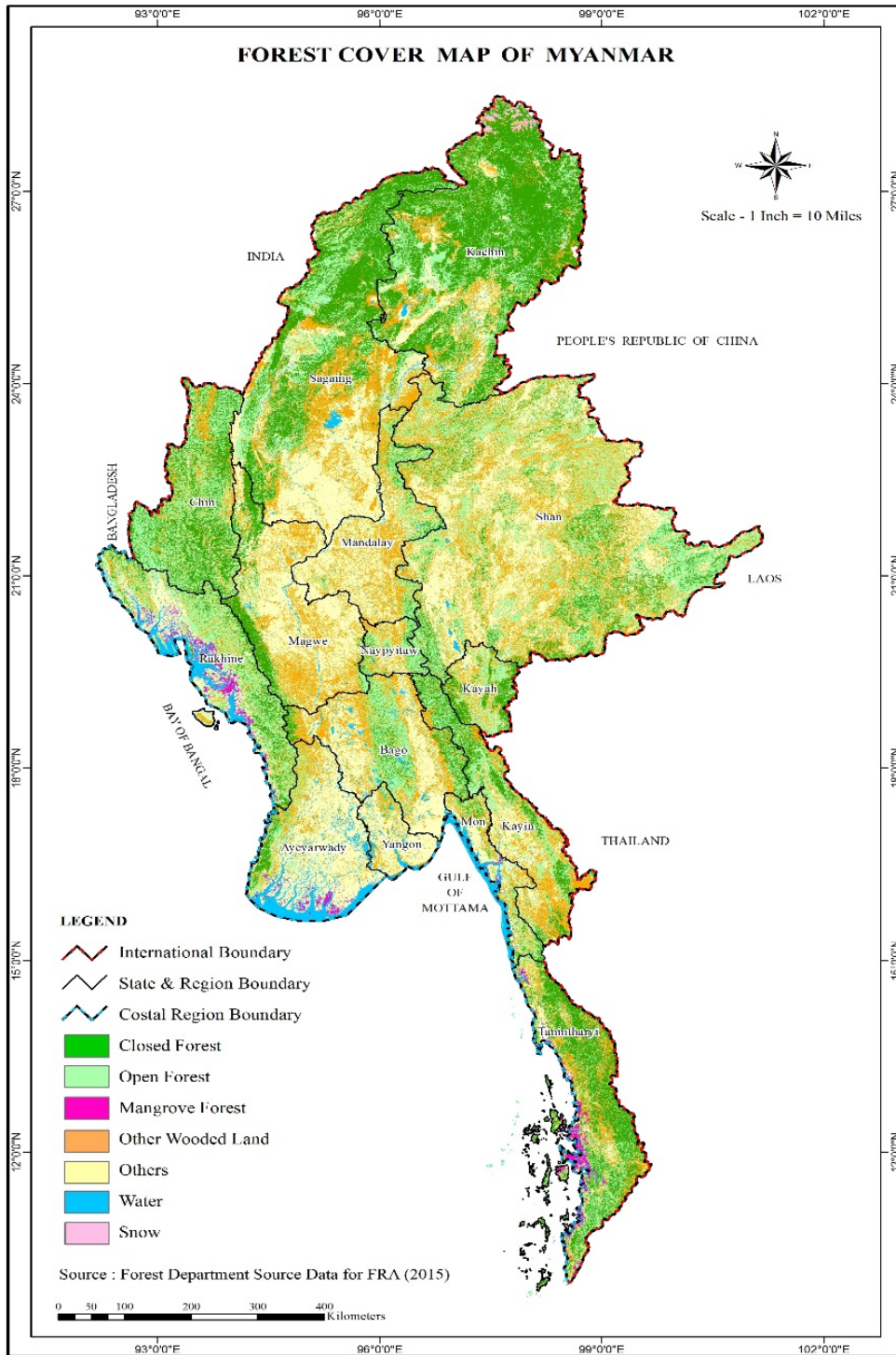
- Myanmar Ecosystem Map from FAO.jpg (Large scale ecosystem map – see below)
- Myanmar FRA2015.jpg (Forest typing 2015 large scale – see below)
- Myanmar_national_natural_capital_assessment_technical_report_2016_06_06 (1).pdf (Data for ecosystem evaluation, WWF) https://www.naturalcapitalproject.org/wp-content/uploads/2017/04/Myanmar_national_natural_capital_assessment_technical_report_2016_06_06.pdf
- Large-scale ecosystem types Myanmar_ from_ Mandle et al. 2017.PNG (see below)
- Ecosystem services under climate change; Mandle et al. 2017 <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0184951>
- Aquatic ecosystem services map and climate change_ from_ Mandle et al 2017.

FAO – Myanmar ecoregions

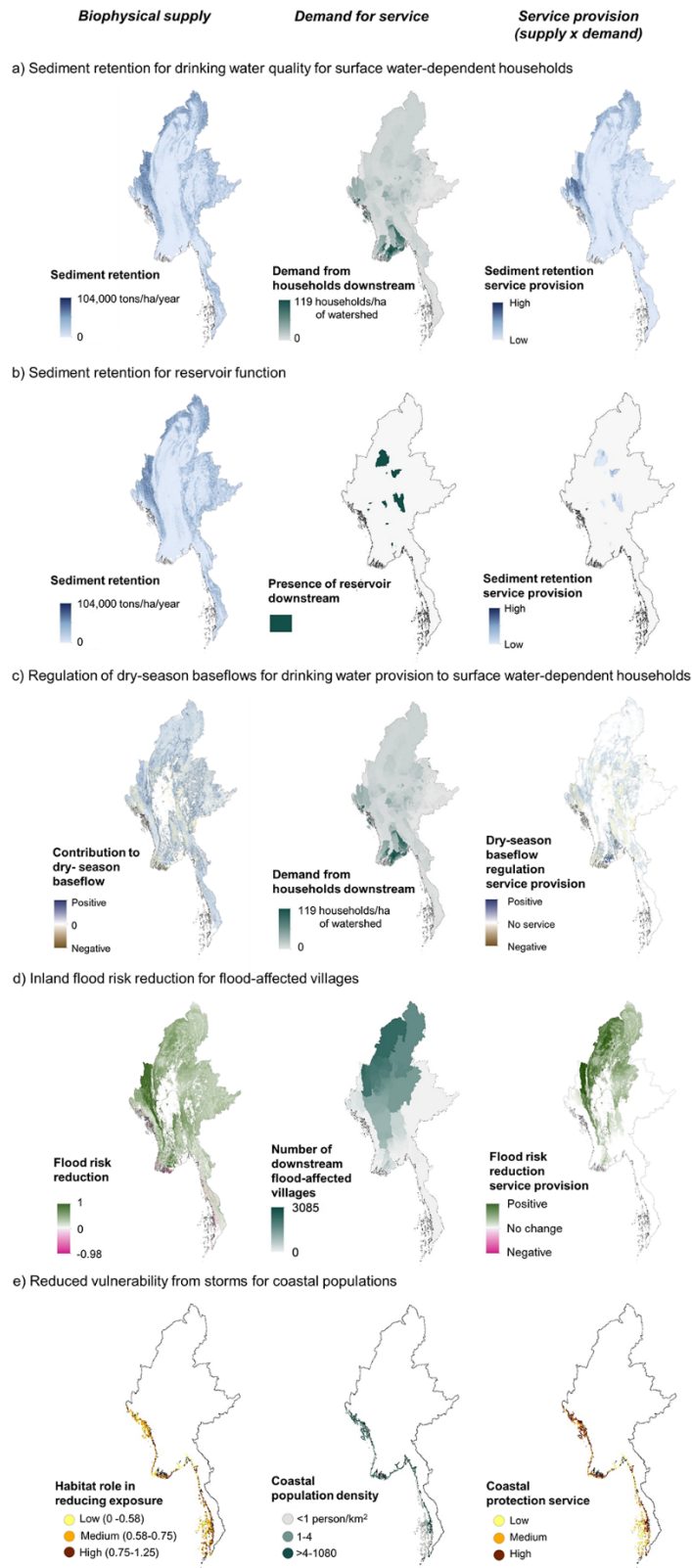
Ecosystems (regions) - Mandle et al. 2017



Forest ecosystems – from FAO



Effects of climate change on aquatic ecosystem services (Mandle et al. 2017)



Target 15.

Title of measure

15.1.1 Amend the Forest Law to strengthen the legal framework for community forestry and increase incentives for community management

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The new Forest Law was enacted on 19 September 2018, and consists of provisions related to enabling community forestry. More detailed regulations will be put in the new Forest Rules that is under preparation.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

Results are unknown until the Law has been completed and legislated, but there is progress.

Obstacles

There are no obstacles to amending the law, but regardless, the target has already been met - see measure 15.1.2 below

Title of measure

15.1.2 Launch a major new initiative to significantly upscale community forestry, building on the lessons and experiences to date

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Community forestry has become an important part of Myanmar's overall strategy to reduce forest loss, enhance ecosystem resilience and to enhance carbon storage. The Forest Department as well as several organisations, including FAO, Flora and Fauna International, Biodiversity and Nature Conservation Association, WWF, RECOFTC, and the Women's Platform for Community User groups, are all engaged in establishing and/or training community forest (CF) groups. Flora and Fauna International has 7 CFs submitted for certification and 6 village conservation groups and conducted training 190 people with several manuals for CF operations and silviculture. FAO under the Forest and Farm Facility (FFF) Programme has formed 113 CFs covering 9000 ha, and has provided 50 training sessions to its 6500 members. WWF worked with an additional 7 CFs established covering around 7,000 hectares. Biodiversity and Nature Conservation Association worked with a local CF in the Gulf of Mottama to establish a tree nursery especially for fuelwood species. In total Flora and Fauna International estimates that about 15,000 people are benefitting from the CF program, of which half are women. Flora and Fauna International is working with Myanmar Forest Certification Committee – who work with FLEGT - developing timber legality assurance system. In the Kachin area, 32 people were trained in community forestry processes. In Gwa Township, Rakhine State, Norway has funded the Regional Community Forestry Training Centre for Asia and the Pacific (RECOFTC – The Centre for People and Forests) to assist 19 villages on 5600 ha to develop community forests and use some as demonstration areas. This project also aims to increase the CF area by 40,000 ha in about 100 additional CFs. RECOFTC has been working to assist CFs for more than a decade and has continued to be actively involved in training and elevating the participation of women (see case study below). FAO, in cooperation with the Myanmar Environment Rehabilitation-Conservation Network (MERN) and the Forest

Department held their second training course on “Sustainable Timber Production and Value Chain Creation” for 31 members of Community Forestry User Groups from Kachin State (8), Sagaing Region (8), Mandalay Region (6), Shan State (3) Rakhine State and Bago Region (2 each), Chin State and Yangon Region (1 each) (among the 31 attending, 5 were women). Overall, Forest Department indicates that 211,397 ha are under community forest management in 2018, by 3884 user groups, with 103,907 members. The total area covered by CFs (although not all certified yet), as reported by Forest Department, represents an increase of 131,397 ha since 2014, exceeding the NBSAP target of 130,000 ha. JICA will begin a project at Inle Lake to work with community groups to ensure watershed protection, in part, by working with community forest management.

As an important step to support the ecosystem conservation of Myanmar’s Southern Coastal Zone, FAO has initiated with the Dept. of Fisheries the formulation process of a GEF funded project: “MyCoast: Ecosystem Based Conservation of Myanmar’s Southern Coastal Zone” in 2018. Focusing primarily on the Taninthayi Region and the Myeik Archipelago, the project will support within fisheries and forestry communities to improve local management of the precious coastal and marine in the area. The MyCoast Project is intended to bring improved conservation of hundreds of thousands ha of mangroves, seagrass, and other coastal zone resources.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The target has been exceeded and considerable training has been provided, and continues to be provided. Some groups have received certification. Data show that CFs are significantly reducing poverty levels (see report by Feuerer et al. attached). There is ongoing work by many groups to increase the area covered by CFs and to improve the capacity of the user groups to manage these forests well.

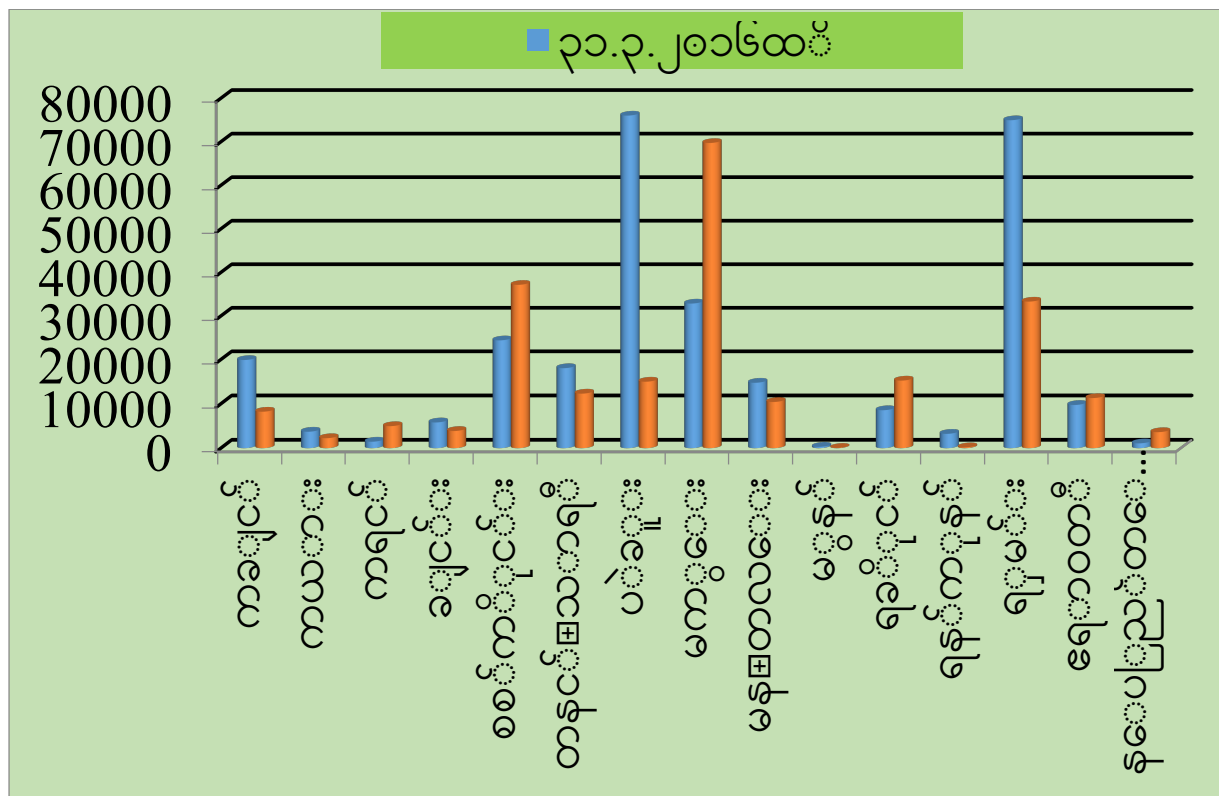
Obstacles

A key obstacle is time and capacity to train members of the many CFs, but also the time and process to certify CFs has been flagged as an issue by several of the groups working with CF user groups. An important change will come with the new forest law that will enable clarification of tenure for CFs.

Links and documents included

- BANCA. 2017. Maintenance of tree seedling nursery for sustainable distribution of seedlings for restoration of forest cover for 3 coastal villages of Gulf of Mottama.
- FFI. 2016. Assessment of Community Forestry in Taninthayi and recommendations for Improvement in Financial, Institutional, and Environmental Sustainability. TCP Report 46,
- FFI. 2015. Working Paper 06, Field Manual for CF Forest User Groups (Apr 2015) .pdf (In Myanmar Language) (Flora and Fauna International example of training manual)
- The Centre for People and Forests (RECOFTC) <https://www.recoftc.org/basic-page/recoftc-myanmar>
- Mangrove CFs value Fuerer et al 2018.pdf <http://www.mdpi.com/1999-4907/9/3/150/pdf>

Area under CF 2014 and 2018 by state or region Myanmar language):



Title of measure

15.2.1 Draft and adopt a national forest restoration strategy

Describe a measure taken to contribute to the implementation of your country’s national biodiversity strategy and action plan

In 2016, the government launched a 10-year Myanmar Reforestation and Rehabilitation Program (MRRP), aimed at not only restoring degraded and deforested landscapes, but also improving economic and environmental conditions of local communities.

This very ambitious reforestation and restoration project, the “Myanmar Reforestation and Restoration Programme (MRRP)” was launched in 2017 with ambitious targets to be achieved over 10 years of implementation:

- Assisted Natural Regeneration: 818,538 acres
- Natural Regeneration 500,000 acres
- Enrichment planting 147,270 acres
- Commercial plantations 162,900 acres
- Watershed plantations 34,585 acres
- Mangrove plantations 29,690 acres
- Village supply plantations 104,563 acres
- Private plantations 285,104 acres

The total budget of the MRRP is around USD 460 million.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation

See 15.2.2 for details on the plan.

Title of measure

15.2.2 Implement pilot forest restoration projects

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

In 2016, the government launched a 10-year Myanmar Reforestation and Rehabilitation Program (MRRP), aimed at not only restoring degraded and deforested landscapes, but also improving economic and environmental conditions of local communities. This program is associated with the large GEF-funded forest restoration project: "The Restoration Initiative (TRI) Myanmar, Reversing Forest Degradation and Deforestation and Restoring Forested Landscape through Local Multi-stakeholder Management" announced in 2016. The government's project is planned to cover some 32,300-40,500 ha/year, including establishing forests and local residents will develop forests on 283,000 ha, including in community and private plantations. Of the area to be reforested, about 30,000 ha are mangrove, the vast majority of which is planned for the Ayeyawady delta. In 2017, the Forest Department, supported by IUCN and The Nature Conservancy, conducted a multi-criteria spatial analysis which identified opportunities for restoration. This mapping process allowed the stakeholders to analyse and determine where restoration actions could generate multiple benefits in terms of reversing forest loss, conserving Myanmar's important biodiversity, ecosystem services recovery, and with socioeconomic success. The next steps in this process include fine-tuning the restoration areas map, field investigation and the subsequent creation of pilot projects in Sagaing Region to demonstrate the application and benefits of forest landscape restoration. PROFOR is also providing an assessment of the national restoration program with a view to improving information and decision-support systems to support program planning, implementation, and monitoring and evaluation. A 10-year Habitat Restoration Programme (2018 to 2028) is being prepared based on the habitat restoration plan (2018 to 2028) of 19 protected areas with the aim of restoring degraded ecosystems and species and of strengthening protection on existing ecosystems and species.

Biodiversity and Nature Conservation Association and the Forest Department established tree nurseries to work with 3 villages in the Gulf of Mottama on reforestation, especially in mangroves and bank stabilisation, and have provided training to 163 individuals on planting of trees. Flora and Fauna International is working with 15 communities at Indawgyi Lake to help with Community Forestry and agroforestry in the reserve through reforestation projects. They have instituted an efficient cookstove program and planting coppice wood species to reduce timber harvesting for fuelwood. At Taninthayi area, Flora and Fauna International has 3 projects on mangroves management and recovery, one with UNDP through GEF (Mainmala Kyun and Bogalay in the Delta area), and Flora and Fauna International has provided training in mangrove co-management and inventory to 91 people, among whom about 30% were women. Worldview Myanmar Limited (WML) has a project in part to establish mangrove plantations through a series of Mangrove parks with Pathien and Myiek Universities to help restore and protect the mangrove forests through demonstration and research.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

The project has only recently been initiated, but is well funded and has a clear set of objectives, some of which, such as the map, have been achieved.

Obstacles

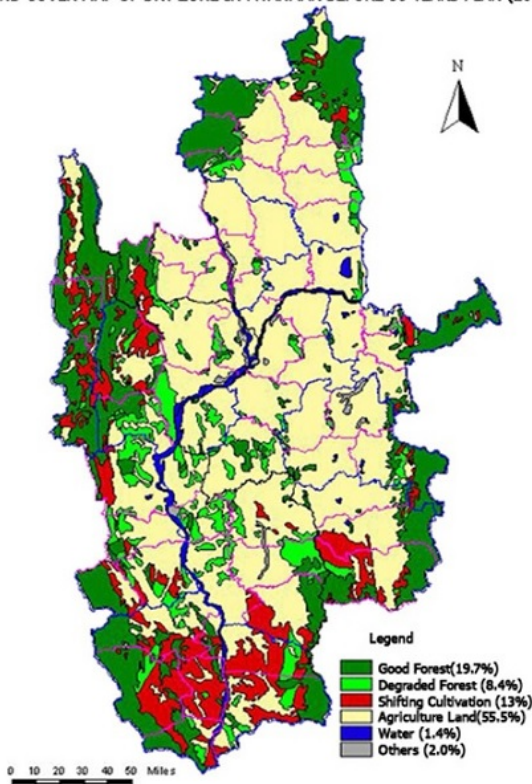
Sufficient capacity and funding to work on forest restoration, especially in mangroves, is the main obstacle. Sufficient knowledge is not an obstacle.

Links and documents included

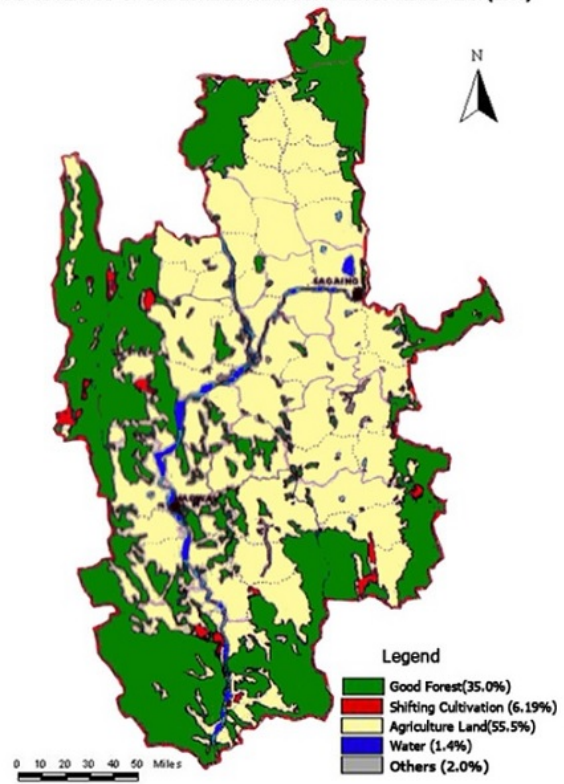
- Forest restoration plan by 2030.jpg
- Myanmar forest restoration potential.jpg (IUCN)

Myanmar forest restoration plan

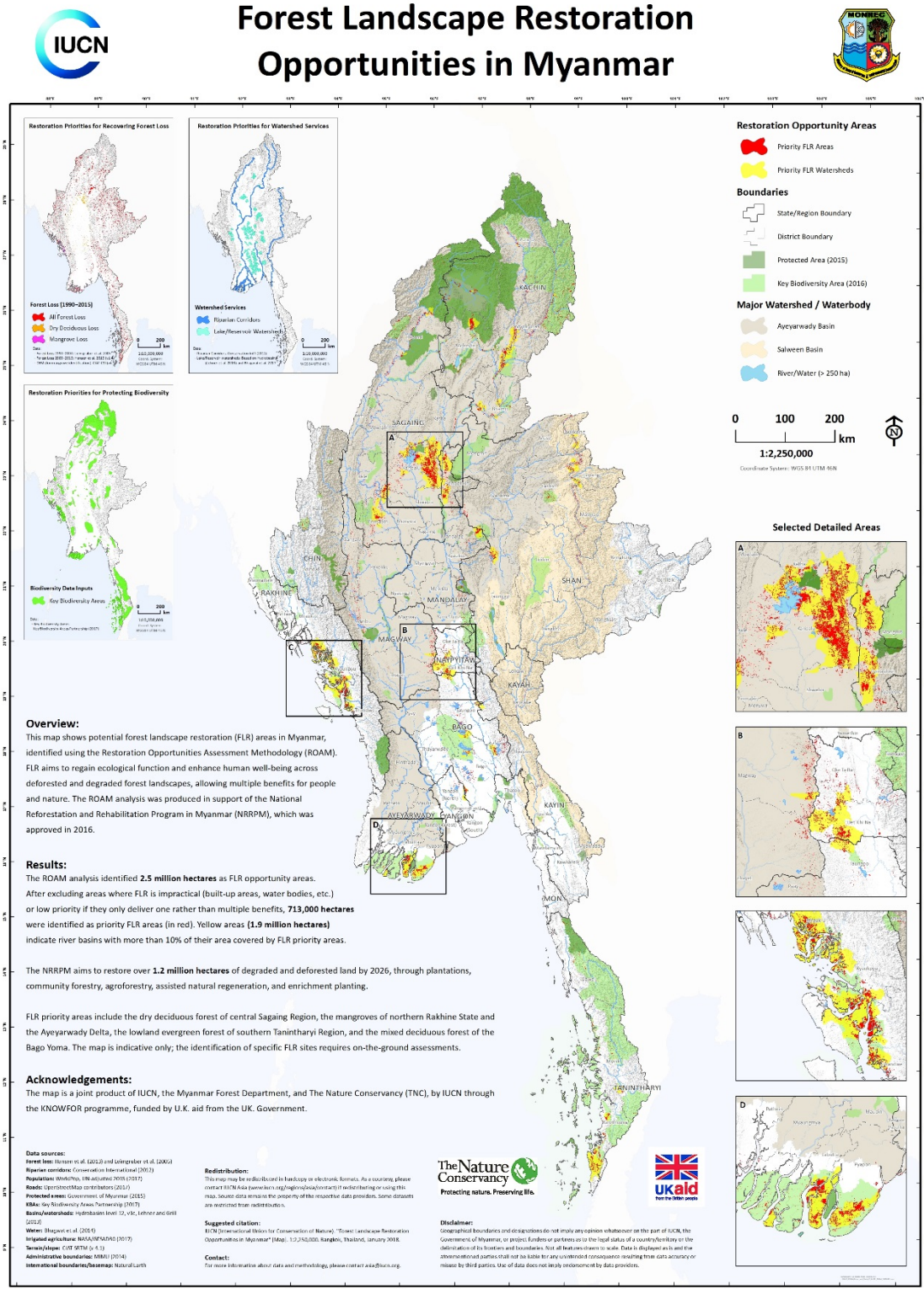
LAND COVER MAP OF DRY ZONE IN MYANMAR BEFORE 30 YEARS PLAN (2001)



LAND COVER MAP OF DRY ZONE IN MYANMAR AFTER 30 YEARS PLAN (2030)



Restoration potential (IUCN)



Title of measure

15.2.3 Explore opportunities for sustainable funding of restoration through REDD+ and establishment of other payments for ecosystem services

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The REDD+ Programme has been established with a completed roadmap (see 15.3.1). Several other restoration programs, specifically for mangroves have already been implemented (see 15.2.4) or are planned. The REDD+ Programme will be linked into the Myanmar Forest Restoration Programme.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

REDD+ and other programs are active although little forest has yet been restored.

Obstacles

Obstacles have been related to negotiations with local communities as well as the lengthy REDD process.

Title of measure

15.2.4 Prepare guidelines for a national forest restoration programme taking into consideration economic, including the value of ecosystem services, and ecological aspects.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Department of Agricultural Research with Yezin Agricultural University of Nay Pyi Taw are developing an Agroforestry Model under supervision of the Seed Bank. IUCN provided a training session on general issues surrounding restoration projects to protected areas staff in 2017 (see attached meeting summary). Also, training has been provided to local areas for reforesting mangrove forests (Flora and Fauna International - attached). Technical assistance by Forest Department staff to CFs is provided for reforesting, but no national-level guidelines are available.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

This is a recent measure for which there are no results as yet.

Links and documents attached

- Restoration in PA training IUCN 2017.pdf
https://www.iucn.org/sites/dev/files/content/documents/2017/nwcd_nea_iucn_pa_restoration_training_course_november_2017_final.pdf

- Mangrove restoration project 2012-15.pdf (Worldview Inter. Foundation)
<https://challenges.openideo.com/attachments/dc012e47-203d-41cf-bd56-cf5e43e79c9c.pdf?id=7275>

Title of measure

15.3.1 Continue to implement the REDD+ Readiness Road Map especially development of standards, and pilot project.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The roadmap is completed and is in the process of being implemented. The roadmap has 6 key components 1. Management of REDD+ readiness; 2. Stakeholder consultation and participation; 3. Development and selection of REDD+ strategies; 4. Implementation framework and safeguards; 5. Developing a national FREL or RL; and 6. Development of a national forest monitoring system. Some components are complete while other are ongoing. For example, the FAO is involved in strengthening Myanmar National Forest Monitoring System and Korean Forest Service is helping to building of relevant stakeholders for REDD+ readiness of Myanmar. However, key components of the roadmap have not been implemented, including the FREL, safeguard system, and selection of strategies. The draft REDD+ Strategy is undergoing a comprehensive consultation process. Myanmar's first FREL was submitted to the UNFCCC in January 2018, and the technical assessment process is nearly complete. The first draft of the design of that Safeguard Information System is due by the end of 2018.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

The road map is being implemented but major aspects such safeguards are not accomplished. Some components, however, such as the National Strategy and Safeguards Information System are expected to be complete by 2019.

Links and documents included

- Myanmar REDD roadmap (http://www.myanmar-redd.org/wp-content/uploads/2017/10/Road-Map_Eng.pdf)
- Myanmar FREL (https://redd.unfccc.int/files/2018_frel_submission_myanmar.pdf)

Target 16.

Title of measure

16.1.1 Develop a National ABS Roadmap and Action Plan, which identifies the most relevant genetic resources, assesses the likely demand for these, and identifies the priorities for legislative development, awareness raising, and capacity development.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Implementation of the Nagoya Protocol has been delayed until after 2020, however as of 2017, in cooperation with United Nations Development Programme (UNDP), the project "Strengthening human resources, legal frameworks, and institutional capacities to implement the Nagoya Protocol" is being implemented. As a part of that project, a report on traditional knowledge of genetic

resources is under review. That report will assess traditional knowledge of genetic resources currently being applied, suggest legislation to be enacted and recommendations for how Myanmar should move forward. Also, the UN Environment Program and the Ministry of Natural Resources and Environmental Conservation (MoNREC) are working together to apply for GEF funding to implement the Project called “Implementing Nagoya Protocol of Myanmar by Promoting the Policy for Utilization of Genetic Resources and Associated Traditional Knowledge and Benefit Sharing”. Preparations are being made to establish Competent National Authority (CNA) to implement Nagoya Protocol. Only after establishing a CNA, can the Nagoya Protocol can be implemented step by step.

Specific country-level activities will be conducted with three objectives;

I. To strengthen the legal, policy, and institutional capacity to develop national ABS frameworks;

II. To build trust between users and providers of genetic resources to facilitate the identification of bio-discovery efforts:

III. To strengthen the capacity of indigenous and local communities to contribute to the implementation of the Nagoya Protocol.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

One component of the Protocol has been implemented (see 16.1.2), but with the funded projects now being implemented and pursued, the protocol has a high likelihood of being implemented soon after 2020.

Obstacles

Time to inform and negotiate with stakeholders, as well as to develop scenarios for impacts of the protocol in Myanmar.

Title of measure

16.1.2 Establish the Nagoya Protocol in the national legal framework

Describe a measure taken to contribute to the implementation of your country’s national biodiversity strategy and action plan

The Department of Agriculture has implemented the SMTA component of the protocol during all seed collections and research. A gap analysis with respect to laws and policies needed has been completed, and to establish the Nagoya Protocol within the national legal framework, discussions and workshops will be organized with relevant ministries, departments, organisations and NGO/INGO.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

There has been progress in terms of the gap analysis, implementation of the SMTA and with planning for stakeholder workshops.

Title of measure

16.1.3 Raise awareness among selected stakeholder groups within government, the private sector, international and national NGOs, and communities about the implications of the Nagoya Protocol.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

So far, there have been no formal workshops or training sessions by Ministry of Agriculture, but during exploration and collection trips, the Agriculture Seed Bank raises awareness of local communities on the importance of PGRs and for genetic resources access and benefit-sharing on an ad hoc basis. Training on Free and Prior Informed Consent (FPIC) was provided by WWF for leaders from 9 communities, with 18 participants, including 4 women.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

Little formal training has been provided as yet.

Title of measure

16.1.4 Strengthen and continue the National Information Sharing Mechanism and Global Plan of Action.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Training on the NISM and GPA in collaboration with Regional ITPGRFA training and with assistance from FAO has been conducted among staff from different states and regions.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

The work is in progress and no results are known.

Title of measure

16.1.5 Conduct collaborative research on medicinal plants and crops and TK of these resources under the framework of the Nagoya Protocol.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Although not specifically with regards to the Nagoya Protocol, several studies and publications on traditional medicines have been published. See 13.1.1

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Traditional medicines and TK have been documented in two major research publications.

Title of measure

16.1.6 Build capacity among stakeholders to implement the provisions of the Nagoya Protocol through the provision of targeted training and the development of model ABS agreements

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No progress.

Title of measure

16.1.7 Translate the Guide to the Nagoya Protocol and other key references into Myanmar language.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Biodiversity Convention, Nagoya Protocol, Access and Benefit Sharing (ABS), Good Practice Guide for Using and Implementing Genetic Resources and Bonn Guidelines have all been translated into Myanmar language.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

Several key publications including the NP have been translated - target met.

Target 17.

Title of measure

17.1.1 Prepare the necessary briefing papers and formally submit the NBSAP to Cabinet for approval

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Policy brief in Myanmar and English languages for NBSAP 2015-2020 was prepared and disseminated.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation

Parliamentarians are aware of the NBSAP and recently passed the Protected Areas and Biodiversity Law.

Title of measure

17.2.1 Establish a National Steering Committee, to oversee and guide the implementation of the NBSAP.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

National Biodiversity Conservation Committee (NBCC) was formed on 28 February 2017, with notification no. 31/2017.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The revised NBSAP is being implemented so far as has been possible since 2014 given funding constraints. The evidence is the large body of information indicated in this report.

Title of measure

17.2.2 Create an NBSAP Implementation Coordination Unit within MONREC and develop a mainstreaming and coordination strategy that recommends clear roles and responsibilities across national policy framework

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The NBCC (see 17.2.1) is the interdepartmental body, which has working groups that vary with membership among the Departments as required by expertise and subject area.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The revised NBSAP is being implemented so far as has been possible since 2014, given funding constraints. The evidence is the large body of information indicated in this report.

Title of measure

17.3.1 And 17.3.2 Develop guidelines for BSAP preparation and develop BSAPs in at least 3 states.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Nothing done.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No work done.

Title of measure

17.4.1 And 17.4.2 Develop a communications plan for key audiences and a series of high-level briefing packages on the NBSAP for senior policy and decision-makers within government.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

A policy brief in Myanmar and English languages for the NBSAP 2015-2020 was prepared and disseminated. In 2015, a national meeting on application of the NBSAP was held in Nay Pyi Taw. Communications tools were developed and disseminated (see attached for examples)

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The effectiveness is indicated by the presence of numerous references to the NBSAP in high-level government planning for sustainable development (documents unavailable yet). The NBSAP has provided guidance and policy justification for the implementation of many programs currently being conducted by government and NGOs in Myanmar.

Links and documents included

- NBSAP flyer English (see attached)
- Myanmar NBSAP flyer FINAL March 2016_Burmese (see attached)

Target 18.

Title of measure

18.1.1 Develop a National Land Use Policy and pass a Land Law that recognizes customary land use systems

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The new (2016) Myanmar Land Use Policy recognizes customary land use tenure system. A new Land Law, based on the policy statement, is currently being written.

In “Conservation of Biodiversity and Protected Areas Law” (2018), there are sections that support the legal recognition of customary land use tenure.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

The policy is complete and a new law is being written. Application of the law and policy will be apparent only over time.

Links and documents

- Myanmar Land Use Policy, 2016 <http://extwprlegs1.fao.org/docs/pdf/mya152783.pdf>

Title of measure

18.1.2 Develop implementing rules and regulations to allow registration of customary tenure.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

A new Land Law is under preparation and customary tenure will be partly included. In the "Conservation of Biodiversity and Protected Areas Law" 2018, there are sections that support the legal recognition of customary land use tenure.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

The laws and policies are new and results will only become apparent with time.

Title of measure

18.1.3 Harmonize recognition of customary and communal tenure into relevant laws, dispute resolution mechanisms, and land use planning processes

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

A new Land Law is under preparation and customary tenure will be partly included. In the "Conservation of Biodiversity and Protected Areas Law" 2018, there are sections that support the legal recognition of customary land use tenure.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

The laws and policies are new and results will only become apparent with time.

Title of measure

18.1.4 Begin to register communal land

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Where community forests and community fisheries have been established, these lands are registered.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

Clear areas are required for community user groups.

Title of measure

18.2.1 Prepare guidelines on FPIC for government use, including guidelines on consultation processes

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Under the REDD+ initiative, the roadmap calls for National Guidelines on Free, Prior and Informed Consent (FPIC). The principles of FPIC are reflected in guidelines on stakeholder engagement that have been developed, and are supported in the new Forest Law (in 2018).

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

Uncertain if these guidelines have been developed.

Title of measure

18.2.2 Ministries overseeing sectors, particularly extractive industries with significant impacts on indigenous peoples and local communities affirm FPIC principles.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No progress

Title of measure

18.2.3 Produce and disseminate guidelines for FPIC and grievance mechanisms to government and private sector.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No Progress.

Title of measure

18.2.4 Train relevant government staff on FPIC principles and consultation methods to increase awareness and capacity

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Staff training on FPIC has been ongoing since 2014, in-house and through RECOFTC.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

There are no data to assess effectiveness.

Links and documents included

- REDD+ FPIC training <http://reddmyanmar.blogspot.com/2014/08/capacity-building-training-on.html>
- FPIC Booklet (Q&A)_Myanmar.compressed.pdf (RCOFTC FPIC - in Myanmar language) [https://chm.cbd.int/api/v2013/documents/F7636AF4-F0E7-CAAE-ED0A-CE0E9F3A7F9C/attachments/FPIC%20Booklet\(Q%26A\)_Myanmar.compressed.pdf](https://chm.cbd.int/api/v2013/documents/F7636AF4-F0E7-CAAE-ED0A-CE0E9F3A7F9C/attachments/FPIC%20Booklet(Q%26A)_Myanmar.compressed.pdf)

Title of measure

18.3.1 Incorporate traditional knowledge, practices, and beliefs into protected area education materials

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

In April 2018, Forest Department, Wildlife Conservation Society, and the International Centre for Integrated Mountain Development (ICIMOD) conducted a survey on traditional knowledge on plant diversity, use and management in Northern Myanmar. The results will be integrated in community development planning.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

The survey was recently completed but materials have not been published.

Title of measure

18.3.2 Develop educational materials on TK practices and beliefs for university coursework on forestry and conservation

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No progress.

Title of measure

18.4.1 Integrate traditional ecological knowledge practice, and beliefs into PA educational materials

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No progress.

Title of measure

18.4.2 Promote environmental awareness and engagement for youth and women's groups

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

These specific groups are often present during usual public awareness-raising sessions. Specifically for women, about 1/3rd to 1/2 of people attending workshops and training sessions are women. Few organised women's groups are active in Myanmar. Information on these groups was included in the 'Gender Report' attached at Target 14.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

About 1/3 – ½ of attendees at training sessions are women.

Target 19.

Title of measure

19.1.1 Establish a CHM portal with relevant information

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective X
- Unknown

Explanation

No progress

Title of measure

19.2.1 Finalize national forest cover database and make publicly available online

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Myanmar has a national forest cover database and is in the process of updating the information, jointly with FAO once the inventory project is initiated, for the 2020 Global Forest Resources Assessment. The information will be available in 2020 and making it publicly available is expected at that time.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

The project is ongoing.

Title of measure

19.2.2 Hold regular GIS training courses for relevant staff

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective X
- Unknown

Explanation

No progress

Obstacles

Insufficient capacity and insufficient time for GIS staff.

Title of measure

19.3.1 Establish conservation-related diploma course and advanced degree course at universities.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The Wildlife Conservation Society (WCS) is working with the University of Forestry and Environmental Science (UFES) to strengthen the Department of Biodiversity and Wildlife Conservation. This department will offer a special course on biodiversity conservation. WCS is also supporting UFES to improve existing curricula and syllabus and provides them with reference books and field equipment. UFES graduated 382 students during 2015 to 2017, of which 84 were women. Elsewhere, WCS has organized workshops on environmental conservations at the Departments of Zoology and Botany at Taunggyi University Curricula there are being developed for diploma courses as a short term process, in cooperation with State Department of Fisheries, to help create job opportunities for graduates and young people who have passed their matriculation examinations. Yezin Agricultural University works directly with the Seed Bank on genetic research and Mandalay University is active in assessing the status of species. Also see 10.1.2: The capacity of Mawlamyine University is being enhanced as National Centre for Marine Excellence by working together with foreign universities, local and international organizations.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Two universities are active on this target with Wildlife Conservation Society and the Department of Fisheries is working to improve the curriculum at Mawlamyine University. Both of these efforts have been successful in moving the agenda forward, but the efforts are recent and numbers of students educated and finding jobs has not been reported.

Title of measure

19.3.2 Identify and initiate opportunities for collaboration in curriculum development, student exchange, internships, and field research programs with foreign universities and international NGOs

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Wildlife Conservation Society (Wildlife Conservation Society) provided technical and financial support for Basic Wildlife Conservation Course No. 1 running from 4 to 13 Jun 2018. In 2016 and 2017, the University of Forestry and Environmental Science (UFES) arranged field studies on biodiversity monitoring and conservation for fourth year students. A study tour on biodiversity conservation to protected areas in Thailand was organized for fourth and fifth year students and faculty members from UFES in 2017. Wildlife Conservation Society taught short courses on conservation of protected areas and biodiversity were taught in Myanmar Forest School from 2015 to 2017.

By working together with NGOs, the several universities have engaged and negotiated with local fishery businesses to create job opportunities for university students. Internship programs, field visits and research are being arranged for the students majoring zoology and botany in order to increase their interest in the subjects, to gain local knowledge, to exchange knowledge among the universities in states/regions, and to create job opportunities. The Plan House exhibiting collections of medicinal plants and herbs provided by the Botany Department Alumni Association has been established near Taunggi University.

MONREC has a funded program to improve the qualifications of employees, by sending them to well-known foreign universities for masters and doctoral degrees. This is done to help develop capacity within the Department with a long-term view to improve resources management.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Progress has been made, but this is a target where no expectations have been set, so determining level of effectiveness is not possible. Regardless, 3 universities have improved substantially their capacity to develop high quality graduate students in conservation themes.

Title of measure

19.3.3 Invite contributions to start a Myanmar biodiversity journal

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No progress.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No progress

Title of measure

19.3.4 Establish training programs in areas that universities have identified as priority gaps, including scientific writing, teacher training, and development of field-based courses.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

In cooperation with relevant government agencies, departments and INGOs, the Department of Zoology and Department of Botany from Taunggi University are now delivering skill training on research (e.g., apiculture for queen bees, and conservation of biodiversity in natural caves). Marine sciences was an identified gap that is now being filled as a result of cooperative work between government and Mawlamyine University.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective X
- Measure taken has been ineffective
- Unknown

Explanation:

Work on this measure has begun successfully at 2 universities.

Target 20.

Title of measure

20.1.1 Develop a national resource mobilisation strategy for biodiversity, in line with the CBDs Global Strategy for Resource Mobilisation.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

No Progress

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No progress

Title of measure

20.1.2 Establish and capitalize a biodiversity conservation trust fund

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Work on this measure is ongoing. A first meeting to study the possibility was held between the Forest Department (FD) and Wildlife Conservation Society, and the following activities to establish Biodiversity Conservation Trust Fund were completed: conduct a legal analysis to establish a trust fund, set a timeline for a second meeting, formulate Steering Committee, and develop a work plan. Representatives from FD and Wildlife Conservation Society went on a study tour to examine the

Madagascar Trust Fund as a model and a return visit by the Madagascar Trust Fund occurred in 2017.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

No fund has yet been established but meetings have been held and the intent exists.

Title of measure

20.1.3 Submit a formal request to UNDP for Myanmar to join BIOFIN

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

FD sent a letter of interest to UNDP, and expressed that Myanmar wanted to join the BIOFIN, which is implemented by the UNDP. Representatives from UNDP, FD, other line Departments and partner I/NGOs met in March 2018 and discussed how Myanmar could join BIOFIN. BIOFIN is included as one element of the preparation of an integrated environmental financing strategy for Myanmar under the UNDP 'Governance for Resilience and Sustainability' project. UNDP is looking for a donor to support Myanmar joining BIOFIN. An official from the FD attended the 4th BIOFIN regional workshop held in Cebu, the Philippines, on 11-13 September 2018, to learn from other experiences on BIOFIN initiatives in other countries.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown X

Explanation:

This work has only recently started.

Title of measure

20.2.1 Form a "GEF Coordination Team" and implement a "National Portfolio Formulation Exercise" to optimize GEF funding.

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

A GEF coordination team has been formed for GEF-7, with representatives from GEF National Operational Focal Point, line departments, GEF implementing agencies, and NGOs.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

The GEF team is in place and several GEF-7 fund applications have been developed.

Title of measure

20.2.2 Establish donor roundtable on biodiversity led by MONREC

Describe a measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

An international seminar on Cooperation on Biodiversity Funding in Myanmar was organized in Yangon in March 2015. More than 70 representatives from line departments, partners I/NGOs, donor agencies and embassies attended.

An international seminar on Cooperation on Biodiversity Funding in Myanmar was organized in Yangon in March 2015. More than 70 representatives from line departments, partners I/NGOs, donor agencies and embassies attended. Following this meeting, a high-level committee - the Environmental Sector Coordination Group, was established, chaired by the Minister of MONREC to better coordinate programs and projects in the environmental arena. This high level group has met on an annual basis for 2 years.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

- Measure taken has been effective X
- Measure taken has been partially effective
- Measure taken has been ineffective
- Unknown

Explanation:

A committee now meets annually.

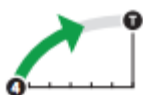
Section III.

Assessment (of progress towards each national target)

This section describes a summary of progress for all measures (actions) as an assessment of progress towards each of the 61 National Targets. The assessment draws on information in Section II but also uses data and information that are more specific to the target itself. For example, there are no measures under Target 6 to report on whether the overall marine fish harvest has declined or not. So, for target 6, the national catch data are used to indicate overall success relative to that Target for reducing the harvest. In some cases, national data were available, while in other cases only global data or indicators could be used to suggest progress, while for some other targets, there were no good data or indicators to imply overall progress.

Target 1.1 By 2018, awareness of biodiversity values of key decision makers and line agencies has been improved.

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

While there have been no surveys to determine how many decision-makers at the national and state levels are aware of biodiversity, national parliamentarians are well-aware of biodiversity as a result of passing the new law on biodiversity and protected areas in 2018, and briefings on biodiversity were provided to 7 states and regions. Forest Department's outreach unit conducted a training session at Popa Mountain Park in 2015. The topic of environmental education is included in regular capacity building training at NWCD, conducted since 2018 May.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Assessment of reports and web-based materials.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

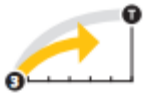
No formal surveys have been done. Of the 3 measures (Actions) planned, only the first has been achieved to 2018.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate
Monitoring related to this target is partial (e.g. only covering part of the area or issue)
No monitoring system in place X
Monitoring is not needed

Target 1.2 By 2018, the private sector has an enhanced understanding of the value of biodiversity and relation to business practices

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

There has been a very large effort to improve ecotourism through development of policies, guidelines and training in this sector. However, other than under EIA training and an SEA for the hydropower sector, other sectors have not been trained extensively on biodiversity issues. Biodiversity so far is not well mainstreamed in other sectors.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Assessment of reports and web-based materials.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information
Based on partial indicator information and expert opinion
Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Among the major industries in Myanmar (mining, energy, agriculture, tourism, and fishing) only the tourism industry has been a focus under this target. However, in the areas of agriculture and fishing some progress has been made, specifically related to other targets in the NBSAP. There are no data as yet to assess the effectiveness of the ecotourism efforts (e.g., increased ecotourists, reduced pressure on biodiversity, etc.). Little work has been conducted in other sectors other than under EIA.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate
Monitoring related to this target is partial
No monitoring system in place X
Monitoring is not needed

Target 1.3 By 2017, the media have an improved understanding of and capacity to communicate topics related to biodiversity

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The total number of media attendees in the two major cities was 43 in two workshops. While they should have an increased understanding of biodiversity, a search of the 'Myanmar Times' using several biodiversity related terms (forest, biodiversity, environment*, elephant, fish, wildlife) showed no increase in coverage of these subjects between 2014 and 2017. However, many other media have increased coverage. For example, "The Voice Myanmar" (<http://thevoicemyanmar.com/environment>), "7 Day Daily" (<http://7daydaily.com/environment>), Eleven Media (<http://news-eleven.com/?s=environment>) and others are broadcasting or pressing environmental issues, including biodiversity in Myanmar.

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

Number of environmental articles in the Myanmar Times by year (web search)

Number of training sessions

Number of media people attending.

Please describe any other tools or means used for assessing progress

Numbers of articles (in English) in the Myanmar Times – a national news service.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

There is no media monitoring in place to indicate success.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial X

No monitoring system in place

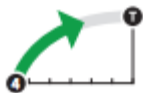
Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Numbers of media personnel attending training sessions.

Target 1.4 By 2020, local communities in and around PAs have enhanced opportunities to share knowledge and participate in management activities

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The very large number of training sessions and workshops for this target indicates a comprehensive effort to improve the capacity of local communities near PAs with respect to management and assist in management activities. Further, progress is being made towards the recognition and development of LCCAs.

Has your country used indicators to assess progress towards this national target?

Yes No

Describe indicators used

Numbers of workshops, numbers of training sessions, number of PAs where the work has been conducted and the number of people attending over the past 5 years.

Please describe any other tools or means used for assessing progress

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Large number of workshops and attendees indicates a very large effort to train people.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial

No monitoring system in place

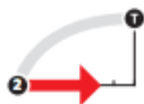
Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Numbers of people attending training sessions and number of PAs with training.

Target 1.5 By 2020, primary and secondary curricula have incorporated biodiversity values

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The 2015 National Report noted that primary and secondary curriculums include environmental issues, but there are no data to suggest that these have been improved or that more schools carry these subjects. While several key biodiversity-related references have been translated into Myanmar language, there is little information available as to how many school curricula have been altered to incorporate biodiversity values, or that make use of the translated references. In the case of Yangon, for example, a survey indicated that no state-owned primary and secondary school has environmental conservation (or related) subjects in their curriculum.

A check of Google trends suggested no general increase in searches from within Myanmar using Google (see graph attached). However, this trend is likely partly flawed because it does not consider searches in Myanmar language.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

None

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

The only information we have is the few references that were translated into Myanmar language.

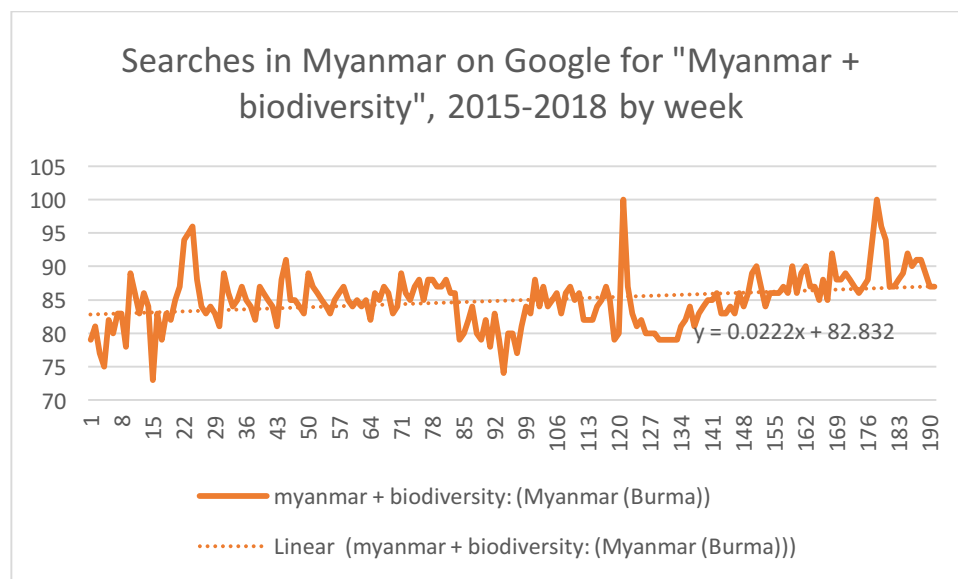
Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place X

Monitoring is not needed



Target 2.1 By 2018, Myanmar has made a formal commitment to natural capital accounting and has taken significant steps to integrate the value of biodiversity and ecosystem services into its national accounts

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate X

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

There has been little progress on this target except for a meeting and two independent studies on ecosystem valuation during this review period. It will not be possible to meet this target by 2020. Obstacles include good data on the value of ecosystem services at national and state scales (which do not exist), a mechanism to incorporate ecosystem services into national accounting, and funding to support the initiative.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

None.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

The general lack of progress on this target (similar to most other countries in the world) suggests that it will be a very long-term process to value ecosystem services at a national scale.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place X

Monitoring is not needed

Target 2.2 By 2018, significant steps have been taken to incorporate biodiversity and ecosystem services into state/region planning

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

No progress on the development of guidelines or training of state staff to incorporate ecosystem services into planning. Nevertheless, there is a recognition among community user groups (fishery, forest) of the values that can be achieved through proper management and conservation (see Targets 5, 6, 7, 11 and 15). At an individual project level where training has been provided and organisation established, there is clear understanding of ecosystem values. So, while there is change, it is happening slowly and at the local level. At the regional level, projects like BOBLME on the ocean conditions in the waters of the Bay of Bengal and Andaman Sea, sustainability is very much highlighted and is a clear consideration in ASEAN policies and programmes.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Questionnaire to government

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Neither of the 2 planned measures was actioned, but local and regional understanding of ecosystem services is increasing.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)
No monitoring system in place X
Monitoring is not needed

Target 2.3 By 2018, the government has significantly enhanced its capacity to review and assess EIAs and monitor and enforce EMPs.

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

There has been a large effort to improve EIA procedures, requirements and staff training in Myanmar. However, information from UNDP and ECD suggests that enforcing the requirement to conduct an EIA on businesses is still an outstanding issue. A third specified measure is the development of sufficient GIS databases to assist in EIAs and SEAs and this is lacking although the capacity is increasing, for example as ecosystem mapping is nearly developed. There has also been progress (but no SEA) in the area of ecotourism, with new policies, assessments of impacts, and training of operators to improve and monitor planning (see Target 1.2).

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Amount of training, documents on formal EIA, efforts by NGOs.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

There has been a large number of government staff trained in aspects of EIA. What is missing at this point is actual enforcement of the requirement to conduct EIAs, for sectors other than hydro developments, for which there is a lack of capacity.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue) X

No monitoring system in place

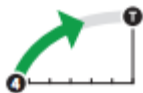
Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Numbers of government staff trained in EIA process.

Target 2.4 By 2017, Myanmar has been assessed as an EITI compliant country

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The government is reporting as required to achieve EITI status.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Reports.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Information from NGOs and staff who are directly involved.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

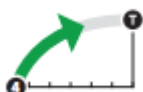
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed X

Target 3.1 By 2020, the national legal framework on tenure encourages conservation and sustainable management

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The process of first developing a Land Policy, dealing in part with land tenure, followed by integrating the policy into a law, is continuing on pace to be complete by 2020. There has been no identified progress, however, on NBSAP measure 3.1.3 to mainstream conservation into regional land use planning. The new Forest Law clarifies land tenure with respect to community forests and there has been progress in working towards LCCAs. The Conservation of Biodiversity and Protected Areas Law (2018) also enable local tenure systems.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

The published Land Policy, Conservation of Biodiversity and Protected Areas Law, and Forest Law.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information
Based on partial indicator information and expert opinion
Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Presence of the published policy and the assurance that the law will soon follow.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate
Monitoring related to this target is partial (e.g. only covering part of the area or issue)
No monitoring system in place
Monitoring is not needed X

Target 3.2 By 2020, positive incentives are established for the sustainable use of nature

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The Forest Law has been re-written to enable more incentives for conservation and there has been a large effort towards managing community forests in a sustainable manner. Three local community fishing groups have been established and others are being developed, and there is a new effort towards improving aquaculture under a joint programme with FAO.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Questionnaire to government, online documents and interviews

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

With the Land Policy, advances in FLEGT, advances in community resources use, and the overall effort to improve sustainable nature management, achievement of this target is likely.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place X

Monitoring is not needed

Target 4.1 By 2020, SEA conducted and guidelines prepared for mining and energy sectors.

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Half the target was completed (hydro-power) and there are advances on the other half, pertaining to the mining sector.

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

SEA documents and guidelines published

Please describe any other tools or means used for assessing progress

Published studies.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

The assessment is based high quality report for the hydro power sector and on information from government and NGOs.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed X

Target 4.2 By 2020, sustainable production and consumption of natural resources is mainstreamed In development planning.

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Of the four measures listed in the NBSAP, there have been advances for two. Particular lacking, so far, is a law requiring a Biodiversity Action Plan (BAP) for any development. Nevertheless, there are guidelines which will include a BAP for hydro developments. Further, progress is being made towards cleaner cooking fuels and establishing a green procurement programme. While the Ecological Footprint indicator still suggests overall sustainability, the index and baseline are becoming closer with each passing year (see attached). The Environmental Performance Index (EPI) ranks Myanmar poorly with its overall index of 24 performance indicators across ten issue categories covering environmental health and ecosystem vitality. These 24 metrics provide a gauge at a national scale of how close countries are to established environmental policy goals. In particular the EPI highlighted unsustainable use of forests and water resources (see attached). Increasing marine catch (see Target 6) is also unsustainable. All of these indicators suggest that sustainability is not sufficiently mainstreamed to result in sustainability.

	Current rank	current score
Environmental Performance Index	138/183 countries	45.32

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

Ecological Footprint and Environmental Performance Indicator, forest harvesting and fish harvesting.

Please describe any other tools or means used for assessing progress

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Global summary indicators can provide a directional suggestion of relative performance, sometimes with a temporal component. On the positive side work towards alternative fuels and overall attention to the NBSAP suggests positive changes are coming.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

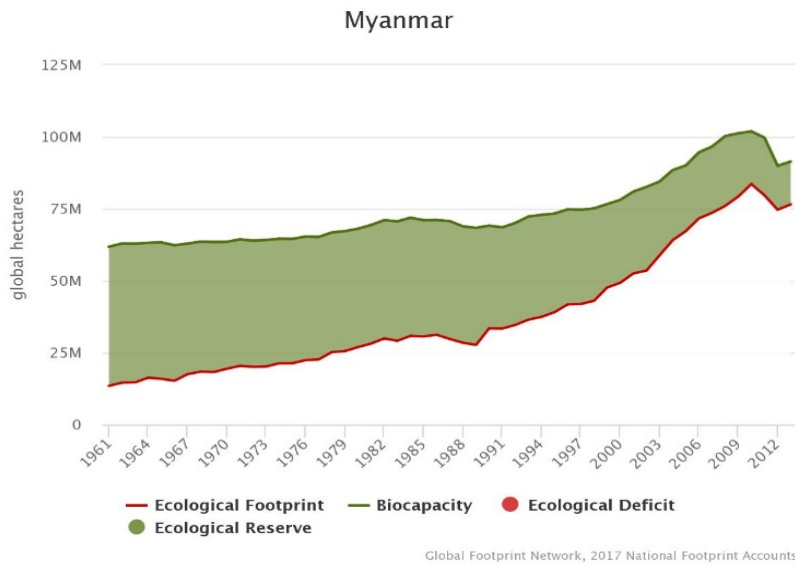
No monitoring system in place X

Monitoring is not needed

Documents, links

<https://epi.envirocenter.yale.edu/epi-country-report/MMR>

Global Footprint Index:



Target 5.1 By 2020, at least 10% of 'dry mixed deciduous forest' (D MDF) and mangrove forest has been put under some form of protection, including sustainable use and management.

Category of progress towards the implementation of the selected target:



Moving away from target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Target 5 is primarily to reduce habitat and ecosystem loss. In forests, however, Myanmar has been unable to meet the global target and, along with several other countries in Central and SE Asia, has a high rate of deforestation (1.4% in 2016 and almost 2% on average from 2005-2015) (Kissinger 2017, FAO 2015). Myanmar lost almost 400,000 ha/yr of forest between 2005 and

2015, and its intact forest landscapes were reduced by 31% from 2001-2013 (Potopov et al. 2017) and these losses have continued with a further decline by 112,000 ha/yr of intact forest (see 2018 map under Implementation 2.3.3). The WRI Global Forest Cover dataset indicates a loss of forest with at least 30% canopy occurred on 997,302 ha from 2015-2017. Teak, which has been the backbone of forestry in Myanmar since the 1800s, has become much less abundant. Following a moratorium on harvesting in 2014, the harvest quota was reduced from 48,897 to just 19,201 trees as an AAC. There is also a moratorium on timber extraction in Bago Mountain Range, a key area for teak in Myanmar, for ten years (2016 to 2026). The area of mangrove forest has continued to decline (based on available data to 2015) and only a small area has been recently additionally protected in the Gulf of Mottama. The FD estimates that about 502,000 ha of mangrove remained in 2017 (FD presentation, attached), but projects a further substantial decline by 2030. Land cover change data at the national level for 2005 to 2015, developed by the Forest Department RS-GIS Department, showed that 136,500 ha (27%) of mangrove forests changed to 'Other Land Use' (mainly cropland), 90% of which occurred in the Ayeyawady and Rakhine regions. Overall, mangrove forests declined by 21 km²/year to 2015 and 13 km²/year through 2018 (although based on different datasets). Area of DMDF added under protection has also been small and there are only a few CFs certified as sustainably managed. On the positive side, the area under CF has considerably increased, and as these areas become certified, there will be incremental movement towards the target. It seems unlikely that the target can be met within 2 years. CF is largely dealt with under Target 15, but there are now several CFs in mangrove areas and there is a mangrove action plan that is currently being implemented.

Has your country used indicators to assess progress towards this national target?

Yes No

Describe indicators used

PA area, data from Clark University (on mangrove area), the global mangrove dataset, and global forest monitoring data from FAO and from U of Maryland/WRI.

Please describe any other tools or means used for assessing progress

Reports from Forest Department, web-based material and published papers.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Kissinger report 2017.
https://static1.squarespace.com/static/58d6cc1e17bffcfb801edde/t/5970ed2cdb29d61b7a95b450/1500572980265/Background+report_Identifying+the+drivers+of+deforestation+and+forest+degradation+in+Myanmar.pdf

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Good data-based indicators available. Limited new forest area is under full protection but there have been considerable advances for community forest area, although certification remains a slow process. Real-time monitoring capacity is lacking as yet in Myanmar and reliance on outdated information (3 years old) and global data is required for this target. Achieving this target is constrained by lack of capacity to regularly monitor and map these two forest types (or any other types), personnel to enforce regulations in protected areas, and capacity to train community forest users on sustainable forest management within a short timeframe.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue) X

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

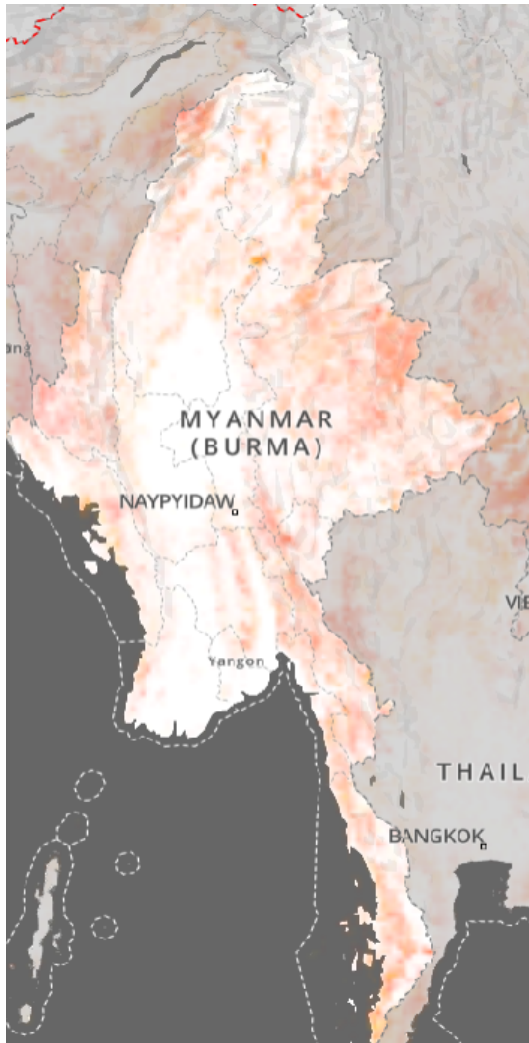
FAO Forest Resources Assessment, Global Forest Change dataset, AAC, and global mangrove area datasets

Links documents

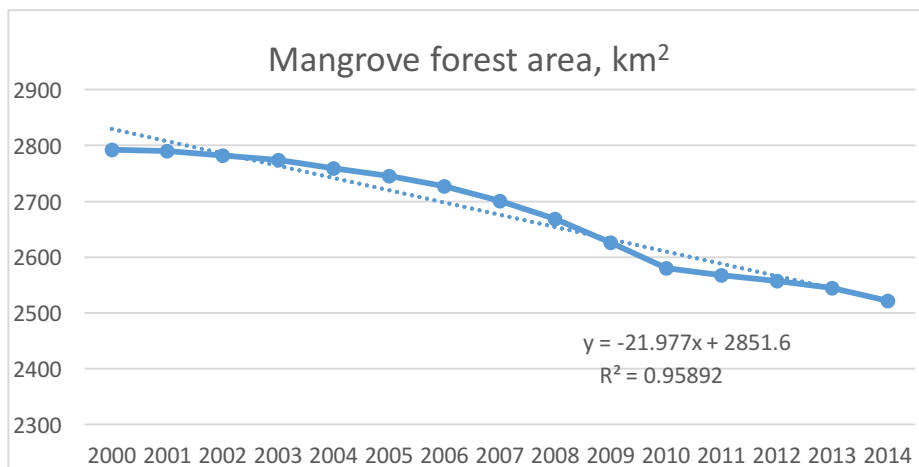
[Forest change Myanmar 2000-17.jpg](http://lcluc.umd.edu/content/global-forest-change) (Global Forest Change, Hanson et al. 2017: <http://lcluc.umd.edu/content/global-forest-change>)

[Mangrove management presentation FD 2017.pdf](#) (Mangrove status 2017, For. Dept.)

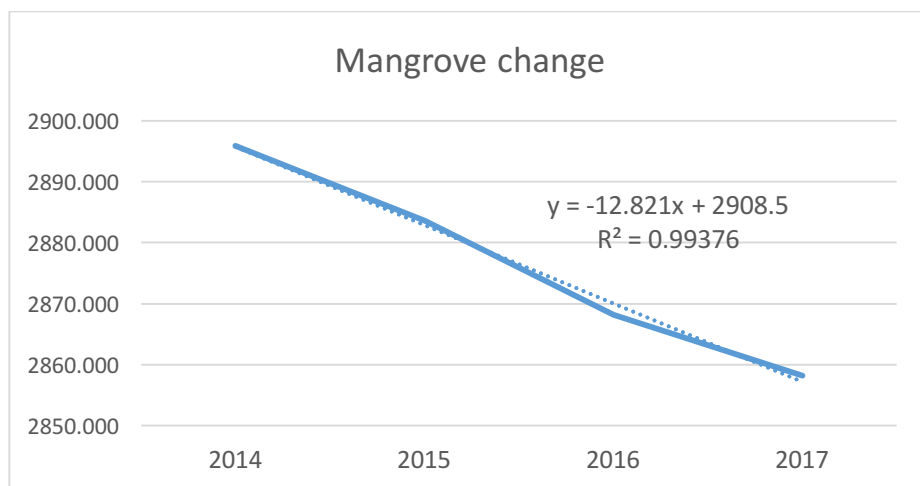
Forest loss 2000-2017, from Global Forest Loss data (Hansen et al. 2018); map from UN Biodiversity Lab.



Myanmar mangrove forest area (data from 2016)



Mangrove data 2014-2017, data from Global Forest Cover (Hansen et. al.)



Target 5.2 By 2018, the PFE will have been re-assessed

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

This target will presumably be achieved by 2019 in time to report to the FAO Global Forest Resources Assessment. There are, however, delays in established and national forest inventory project.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

The proposed forest inventory project with FAO has been delayed.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Discussion with Forest Department and FAO indicate that the target will likely be met, but will be delayed until after 2020.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate X
Monitoring related to this target is partial (e.g. only covering part of the area or issue)
No monitoring system in place
Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

FAO FRA data.

Target 5.3 By 2020, all wetland areas surveyed and prioritized for conservation value.

Category of progress towards the implementation of the selected target:



On track to exceed target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The updated wetland inventory has been completed and will be published soon; the Ramsar provisional list of significant wetlands was published in 2018. There were 4 new Ramsar sites added over the past 4 years (for a total of 5 sites), exceeding the planned three sites. Community participatory monitoring is being practised in three Ramsar Sites.

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

Number and area of Ramsar sites, ranking of wetlands report.

Please describe any other tools or means used for assessing progress

None

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information X
Based on partial indicator information and expert opinion
Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Ramsar sites were approved and there is a report on wetlands.

Adequacy of monitoring information to support assessment

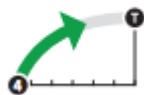
Monitoring in relation to this target is adequate X
Monitoring related to this target is partial (e.g. only covering part of the area or issue)
No monitoring system in place
Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

GIS data and reports on wetlands.

Target 5.4 By 2020, there has been an increased effort to combat and reduce illegal logging.

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

This target is to increase enforcement effort. Illegal logging has resulted in forest losses (and consequently associated tax and job benefits). The Environmental Investigation Agency indicated that, from 2001-2013, 10.2 million m³ of Myanmar of unauthorized logs were estimated to have been exported to global markets, which would equate to a 47.7% illegal logging rate in the country, relative to exported wood alone (Kissinger 2017). The same agency reported 233,484 tonnes of illegal wood were seized between 2010 and 2016. Large amounts of teak and rosewood continue to be cut and illegally exported according to the government statistics (see above), as well as a Mongabay investigation in 2015-16 (see link). As a result of the teak export ban in 2014, prices of teak rose considerably, making illegal logging even more profitable (Kollert and Kleine 2017).

This is a difficult target for which to develop a comparative baseline, which would have to include some information about how much illegal logging there was in 2014 vs. how much is occurring now. There has been an annual increase in illegal wood seized and charges laid, but while this may reflect better planning and enforcement, it may also reflect increased illegal logging. Nevertheless, there is now a national plan in place to deal with the issue that is being implemented and the results are positive. There has not been, however, any increase to the enforcement budget and illegal timber harvesting continues to be a serious problem.

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

The indicators were amount of wood seized, arrests and value of wood seized.

Please describe any other tools or means used for assessing progress

Wood seized, budget data, and enforcement effort increased.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Online reports and published papers.

<https://news.mongabay.com/2016/11/myanmars-logging-ban-feeds-shadow-economy-of-illegal-trade/>

Kollert, W. and M. Kleine (eds.) 2017. The Global Teak Study. Analysis, Evaluation and Future Potential of Teak Resources. IUFRO World Series, Volume 36. Vienna.

Level of confidence of the above assessment

Based on comprehensive indicator information
Based on partial indicator information and expert opinion X
Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

The statistics reflect wood seized, but not necessarily reduced illegal logging.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate
Monitoring related to this target is partial (e.g. only covering part of the area or issue) X
No monitoring system in place
Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Amount of wood seized; number of charges laid annually.

Target 5.5 By 2020, negotiation phase to sign Forest Law Enforcement Governance and Trade (FLEGT) and Voluntary Partnership Agreement (VPA) has been conducted

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Among the 4 measures planned for this target, 3 have been completed and the fourth, re-writing the forest law, is in process.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Progress was assessed by interviewing both the Forest Department director in charge of negotiating and developing FLEGT and the EU counterpart, as well as assessing online documents.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information
Based on partial indicator information and expert opinion
Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Both parties indicated that there has been progress in the negotiations and there is active involvement among all stakeholders.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place X

Monitoring is not needed

Target 6.1 By 2020, states/regions have approved laws allowing for community and/ or co-managed fisheries.

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

This target has as its main focus the changing of laws, although there are also measures dealing with community management of fisheries and development of community fisheries guidelines. Much progress has been made on the latter, but no progress was reported with respect to legal status. Targets were set for 400 CFiUGs managing at least 10,000 ha, and while there were far less than 400 groups formed (in fact, 4 were initiated), more than 10,000 ha is now under CFiUG management. There are no data from a monitoring system to indicate sustainable fishing levels for the LMMAs however, and it is uncertain how often the LMMAs are monitored. Rakhine State has a law enabling community fisheries. (Note: Fisheries officials believe that this target was incorrectly set at 400 CFiUGs and that 4-6 would have been a reasonable target.)

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

Numbers of LMMAs, area managed.

Please describe any other tools or means used for assessing progress

Information was also gathered from project websites (e.g., MYSAP).

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Some advances but no monitoring data and no information about state laws.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue) X

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Numbers of user groups, number of user groups trained and certified, area covered by user group management.

Target 6.2 By 2020, total commercial marine catch is reduced to more sustainable levels.

Category of progress towards the implementation of the selected target:



Moving away from target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The global marine impact index shows that the oceans off Myanmar have been highly affected by human activities (see attached from UN Biodiversity Lab) in several areas, including in Rakine State, the mouth of the Ayeyawady River and delta, and at the southern border with Thailand. This target is to reduce the marine catch, and while there is limited information available for individual fish species, the data show that the overall marine catch has continued to increase through 2017 and has increased by an average of 152 metric tons/year (see table attached). Fishing pressure is substantial and unevenly distributed within the country (see figure attached from Tezzo et al. 2018). There have been positive changes, with the development of community groups in a few areas, increased training for local communities including many women, improvements through targeted programs for mangrove aquaculture, and the target for area under community management was exceeded. There is now a National Coastal and Marine Resources Management Committee, recently established to oversee management of coastal marine areas.

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

Marine impact mapping and fish harvest data.

Please describe any other tools or means used for assessing progress

Online reports and publications.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

UN Biodiversity Lab

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

The marine catch were the major indicator used, suggesting that, if the catch was excessive before 2015. Better information about species, however, would improve the value of the indicator. Other data include the high impact under the global marine impact dataset.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue) X

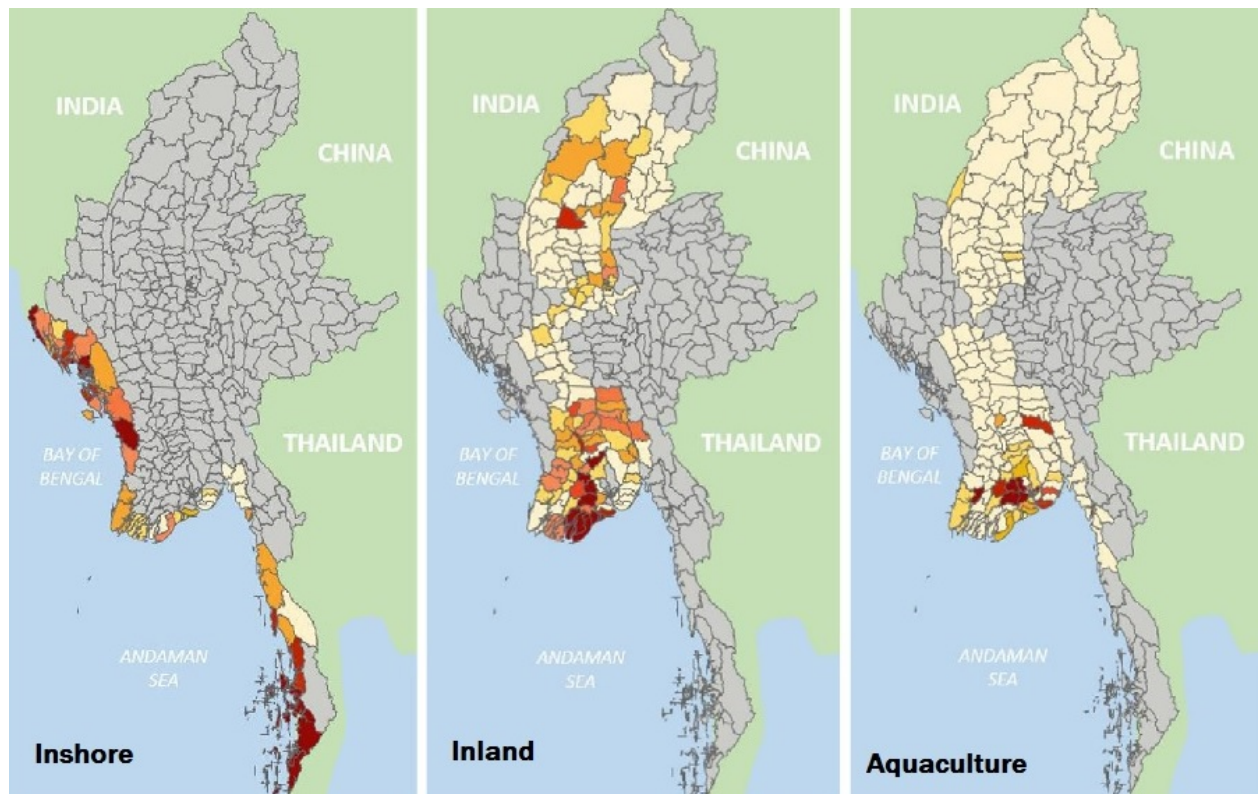
No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

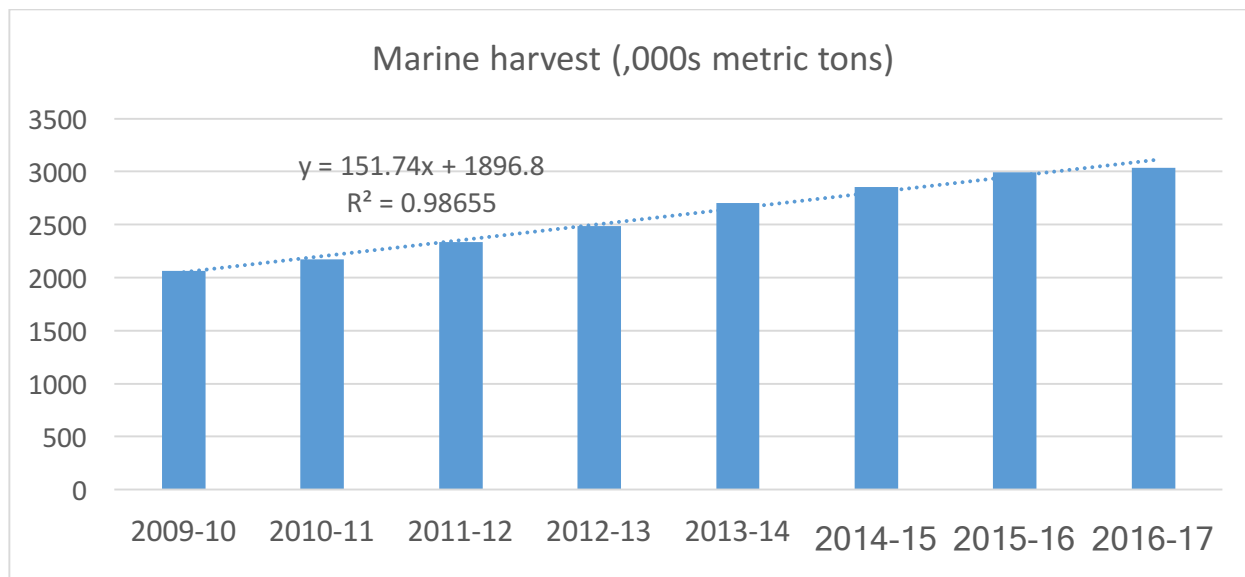
Marine catch reported, aquaculture production reported.

Fishing pressure indicators fishery type (From Tezzo et al. 2018)

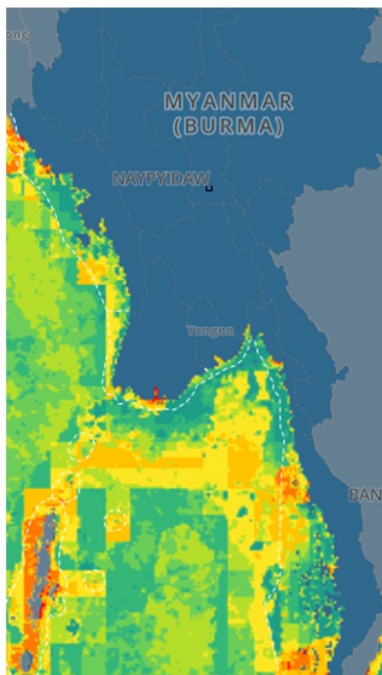


Fisheries catch data 2009-2017 (, 000 metric tons), Dept. of Fisheries (2018).

Year	Total	Aquaculture	Leasable	Open fishery	Marine fishery	Exports (US \$million)
2009-10	3921.9	858.8	237.4	764.9	2060.8	496.6
2010-11	4163.5	830.5	250.0	913.1	2169.8	555.5
2011-12	4478.2	898.9	282.6	963.8	2332.8	653.8
2012-13	4716.2	929.4	290.0	1012.9	2483.9	652.8
2013-14	5047.4	964.1	304.4	1076.6	2702.3	536.3
2014-15	5317.0	999.6	315.4	1147.8	2854.2	482.3
2015-16	5591.8	1014.4	338.7	1242.0	2996.7	502.6
2016-17	5675.5	1048.7	339.2	1251.1	3036.4	605.8



Global marine impact in oceans near Myanmar



Cumulative ocean impact to 2013:
 Greens – low impact
 Yellow - Red – higher impact
 Data from: Halpern et al. 2015, UN Biodiversity Lab

Target 7.1 By 2020, SRI and other forms of environmentally friendly rice production have been implemented in 10% of rice paddy area.

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Aichi Target 7 is about sustainable agriculture, aquaculture and forestry. A key pillar of this moving forward in Myanmar is the Myanmar Sustainable Development Plan, which recognizes the importance of natural resources and environmental sustainability as necessary for growth. Forestry is absent from National Target 7 but is dealt with under National Targets 5 and 15. The two targets under National Target 7 deal with agriculture (7.1) and aquaculture (7.2), and see National Target 6 for more information on aquaculture. Implementing the Target 7.1 for improved rice production requires considerable training be provided to farmers to improve crop techniques and research at the genetic level to improve varieties. Research on rice types is ongoing and has been successful for several varieties native to Myanmar. The Ministry of Agriculture has trained several thousand people so far on sustainable rice production, and rice production has increased in Myanmar. It is uncertain, however, if the training and production are correlated. There has been also an extensive program to work with floating vegetation farmers, to reduce chemical use and to improve techniques. There is a national program, for biological control of pests on vegetable crops.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Online reports, data on training from Ministry of Agriculture (MoALI)

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Without a program that monitors a sample of individual farms, it is impossible to link training to production.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

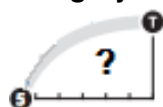
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place X

Monitoring is not needed

Target 7.2 By 2020, 5% of fish and shrimp aquaculture by volume follows international best practices for sustainable management

Category of progress towards the implementation of the selected target:



Unknown

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Myanmar with EU partnership has recently instituted a program to improve the sustainability of shrimp farming practices. There are no results as yet and so progress towards the target is unknown. The JICA / Dept of Fisheries programme, started in 2009, has trained a large number of farmers and is ongoing. The more recent expansion of the extension programme is working with fish and shrimp farmers. Another program "Myfish2, involving Worldfish and the Department of Fisheries has an objective to improve fishery management in Ayeyawady Delta, began in 2017.

There are few data on how many farms follow best practices but Fisheries has trained 17 farms. What is known is that larger farms use less labour than small farms (per unit of production) owing to economies of scale. Some indicators do suggest considerable improvements: 13% of farms use pelletised foods vs. 7% in 2011, and the yield is now about 3.5 t/ha vs. 3/ha in 2011.

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

Use of pelletized foods, fish yield/ha.

Please describe any other tools or means used for assessing progress

Web-based material on MYSAP, other web-based materials and published reports.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

MYSAP program was very recently initiated; data from fish farms was collated in 2016.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue) X

No monitoring system in place

Monitoring is not needed

Links:

http://pubs.iclarm.net/resource_centre/2017-39.pdf (Myfish2 project)

Target 8.1 By 2020, understanding of the extent and severity of pollution in Myanmar and its impacts on biodiversity are significantly enhanced

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The target calls for an improved understanding of pollution and its effects on biodiversity. While there is considerable work on understanding pollution levels and sources from individual studies, especially along major rivers and the coastline, no assessments of effects of these pollutants on biodiversity are available and no country-wide study has yet been accomplished.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Interviews, web-based materials, published studies and reports.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

The target calls for a national-level study but this has not been initiated and of the studies and projects reviewed, none had a focus on effects on biodiversity.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place X

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Data from individual uncoordinated studies.

Target 8.2 By 2017, the EIA Procedure, NEQG, and NEQS include adequate provisions to ensure protection of biodiversity and ecosystem services

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The guides and standards were produced and circulated, and a large amount of training has been provided to ECD staff on their application.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Web-based materials, published studies and reports.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Guidelines were produced on time and many ECD staff have been trained.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

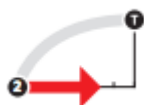
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed X

Target 8.3 By 2020, a water pollution monitoring network involving both government and local communities is operational at three critical freshwater sites and at existing or proposed Special Economic Zones

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

None of the measures for this target were carried out to 2018, although there is an existing water quality monitoring network on the Ayeyawady River and there is a comprehensive water program in association with Norway that is underway. There has been a monitoring program recently completed on the Chindwin River, but that was a one-time program.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Online searches, information reports and published reports.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Work is proceeding.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place X

Monitoring is not needed

Target 8.4 By 2020, informal and artisanal miners have an enhanced understanding of pollution and toxicity of mercury and methods to reduce its use

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

No progress was made on this target. Two projects were proposed by NGOs but there is no evidence that they received funding.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Web-based search

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

No measures taken.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

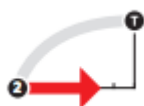
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place X

Monitoring is not needed

Target 8.5 By 2020, the sale and use of fuel additives, agrochemicals and veterinary drugs that are known to have significant negative impacts on biodiversity and ecosystem services are effectively controlled and, where appropriate, banned.

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

No progress on this target was made, although a new Pesticide Law (2016) was adopted.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Interviews, web-based searches.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

No information was found to suggest progress for any of the 3 measures proposed.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

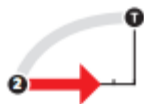
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place X

Monitoring is not needed

Target 9.1 By 2019, NIASP has been developed and approved, and is under active implementation with the support of civil society, local communities, the private sector and the international community

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

There are a known 97 invasive species in Myanmar according to the Global Invasive Species Database and 267 species listed on the GIASIP Gateway site. Among the 5 measures in the NBSAP, none has been fully accomplished yet for invasive species. The only substantive action has been the establishment of a plant quarantine facility at the Yangon Airport (by Agriculture) and the identification of a few aquatic invasive species. There is, however, an invasive species action plan in preparation.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Web based searches, information from government, published data.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Global Invasive Species Database (Myanmar):

[http://issg.org/database/species/search.asp?st=sss&sn=&rn=Myanmar%20\(Burma\)&ri=19414&hci=-1&ei=-1&fr=1&sts=&lang=EN](http://issg.org/database/species/search.asp?st=sss&sn=&rn=Myanmar%20(Burma)&ri=19414&hci=-1&ei=-1&fr=1&sts=&lang=EN)

<http://giasipartnership.myspecies.info/en/search/site/myanmar>

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Relevant government departments all provided the same answers of little work so far.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place X

Monitoring is not needed

Target 10.1 By 2020, 15 per cent of Myanmar's coral reefs conserved within MPAs, including LMMA's and other area-based conservation measures

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Of the 187,000 ha of reef, about 51,000 are protected in Lampi NP and Thamihla Wildlife Sanctuary (i.e., already was >20%). Therefore this target presumably means adding an additional 15% of reef areas. Myanmar has a long coast and a large offshore area, the ocean in the Andaman Sea and Bay of Bengal are highly impacted by human actions (see attached from UN Biodiversity Lab at Target 6.2) and so protected areas are needed as a key means to conserve biodiversity. However, no new marine parks were created after 2014. Three LMMAs, however, were established to improve management of exclusive management zones along some reefs in the Myeik Archipelago cover another 10,000 ha, adding another 5% reef area into some form of protection. These LMMAs are the first for Myanmar and are part of the management program to protect coral reefs from poor and excessive fishing practices. Reef coverage is currently about 33% of Myanmar's reefs, although the target of +15% under the NBSAP has not yet been met.

Has your country used indicators to assess progress towards this national target?

Yes No

Describe indicators used

Area of coral reef protected and as a %reef area, numbers of LMMAs, area in MPAs.

Please describe any other tools or means used for assessing progress

Web based searches, published papers and reports, and interviews.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Robust quantitative indicators.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Area of coral reef protected and number and area of MPAs and LMMAs.

Target 10.2 By 2018, destructive fishing practices in coral reef areas banned and effectively enforced

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The BOBLME project, in 2014 concluded that coral reef health in the Myeik Archipelago was significantly impacted due to a combination of coral bleaching events, dynamite fishing, and excessive sustained fishing pressure. Of these, the impacts of dynamite fishing are the most serious. These, along with other forms of illegal, unreported and unregulated fishing are the major threats to the Myeik Archipelago's reefs. Pervasive use of explosives, poisons, and drift nets and targeting of high-value species like sharks and groupers has devastated the fish populations and destroyed the corals that support marine productivity. The result is once vibrant coral communities have been replaced by algae and sea urchins with a very low diversity and low biomass populations of low value fish. However, few measures have been taken towards achieving this target for reef protection so far under this NBSAP period, except for the 3 LMMAs and planning for other CFIUGs (see Targets 6.1 and 10.1).

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

Number and area of LMMAs, MPAs and enforcement actions taken.

Please describe any other tools or means used for assessing progress

Reports and online information.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

No measures (actions) were reported aside from the establishment of 3 LMMAs.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue) X

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Area and number of LMMAs formally established, area of MPA, enforcement effort to ban illegal fishing.

Documents and links:

- IUCN. 2014. Coral reef survey. <https://www.iucn.org/content/coral-survey-confirms-marine-habitat-southern-myeik-archipelago-impacted-heavy-fishing>
- Reports from the BOBLME Project. <http://boblme.reefbase.org/countries.aspx?country=MMR>

Target 11.1 By 2020, 8% of Myanmar's land area is conserved within Protected Areas (PAs), including Indigenous Community Conservation Areas (ICCAs).

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Myanmar currently has 5.75% of its landbase in protected areas (PAs) including 42 National Parks. (If all other areas were included, such as Ramsar sites, wildlife sanctuaries, UNESCO sites, etc., then the area under some form of protection is closer to 8.7%). Including all 19 planned national parks (i.e., including those not yet gazetted), the Park PA area alone would be just under 8%. The land negotiations at Taninthayi (ongoing since 2002) and Hkakaborazi NP SE are progressing but slowly and it is uncertain if they will be concluded by 2020, meaning that it is unlikely that the 8% PA target will be met. One important consideration for protected areas is representativeness of the various ecoregions. Data from the IFC (2017) and the UN Biodiversity mapping data (attached) indicated that there is very low representation of certain ecoregions, especially for coastal forests, the Northern Indochina Subtropical ecoregion, and forests of the Ayeyawady ecoregions (see maps at 11.1.1). There is progress on ICCAs but none is officially declared yet.

Has your country used indicators to assess progress towards this national target?

Yes X No (area in PA)

Describe indicators used

Area in formal PA, area of all types of PA, and proportion of ecoregion types within PA

Please describe any other tools or means used for assessing progress

UN Biodiversity mapping, online reports and published papers.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

The indicator shows the target is unlikely to be met and interviews with staff suggest that negotiations will not be complete by 2020.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate X

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

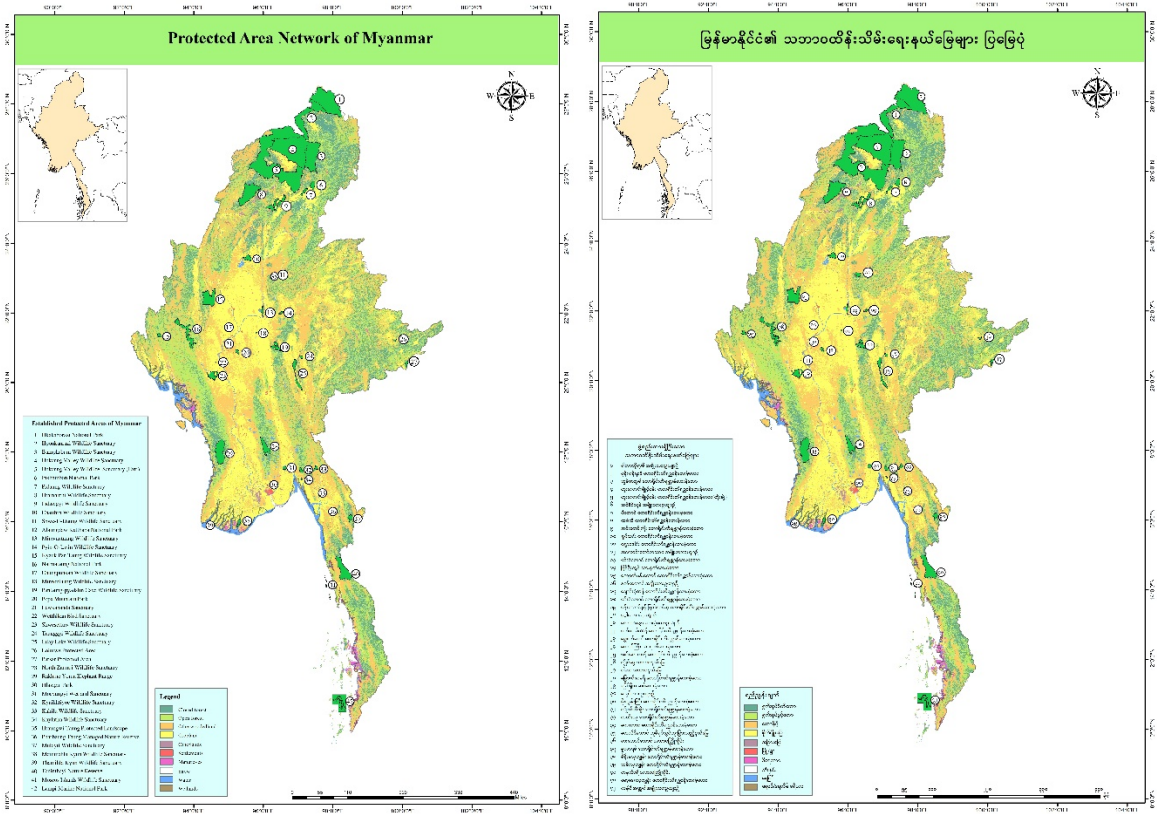
No monitoring system in place

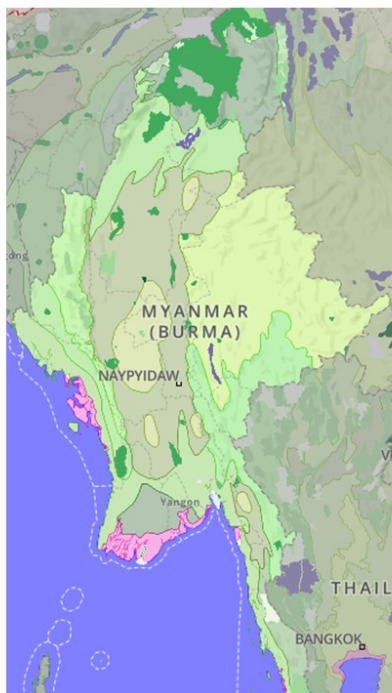
Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Area within PA.

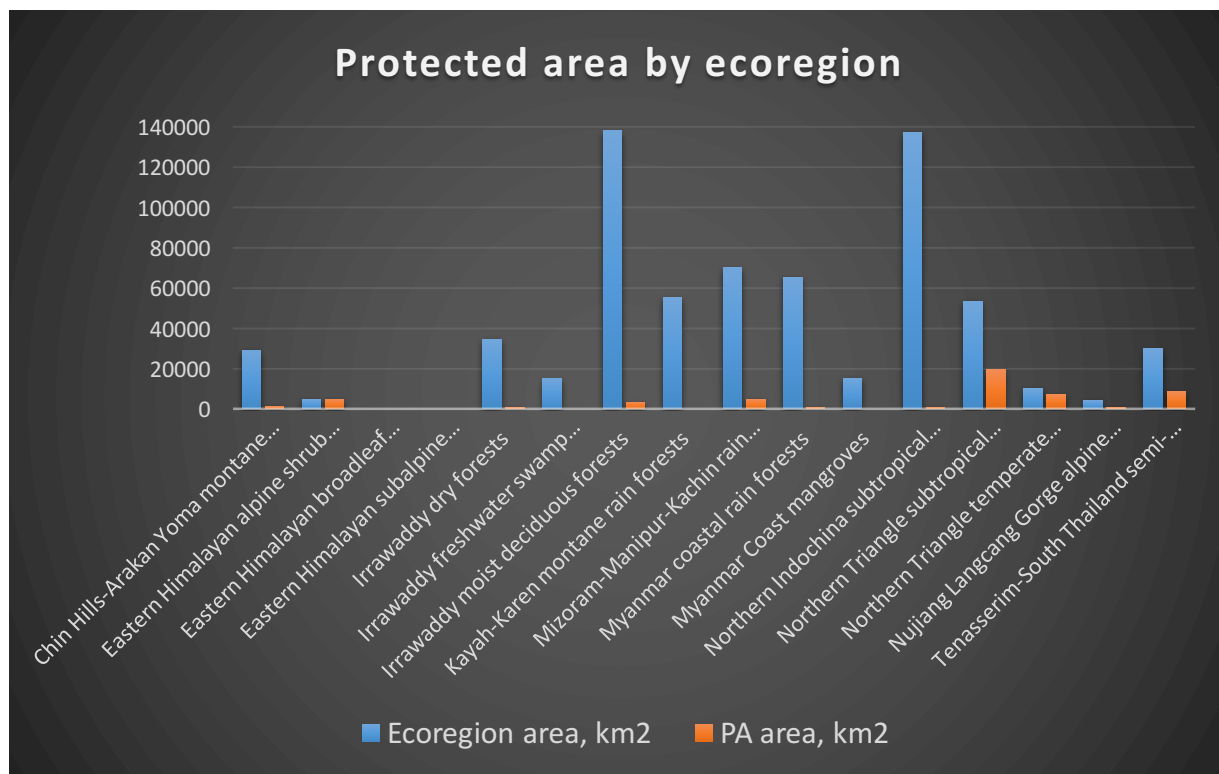
Official 2018 Myanmar protected areas maps:





Protected areas overlain on ecoregions (Ecoregions of the world, Olsen et al. 2001)
From: UN Biodiversity Lab

Protected area and ecoregion area compared (from UN Biodiversity Lab)



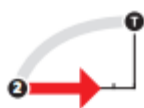
Areas of WWF ecoregions and area of KBA and PAs within the ecoregions (From: International Finance Corporation. 2017. Strategic Environmental Assessment of the Hydropower Sector in Myanmar: Baseline assessment Report, Biodiversity.)

Ecoregion	Ecoregion Area (km ²)	% Ecoregion of country	KBA area in Ecoregion (km ²)	% ecoregion in KBA	PA area in Ecoregion (km ²)	% Ecoregion in PAs
Chin Hills-Arakan Yoma montane forests	34,987	5.3	9,723	27.8	163	0.5
Eastern Himalayan alpine shrub and meadows	5,264	0.8	5,264	100.0	4,794	91.1
Ayeyawady dry forests	34,987	5.3	9,723	27.8	163	0.5
Ayeyawady freshwater swamp forest	15,085	2.3	12,324	81.7	6	0.0
Ayeyawady moist deciduous forests	137,909	20.7	27,321	19.8	2,488	1.8
Kayah-Karen montane rainforests	54,959	8.3	35,810	65.2	348	0.6
Mizoram-Manipur-Kachin rainforests	70,308	10.6	36,662	52.1	4,798	6.8
Mizoram-Manipur-Kachin rainforests	70,308	10.6	36,662	52.1	4,798	6.8
Myanmar coastal rainforests	65,368	9.8	24,085	36.8	225	0.3
Myanmar coast mangroves*	15,827	2.4	12,684	80.1	118	0.7
Northern Indochina subtropical forests	136,723	20.6	22,331	16.3	1,242	0.9
Northern triangle subtropical forests	53,709	8.1	43,418	80.8	18,540	34.5
Northern triangle temperate forests	10,677	1.6	9,206	86.2	4,361	40.8
Nujiang Langcang Gorge alpine conifer and mixed forests	4,483	0.7	4,451	99.3	21	0.5
Tenasserim-South Thailand semi-evergreen rainforests	29,973	4.5	22,734	75.8	1,617	5.4
TOTAL	664,854	100	272,531	41.0	39,812.92	6.0

* figure differs from the 5029.11 km² reported by Forest Department (For. Dept. 2017. Presentation to: Learning Deltas Asia Initiative) and in the National Strategy and Action Plan for Mangroves (2016) of 4673.3 km².

Target 11.2 IUCN governance categories and management categories are recognized in policy and practice

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Of the 3 measures planned in the NBSAP for this target, work has only been done on 11.2.2, with respect to improving laws to recognize traditional governance types.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Number of NBSAP measures with work completed based on interviews, data provided by government and online information.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

There has been some progress for 11.2 but none for 2 of the 3 proposed measures.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

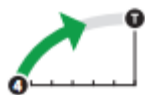
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed X

Target 11.3 By 2020, the management effectiveness of Myanmar's PA system has significantly improved, with 15 PAs implementing SMART objectives, at least five PAs implementing management plans, and local communities are involved in management activities in at least five PAs.

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

For some measures, the NBSAP target was exceeded (SMART application, and management planning), for other measures, such as METT surveys, it is doubtful that the set target can be met. Regardless, there has been considerable advancement in the management of PAs in Myanmar, especially with the application of management plans for a large number of PAs, development of an ecotourism policy and plan, and the amount of training provided to PA staff and local communities. The METT surveys indicated improvements in some parks, but very low scores in others.

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

Numbers of METT surveys, parks with SMART applied, number of training events.

Please describe any other tools or means used for assessing progress

Online reports, data provided by NGOs and government.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Progress on much of the proposed measures and partial advances in others. However, there is no real measure of effectiveness of training or enforcement.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue) X

No monitoring system in place

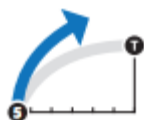
Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

The indicators are robust, but lack an overall means to assess improvements, especially for enforcement.

Target 11.4 By 2020, Myanmar's sites of premier conservation value are recognized by relevant international designations, through the designation of one natural WHS, three additional Ramsar sites, and one Biosphere Reserve

Category of progress towards the implementation of the selected target:



On track to exceed target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Among the 3 measures towards this National target, two have been exceeded: number of Ramsar sites added (4) and number of Biosphere Reserves (2). UNESCO Heritage sites have been nominated but have not yet been accepted.

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

Numbers of Ramsar sites, number of Biosphere Reserves, number of UNESCO sites

Please describe any other tools or means used for assessing progress

Data from Ramsar website, online reports, published information, data from NGOs.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information X

Based on partial indicator information and expert opinion

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Indicators are robust.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate X

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Numbers of sites in each category vs. target.

Target 11.5 By 2020, a Marine Spatial Plan with nested MPAs is prepared for the Myeik Archipelago.

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

There is an advice document on marine spatial planning and there has been training in spatial planning provided by Wildlife Conservation Society. Work by Dept. Fisheries with Flora and Fauna International is progressing through the LMMAs but there has been limited work towards any new MPAs. The government has made a commitment to have a marine spatial plan completed by 2121.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Online reports, data from NGOs, web-based searches.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

While there has been progress and a government commitment, the target will not be met by 2020.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

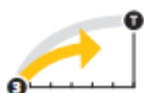
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed

Target 12.1 By 2020, the conservation status of priority, globally threatened species in Myanmar has improved

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

There is a very high regional-level density of threatened species and a high number of rare species in Myanmar (see attached maps from UN Biodiversity Lab), with a low level of protection in terms of overlap in protected areas (see attached maps from UN Biodiversity Lab). The status of some turtle species has been improved, but there have been continued declines in most large mammals, and no species has been down-listed by IUCN. Myanmar has taken large measures to understand better many of the threatened and endangered species through many research programs and some monitoring. This work has not been well-translated into national or state level planning as yet, however, with the exception of in and near certain protected areas. Comprehensive georeferenced distribution maps for species have not been prepared, and global datasets contain no better data except for the available large-scale maps for 6 Myanmar endemic species on the Alliance for Zero Extinctions website. Considerable work has been done to evaluate species for the IUCN Red List, with taxon expert groups formed and training provided on assessments. As a result the IUCN Red List for Myanmar has grown annually (see Target 12.3).

Has your country used indicators to assess progress towards this national target?

Yes No

Describe indicators used

Number of research studies some with population data, IUCN Red List, ongoing monitoring work for some species.

Please describe any other tools or means used for assessing progress

Data from published reports and in scientific journals.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Many species are being studied but comprehensive population data and mapping are still lacking for most. There have been positive results for many species of turtles, but losses of many larger species, such as elephants, continue for several reasons including habitat loss (especially forests) and poaching. There has, however, been considerable work towards improving understanding of habitat and populations of many species.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g., only covering part of the area or issue) X

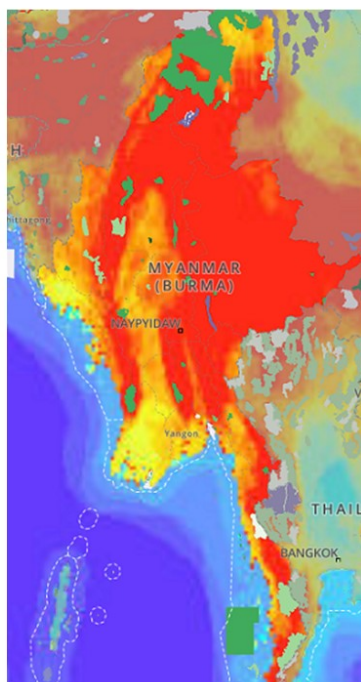
No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Monitoring includes: numbers of studies, population status of certain species (e.g., elephants, turtles), numbers of colonies and releases for turtles, and regular shorebird monitoring. Listing status on IUCN Red List.

Maps included:

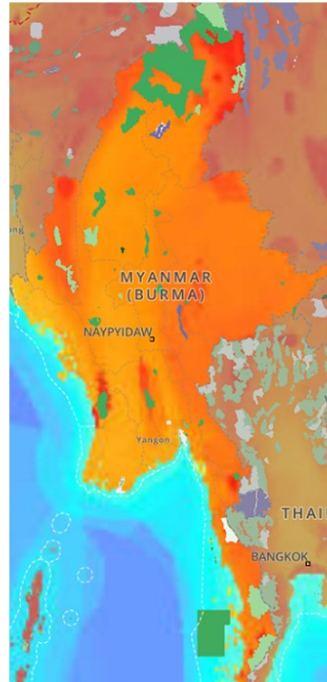


Protected areas (green) overlain on IUCN threatened species polygons, 2017.

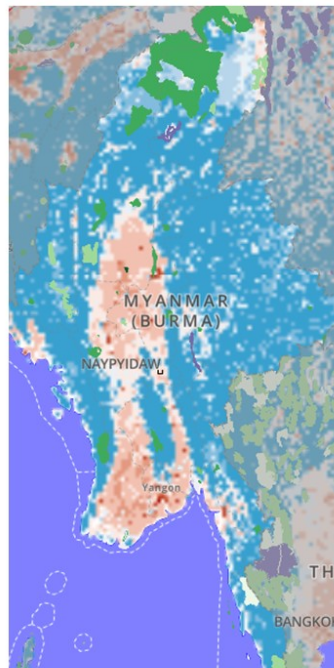
Red – high index

Grey - low index

From: UN Biodiversity Lab



Protected areas (green) overlaid on species rarity projection. Data based on IUCN polygons from 2017. Red is high number of rare species, to grey low number. From: UN Biodiversity Lab



Protected areas (green) and "biodiversity intactness" (i.e., species presence relative to original value):
Blue 100% intact
Red <60% intact
Data from: UN Biodiversity Lab

Target 12.2 By 2020, the illegal wildlife trade in Myanmar has been substantially reduced

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Myanmar has undertaken a considerably increased enforcement effort through targeted programmes and public education. However, the enforcement budget has not been increased and it is uncertain what effects the enhanced programs are having as yet. There are numerous publications (samples attached) high-lighting continuing aspects of illegal wildlife trade in and through Myanmar, especially in elephants, pangolins, orchids, and cats. Recent information for elephants indicates continued population decline, and a recent survey by Traffic at Kyaiktiyo indicated that illegal wildlife trade in that area had increased over results achieved a few years earlier (attached). Numbers of seizures and numbers of prosecutions can reflect increased enforcement, improved intelligence, or increased crime and so indicators for this target are problematic. The best information comes from very small samples provided by individual studies following illegal products in the same markets over time, for example those at Mong La on the Chinese border (see attached), where numbers of most threatened species traded have increased based on several published reports.

The EU is funding a joint project with CITES and the United Nations Office on Drugs and Crime (UNODC), the "Asia Wildlife Enforcement and Demand Management" project, which started in May 2016. The 4-year over much of South Asia, including in Myanmar, has a focus on national-level enforcement frameworks, capacity for investigation and prosecution, regional collaboration, enforcement in key protected areas, and raising the awareness of decision. In Myanmar, the focus has been on illegal killing of elephants.

Has your country used indicators to assess progress towards this national target?

Yes No

Describe indicators used

Numbers of seizures, numbers of charges laid, enforcement budget.

Please describe any other tools or means used for assessing progress

Independent research studies (see attached).

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Most of the programmes are newly instituted and ongoing and so assessing effectiveness is uncertain. Lack of budget increase or enforcement staff, coupled with declining numbers of several key species, would suggest that progress may yet be hampered by insufficient effort.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Monitoring includes number of charges laid and seizures made. In addition, individual species studies provide indications of population condition.

Documents and Links:

- UNODC-CITES Asia Wildlife Enforcement and Demand Management Project <https://www.unodc.org/brussels/en/unodc-cites-asia-wildlife-enforcement-and-demand-management-project.html>
- Nijman, et al. 2018. Golden Rock revisited: wildlife for sale at Kyaiktiyo, Myanmar. https://www.traffic.org/site/assets/files/3018/traffic_bulletin_292-myanmar.pdf
- Sampson et al. 2018. New elephant crisis in Asia-Early warning signs from Myanmar. PLoS ONE 13(3): e0194113. <https://doi.org/10.1371/journal.pone.0194113>
- Nijman et al. 2016. Pangolin trade in the Mong La wildlife market and the role of Myanmar in the smuggling of pangolins into China. Global Ecology and Conservation 5: 118–126.
- Min, S. 2018. A note on felid trade at local markets in Myanmar. Cat News 67. https://www.researchgate.net/publication/326610549_A_note_on_felid_trade_at_local_markets_in_Myanmar

Target 12.3 By 2020, a National Red List of selected taxa has been produced

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

There is a national red list and with the current taskforce and its species subgroups, who have been trained, there is now a strong capacity to evaluate and add species to the list. The NBSAP target for number of species assessments had already been exceeded by 2018.

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators

International IUCN Red List; AZE website; number of training sessions provided to staff; numbers of species assessed.

Please describe any other tools or means used for assessing progress

Online reports, data from IUCN and government

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information X

Based on partial indicator information and expert opinion

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

The target for species assessments was exceeded and the species subgroups are meeting to assess more species.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate X

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

The monitoring system is the compiled list of species evaluated and their status (i.e., number of species by taxon) and the number of species listed.

Target 12.4 By 2020, conservation status of migratory species has been Improved

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Myanmar has taken several key steps towards improving the conservation status of species, including listing 4 Ramsar sites, conducting research on some species, monitoring of others and developing 2 management plans.

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

Number of management plans, number of important bird areas protected (among KBAs), number of research programs on migratory species.

Please describe any other tools or means used for assessing progress

Online searches, data from NGOs and government.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

The target for Ramsar sites was exceeded, and there has been a large increase in research and monitoring of migratory species. There is no confidence in the estimate of progress, owing to the lack of long-term data on species.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue) X

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Number of management plans, number of important bird areas protected, number of research programs on migratory species. Individual studies, monitoring by NGOs and communities.

Target 13.1 By 2020, priorities for the conservation of plant genetic resources have been identified and are addressed by programmes to promote in situ conservation.

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

This is a difficult target to assess as most important plant species (i.e., crop species and orchids) have been identified for seed protection and storage and research is an ongoing activity. The new programme with FAO is expected to fill knowledge gaps for unknown or underused species and for in situ conservation. Material seed transfer agreements have been implemented. No data were reported for forest species.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Information from NGOs and government, online publications.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Interviews with Agriculture personnel, including from the National Seed Bank, indicated substantial ongoing work towards this target. Several recent publications support their assessment.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place X

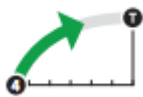
Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Numbers of studies, and number of new species included in Seed Bank.

Target 13.2 By 2020, ex situ conservation gaps have been addressed through collaborative research and collection programmes.

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

This is a target for which Myanmar has been highly active through seed collections and storage and collaborative research programs.

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

Number of accessions to seed bank, numbers of collaborations.

Please describe any other tools or means used for assessing progress

Scientific papers produced, web-based searches, and interviews with staff.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Good quality indicators and strong information from staff.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate X

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

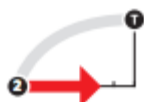
Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Numbers of collaborations, numbers of publications, data on seed accessions conserved nationally and internationally.

Target 13.3 By 2020, a crop wild relative action plan has been initiated

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

No progress reported.

Has your country used indicators to assess progress towards this national target?

Yes No

Please describe any other tools or means used for assessing progress

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed

Target 13.4 By 2020, incentives and programmes to conserve the genetic diversity of livestock are established to address current gaps

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

There is an ongoing program for Mithun breed improvement that includes the conservation of natural habitat but very few studies on livestock genetics have been published.

Has your country used indicators to assess progress towards this national target?

Yes x No

Please describe any other tools or means used for assessing progress

Number of papers in journals

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

A single study was reported and few papers have been published.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue) X

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Number of studies and number of journal publications.

Target 14.1 By 2020, a rapid national ecosystem assessment has been carried out, Identifying the status, values and trends of key ecosystems and the services they provide.

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Considerable work is ongoing, especially in river ecosystems and the national ecosystem classification program has only recently started. However, past work from WWF, information from global databases on forests, and current mapping initiatives have greatly improved knowledge about ecosystem types in Myanmar, especially at a local level. No country report on ecosystem services and trends has been assembled, except for water services provided by WWF in a report by Wolny et al. (see attached), and no report on trends and pressures on ecosystems has been done.

This is the only ABT that specifically mentions women and so the Myanmar gender report is attached here for the online version (see Appendix 1.)

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Reports from studies, websites for river initiatives, and publications.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

There has been considerable progress, especially on the Ayeyawady River basin, in understanding pollution loads, however, other than a study on rice yields relative to pollution, little information was available for most other ecosystem types (see Targets 5, 7, and 15 for other information on forests and fisheries).

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue) X

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

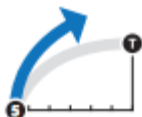
Numbers of projects, numbers of reports, forest and mangrove monitoring, marine fishery catch, rice production, available mapping at fine-scale. Water quality stations on the Ayeyawady and Chindwin Rivers since 2000.

Link:

- WWF, Wolny et al. https://naturalcapitalproject.stanford.edu/wp-content/uploads/2017/04/Myanmar_national_natural_capital_assessment_technical_report_2016_06_06.pdf
- Report on women and the NBSAP (see **Appendix 1**)

Target 15.1 By 2020, over 130,000 hectares of forest have been placed are under community forestry

Category of progress towards the implementation of the selected target:



On track to exceed target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The target area has been exceeded in 2018. Several NGOs (RECOFTC, Flora and Fauna International, Biodiversity and Nature Conservation Association, WWF), government, and FAO have all contributed to the effort to organize and train community forest user groups. Overall this is providing a very successful way to promote sustainable forest management, which includes the conservation of habitat for biodiversity.

Has your country used indicators to assess progress towards this national target?

Yes No

Describe indicators used

Data on numbers of CFs, area managed by CF, and number of CF people trained are used as the indicators.

Please describe any other tools or means used for assessing progress

Online reports, government data, and data from NGOs and IGOs.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

The indicators for this target are robust. (See also Targets 5 and 7)

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Numbers of CFs from various sources including government, NGOs and IGOs, who also record area and numbers of people trained.

Target 15.2 By 2018, guidelines for a national forest restoration programme that incorporates best international practice formally adopted by government and pilot project initiated

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The target calls for guidelines, although Tat here is a national reforestation program with area objectives, but no national guidelines for reforestation are available. Guidelines and workshops for mangroves have been completed and Forest Department staff provide re-planting technical assistance to CFs. NGOs, including Biodiversity and Nature Conservation Association, Flora and Fauna International and WWF have worked with the Forest Department and local communities to develop nurseries and replant mangroves.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Online reports form NGOs and government data

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

No national guidelines have been produced as yet but there are pilot projects in mangroves.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed X

Target 15.3 By 2020, REDD+ Readiness Road Map is actively being implemented

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The roadmap is complete but many of the major components have not yet been implemented and their implementation would not be possible by 2020.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Interviews with REDD+ project personnel.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

The roadmap is partially implemented.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue) X

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Number of activities in the roadmap that have been fully implemented.

Target 16.1 By 2020, the Nagoya Protocol is actively implemented in Myanmar

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Myanmar has expended considerable effort to lay the groundwork for the implementation of the Nagoya Protocol (NP), although the NP will likely not be implemented until after 2020. The NBSAP provides 7 actions, or measures, that Myanmar is following in preparation for implementing the protocol. There has been progress on all of these but at a slower rate than anticipated. Nevertheless, progress has been made through negotiations, training and implementing SMTAs for the movement of seeds.

Myanmar hasn't formulated yet any domestic measures and procedure to access to genetic resources for their utilization, conditions and provisions of access and benefit sharing negotiated

between the user and provider and involving other stakeholders. The Ministry of Natural Resources and Environmental Conservation has initiated ABS related projects with funding from UNEP-GEF and UNEP-China Trust Fund during 2013 and 2016, respectively, in order to build capacities in implementing CBD provisions on ABS and in developing and implementation of National ABS Framework in Myanmar. That National ABS framework is also draft. Now we will be more strengthen to develop this framework.

Myanmar has initiated ABS related projects with funding from UNEP-GEF and UNEP-China Trust Fund during 2013 and 2016, respectively, in order to build capacities in implementing CBD provisions on ABS and in developing and implementation of National ABS Framework. The Global ABS Project "Strengthening human resources, legal frameworks, and institutional capacities to implement the Nagoya Protocol" specifically aims at assisting countries in the development and strengthening of their national ABS frameworks, human resources, and administrative capacities to implement the Nagoya Protocol. The implementation of the project was starting from 2017 to 2019 about 3 year's duration.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Interviews with staff,

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

There has been considerable activities for implementation, including translating the NP into Myanmar language. It appears that Myanmar will miss this target but only by 1 or 2 years.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place X

Monitoring is not needed

Target 17.1 By 2016, the NBSAP is adopted by Cabinet as the nation's over-arching policy framework for the conservation and sustainable use of biodiversity

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

How informed parliamentarians and specifically the cabinet members are, is uncertain.. Nevertheless, the NBSAP is referred to as a part of the National Sustainable Development Plan (2018). Regardless the cabinet is responsible for funding departments and departmental budgets for environmental issues has generally increased, suggested parliament supports the implementation of the NBSAP. The NBSAP is an integral part of the workplan of several government departments as is clear from the ongoing efforts reported in this 6th NR.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Briefing notes to parliament, revised land Policy, new Protected areas and Biodiversity Law.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Interviews with staff and data from departments.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

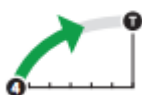
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed X

Target 17.2 By 2016, the institutional mechanisms to ensure effective implementation and monitoring of the NBSAP are in place and functioning effectively

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

A national NBSAP committee (NBCC) was formed with members from relevant departments and is functioning to ensure implementation of the NBSAP.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Information from government staff.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Considerable progress has been made on most aspects of the revised NBSAP, including many measures that were not originally priorities.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed X

Target 17.3 By 2020, BSAPs are under preparation in at least three states/regions

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

There has been no progress towards this target.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Data from Forest Department.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

No progress.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed

Target 17.4 There is an improved national awareness of the NBSAP as a result of the application of a communications plan

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

The communications group has used a variety of flyers and documents to improve awareness of the NBSAP. In addition, information was made available to parliamentarians with respect to passing the new biodiversity and protected areas law and the new forest law.

Has your country used indicators to assess progress towards this national target?

Yes No

Please describe any other tools or means used for assessing progress

Briefs to Ministries and parliament; communications materials.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Available documents and public materials.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed

Target 18.1 By 2020, customary land use tenure systems has been recognized in Myanmar's legal framework and a mechanism for recognizing communal tenure is operational

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

In both the Land Policy and the as yet incomplete land law, as well as in the Biodiversity and Protected Areas Law, there are sections that support the legal recognition of customary land use tenure. The new Forest Law enables community forest management. Of the four Actions (measures) in the NBSAP, only the first has been completed in 2018 but the legal framework is in place.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Laws, policies, guidelines.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information
 Based on partial indicator information and expert opinion
 Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

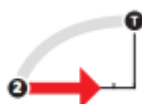
Laws and policies completed and in process.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate
 Monitoring related to this target is partial (e.g. only covering part of the area or issue)
 No monitoring system in place
 Monitoring is not needed X

Target 18.2 By 2020, FPIC principles are institutionalized in government, private sector, and donor programmes

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Little information is available on the FPIC agenda, but of the four Actions, some have been planned but none is yet complete. Two proposed national parks are stalled while FPIC is in process and it is a cornerstone of the REDD+ agenda. The Nagoya Protocol will not be in place until after 2020.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Web-based materials, REDD+ guidance.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Government is well aware of FPIC and has applied it in the attempted creation of national parks, however no clear policy was reported.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

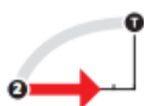
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place X

Monitoring is not needed

Target 18.3 By 2020, traditional knowledge documented, recognized, promoted, and protected through incorporation into education and conservation outreach education.

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

One consultation was held for a protected area.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Interviews with staff.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

- Based on comprehensive indicator information
- Based on partial indicator information and expert opinion
- Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

There has been some work started.

Adequacy of monitoring information to support assessment

- Monitoring in relation to this target is adequate
 - Monitoring related to this target is partial (e.g. only covering part of the area or issue)
 - No monitoring system in place
 - Monitoring is not needed
-

Target 18.4 By 2020, traditional knowledge, practices, and beliefs are documented, recognized, protected, and promoted in formal and informal education

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

No information

Has your country used indicators to assess progress towards this national target?

Yes No

Please describe any other tools or means used for assessing progress

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

- Based on comprehensive indicator information
- Based on partial indicator information and expert opinion
- Based on expert opinion

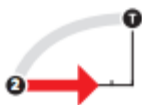
Please provide an explanation for the level of confidence indicated above.

Adequacy of monitoring information to support assessment

- Monitoring in relation to this target is adequate
 - Monitoring related to this target is partial (e.g. only covering part of the area or issue)
 - No monitoring system in place
 - Monitoring is not needed
-

Target 19.1 By 2016, a CHM web portal is established

Category of progress towards the implementation of the selected target:



No significant change

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

No information

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

No information.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed

Target 19.2 By 2020, a national forest cover change 2015-2020 database developed using international standard methods, and made publicly available online

Category of progress towards the implementation of the selected target:



Progress towards target but at an insufficient rate

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Forest Department may have a cooperative project with FAO to produce a digital assessment and inventory of Myanmar forests but the work has yet to begin. Myanmar will report on forests for the FRA 2020.

Has your country used indicators to assess progress towards this national target?

Yes No

Describe indicators used

FRA data

Please describe any other tools or means used for assessing progress

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

GIS section of FD working with FAO.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place

Data can be downloaded from Global Forest Change website and from FAO FRA.

Target 19.3 By 2020, leading Myanmar universities have established post-graduate courses in conservation biology

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Several Myanmar universities now have courses in conservation science, including marine ecology. Several training gaps were identified and filled by working directly with three different universities (e.g., see 10.1.2). MONREC has established a program of improving the qualifications of staff by funding employees at the master's and doctoral levels, and NGOs fund students to foreign schools to study. For example, Australia has a program in place to fund post-secondary student education as well as assisting collaborations between Australian and Myanmar universities.

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

Count of the number of universities meeting the criterion and numbers of students graduating.

Please describe any other tools or means used for assessing progress

Information from government departments, online searches.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion X

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Now 5 major universities offer conservation-related degrees. Data from one university showed a large number of graduates in 3 years.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue) X

No monitoring system in place

Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Count of the number of universities meeting the criterion, counts of students enrolled and graduated.

Target 20.1 By 2020, the funding available for biodiversity from all sources is increased by 50%

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

Of the three proposed actions under this target, none has been completed and all are in progress. Nevertheless, funding through the NWCD office alone has increased by 65% since fiscal year 2014-15. No other departments reported their budgets for biodiversity work. The OECD data on ODA received into Myanmar for natural resources issues (forests, fisheries, biodiversity, environmental protection, etc.) indicated that funding has had a high variance over the past 6 years, but remained stable during the 3 years from 2014-2016 (data for 2017 were not available). The amounts of funds expended by NGOs has clearly risen during this assessment period, based on the increased presence of staff and projects. In addition, at least one new international NGO, The

Nature Conservancy, is now active in Myanmar. GEF funds expended in Myanmar has risen from \$US 26.3 million prior to 2015 to 34.3 million under GEF 6, an increase of 30%.

Has your country used indicators to assess progress towards this national target?

Yes X No

Describe indicators used

OECD ODA funding, government departmental budget data, and GEF funding reports.

Please describe any other tools or means used for assessing progress

None

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

<https://data.oecd.org/oda/net-oda.htm>

Level of confidence of the above assessment

Based on comprehensive indicator information X

Based on partial indicator information and expert opinion

Based on expert opinion

Please provide an explanation for the level of confidence indicated above.

Indicators are robust.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate X

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

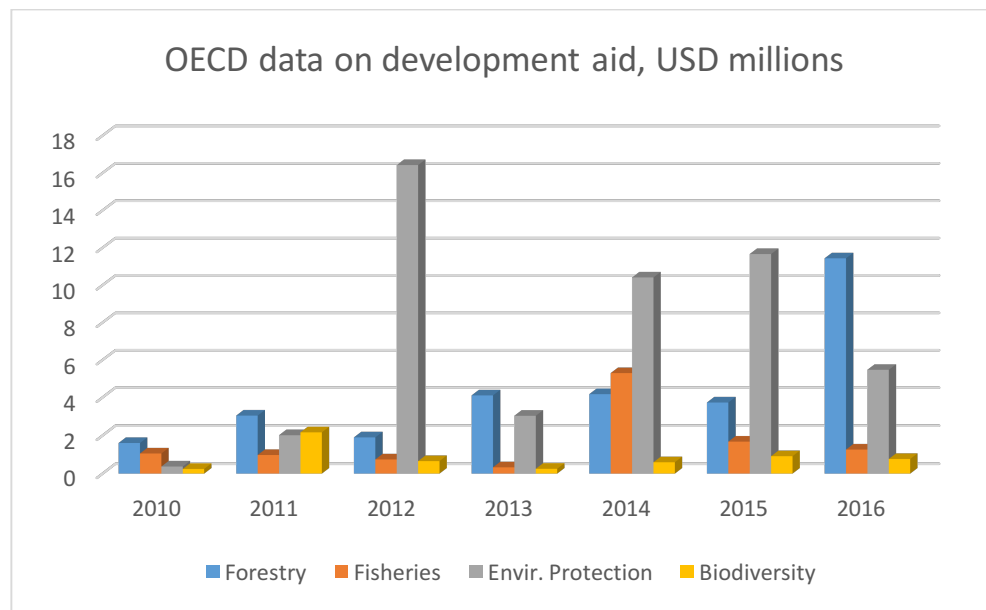
Monitoring is not needed

Please describe how the target is monitored and indicate whether there is a monitoring system in place

Government budget annual data, GEF project funds (5, 6, 7, etc.), and OECD ODA online data.

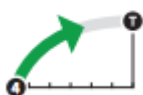
Documents and links

- OECD data: <https://data.oecd.org/oda/net-oda.htm>



Target 20.2 By 2018, donor and partner funding for biodiversity is better coordinated and implemented

Category of progress towards the implementation of the selected target:



On track to achieve target

Additional information (Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

GEF funding coordination is in place, and a new committee (Environmental Sector Coordination Group) has been established, chaired by the Minister of MONREC to better coordinate programs and projects in the environmental arena. This high-level group has met on an annual basis for 2 years.

Has your country used indicators to assess progress towards this national target?

Yes No X

Please describe any other tools or means used for assessing progress

Two measures were planned: a GEF coordination team, which was formed and a donor roundtable, which met once and was then replaced by the new active committee.

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

Level of confidence of the above assessment

Based on comprehensive indicator information

Based on partial indicator information and expert opinion

Based on expert opinion X

Please provide an explanation for the level of confidence indicated above.

Good coordination is now being developed as a result of the Committee's work.

Adequacy of monitoring information to support assessment

Monitoring in relation to this target is adequate

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

No monitoring system in place

Monitoring is not needed X

Section IV.

Description of national contribution to the achievement of each global Aichi Biodiversity Target

1. Awareness of biodiversity values

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

Myanmar's NBSAP calls for a several-pronged approach to improving awareness of biodiversity in the country, including through educating politicians, increasing awareness through the childhood education system, the university education system, and by educating the media and the public. The country has moved forward considerably in most of these areas, recently passed a new biodiversity and protected areas law and a new forest law, and is in the process of re-writing its land law. These three laws combined will improve both the conservation of biodiversity, enable community user groups, but also require people to become more aware of issues related directly biodiversity. Considerable effort has been made to educate politicians in several of the states, as well as at the national level, which enabled the enactment of the "Biodiversity and Protected Areas Law", in 2018. This law is designed to improve awareness of biodiversity and ecosystem services. Biodiversity is also promoted with information displays and brochures at all national parks and people near protected areas, including the Ramsar sites, are being educated on the importance of maintaining biodiversity for both services and tourism. A major effort has been made to promote sustainable ecotourism, with the development of standards for the industry, national policies and the education of people in the industry. Myanmar has developed an ecotourism policy, published in 2015, recognizing the value of biodiversity and protected areas as a means to develop and promote a non-consumptive industry based on its unique natural history values. The policy has 14 objectives designed to improve management of protected areas, involve local communities, increase tourism, and increase economic benefit from protected areas, recognizing the importance of protected areas for conserving biodiversity. The Myanmar Ecotourism Policy and Management Strategy on strengthening protected area management is aligned with the National Forest Master Plan (2001-2030), the National Biodiversity Strategy and Action Plan 2015-2020, and the Biodiversity Conservation Investment Vision (Wildlife Conservation Society 2013). There have also been efforts to form community user groups that have been provided training in conserving biodiversity, in both forestry and fisheries management. Some of these groups are undergoing certification that, in part, requires an understanding of ecosystem services and how to use biodiversity in a sustainable manner. Myanmar has made an increased effort to enable public understanding of the important role that poaching and illegal timber harvesting play in degrading biodiversity and hence ecosystem services. These efforts involve formal community groups, as well as targeted public training sessions in areas most affected by illegal activities, including working directly with neighbouring countries on joint enforcement and awareness programs (India, China, Thailand). Finally, a number of key biodiversity references and documents have been translated into Myanmar language and made available to the public, including both the tiger and elephant action plans. Most of these efforts are new and so there are no good indicators of success. A check of Google searches revealed no increase for biodiversity or associated terms, but this may be a search language issue, hence this may not be a good indicator. The Biodiversity Barometer had no relevant information. One area that apparently needs work is incorporation of biodiversity or conservation issues into primary education; a survey of Yangon schools found no conservation issues in any of the school curricula.

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional):

Myanmar participates in all ASEAN groups (<https://environment.asean.org/awgncb/>), including the ASEAN Centre for Biodiversity (<https://aseanbiodiversity.org/>), where biodiversity and other environmental issues are discussed and regional projects are initiated. Myanmar has been

involved in several transboundary projects, whose aim has been the protection of biodiversity, including the BOBLME project with several adjacent coastal nations, the International Tropical Timber Organisation (ITTO) Taninthayi forest transboundary project with Thailand, and on several biodiversity research projects partnered with China, Germany, and Republic of Korea.

2. Integration of biodiversity values

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

Efforts have been made to raise the awareness of legislators at the state and national level, as described under Target 1. Myanmar is moving towards natural capital accounting and although this will be a lengthy process, several reports have assessed ecosystem service values, for example from forests, as a part of the effort to begin to better value natural capital. The forests study indicated that there are considerable economic benefits to be gained from investing in forest conservation and sustainable use, rather than continuing to degrade and deforest, as in the past. In an effort to highlight the importance of biodiversity, advances are being made in the area of environmental impact assessment, with staff training and new guidelines for public participation in these processes. More than 36 training sessions have been delivered to national and regional government staff, as well as to businesses in Yangon and Mandalay on environmental impact assessment. In sectoral planning, the hydro-power industry and tourist industry have been the foci so far with respect to efforts for biodiversity conservation, but work with the mining and oil and gas sectors is ongoing, and there is a 'Marine Spatial Planning' document that represents a start on better coastal and marine fisheries planning. An SEA was completed for the hydro-power industry, including a section on biodiversity issues, and another is planned for the mining industry. As noted above for Target 1, people living close to protected areas are being trained on the importance of conserving biodiversity values and in some cases given assistance with alternative livelihoods. Several NGOs work directly with industry in an effort to mainstream environmental issues, such as the 'Myanmar Centre for Responsible Business' (MCRB), which has prepared a series of biodiversity briefing papers for Myanmar's key industries. National biodiversity databases are being developed including corridors, forests, protected areas, etc., to improve the planning capacity for developments. Mapping of protected areas, KBAs, and corridors have been completed to assist with large-scale planning of development. (None of the suggested (in the UNDP Technical Manual) global indicators were helpful for Myanmar for Target 2.)

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional):

3. Incentives

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

The efforts in Myanmar towards ABT 3 primarily involve working towards clarifying the national legal framework to encourage conservation through tenure rights, including community tenure and management rights, especially for fisheries and forests. As a result, the Forestry Law has been rewritten, in part to enable community management of forests and to recognize local rights. The Land Law is also being redesigned to enable local land tenure. Clarification of tenure will enhance the probability of success of forest restoration programs, including those to be developed under REDD+.

While Myanmar subsidizes the energy, livestock, rubber, and agriculture sectors, little work has been done on the environmental issues associated with these subsidies. A report by Kenney-Lazar and Wong (2016, CIFOR Info Brief No. 154), however, indicated considerable impacts on

biodiversity from subsidized rubber plantations. In forestry, a small area of land is certified by international organisations and a few community forests have also been certified, although Myanmar is working towards increasing the area of forest managed that is certified. No incentives other than enforcement are used to implement the CITES Convention or Ramsar Convention in Myanmar.

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

4. Use of natural resources

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

The over-arching framework for sustainable development is the Myanmar Sustainable Development Plan, 2018-2030 (link attached), which recognizes the important role that biodiversity plays in providing ecosystem services. In an effort to improve business practices in the resources sector, Myanmar has begun developing sectoral SEAs and improving the EIA process. An SEA for the hydropower sector was completed (see Target 2) and an SEA for the mining sector is planned and a draft guidelines were produced in 2018. A key aspect to the hydro SEA report, and a key measure determining possible dam locations, is the potential effects of hydro developments on aquatic and terrestrial biodiversity. EIA training has been provided to a large number of government employees. Another business area with considerable improvement, from an environmental perspective, is the ecotourism sector, as a result of new policies and guidelines, and training provided to protected areas staff. Special consideration is given to tourism in and near Myanmar's protected areas because of the critical role that these special areas have in promoting local, national and global sustainability. Myanmar is very interested in expanding its ecotourism sector, but not at the expense of damaging protected areas or reducing biodiversity, and as a result significant effort is being expended to ensure sustainability and protection.

Overall, the Global Footprint indicator for Myanmar suggests that resources use is still on average sustainable (up to 2016 and figure below). Relative to its neighbours, with the exception of near cities, human impact overall in Myanmar is low but demand on resources continues to grow with development and population growth. Much of the low impact indicated, however, is as a result of difficult terrain in mountains. The forestry and fisheries sectors are discussed elsewhere (Targets 5, 6, and 15), but for these two sectors, resource use remains unsustainable, based on the increasing rate of marine fish harvesting (see Target 6.2), necessary reduced teak quotas, and the high deforestation rate, including in mangroves (see Target 5.1), with the loss of almost a million ha of forest (using 30% canopy) from 2015-2017 (WRI Global Forest Mapping). A report on forests by Kissinger (2017) indicated that the main cause of forest loss is agriculture clearance and that the current annual deforestation rate is close to 2%. In mangrove forests, the global data show declines of about 2200 ha/year to 2015 and 1300 ha/yr after that, and recent government projections show further losses of >70% of mangrove cover in Ayeyawady Delta region alone by 2030. Progress is being made, however, towards maintaining and restoring habitats, especially in the forest sector where increasing community forestry has become a pillar of the country's approach to improving forest management. There has been an increase in forest areas managed by communities of >130,000 ha (see Target 15) and forest harvesting moratoria in some areas, as well as a very reduced quota for teak harvesting. The national mangrove action plan, for example, calls for 28,000 ha of mangrove to be planted in the Ayeyawady area by 2027, along with another 1690 ha elsewhere. In part, this effort is to recover lost forests but also to develop shoreline protection from cyclones. There is also progress towards a national reforestation programme in other forest types of more than a million hectares by 2030 under the Myanmar Reforestation and Restoration Programme, including through REDD+, and work continues on developing a VPA under the EU Forest Law Enforcement Governance and Trade (EU-FLEGT) process. PEFC has a new forest certification project in Myanmar, together with the Myanmar Certification Committee,

focussing on demonstration areas, developing a knowledge platform, and developing supply chain verification.

Wildlife conservation is another continuing problematic resource use area, owing primarily to illegal harvesting, especially of elephants, pangolins, large cats, and other large mammal species (see Target 12 for data). Myanmar has no “bushmeat management plan”, but a management plan for elephants was adopted in 2018, in response to information that populations are continuing to decline significantly. Wildlife harvest controls are at the national level but the small enforcement budget reduces overall success of these programs. A particular conservation effort aimed at turtle species has had a large and successful impact through captive-rearing and release programmes, which, along with public education, have increased several species’ populations (see Target 15.1).

In 2015, the FAO recognized Myanmar as one of 72 countries that has reduced its population of people suffering from hunger in half (a Millennium Development Goal). The agriculture industry in Myanmar accounts for a majority of the country’s income and is its largest source of employment, so sustainability is becoming an increasingly important aspect. There are many recent programs in Myanmar aimed at increasing the sustainability of agriculture, including farmer training, access to imported fertilizers, and enhancing possibilities for rural people to improve techniques. For example, IFAD began a strategic program in 2014 to improve the livelihoods of rural farmers through sustainable agriculture programs, FAO has a new program to support for sustainable agriculture and rural livelihoods in Northern Rakhine State, and multiple ODA agencies (Japan, Korea, EU, etc.) are contributing to improving the sustainability of agricultural practices. No data on total area with improved sustainability or total numbers of people trained were available, although the Ministry of Agriculture alone has trained >1300 people (53% of whom were women) over the past 3 years, and the intention to improve the sustainability of agriculture, while reducing rural poverty, is a national goal.

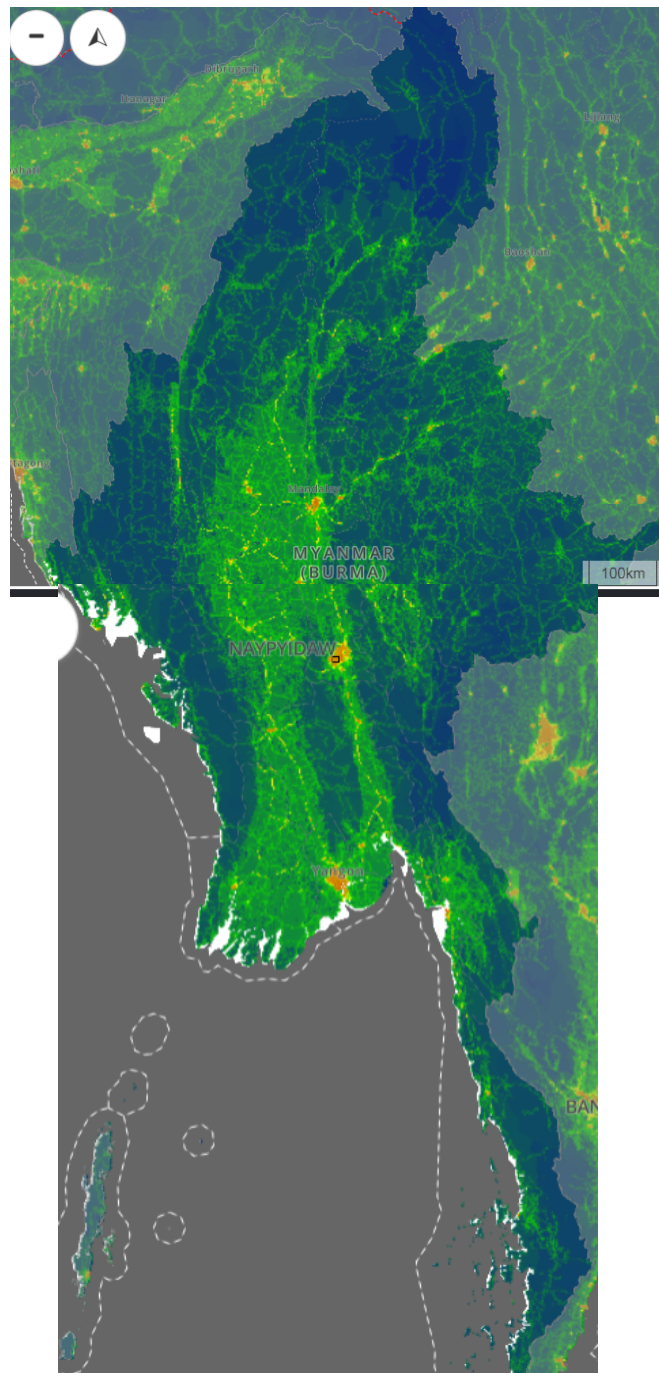
Agricultural genetic resources (see Target 13) have been of particular interest in Myanmar with a long-established seed bank and research program. The seed bank increases its accessions each year, with more than 600 new accessions since 2015. In addition, there are now more than 2400 Myanmar seeds stored internationally. Among the stored seeds are many species of wild orchids, which are an important ornamental species subject to regulation in Myanmar. While there is no in situ conservation programme in place, there are large wild rice populations in Myanmar (Indawgyi Lake in Kachin, Moeyungyi in Bago, many populations in Ayeyawady, Bago, Yangon, Mon, Kayin, Taninthayi and Yakhine states), there is consideration that some of them need to be conserved in situ. There is an ongoing active research programme, with collaborations between the Agriculture Research Section and national and international universities, as well as an active programme with FAO; the latter to assess under-used species has just been started. A recent publication on the Medicinal plants of Myanmar by DeFillips and Krupnick (2018), highlights the importance of plants used as traditional medicines.

Myanmar has an updated list of Key Biodiversity Areas (KBAs) (see figure below) and proposed national parks that are mapped and that both provide guidance to resource managers. KBAs are mostly areas of special importance to species and the IUCN ‘Red List Index’ (IBAT 2016) illustrates a continued decline for Myanmar vertebrate species (see figure attached). IBAT also compiled a list of important drivers of species population declines (see attached figure), and indicated that the major factors are: over-exploitation, land-use change, habitat loss from forestry, and pollution. The IUCN Red List for Myanmar keeps growing in number of species listed (see Target 12), suggesting that increasing development and population growth is having an impact at the species level but also, in part, because there has been a greatly increased emphasis on species since the implementation of the NBSAP in 2010 and the establishment of IUCN-trained specialist groups. For example, three new gecko species were recorded in Taninthayi in 2017.

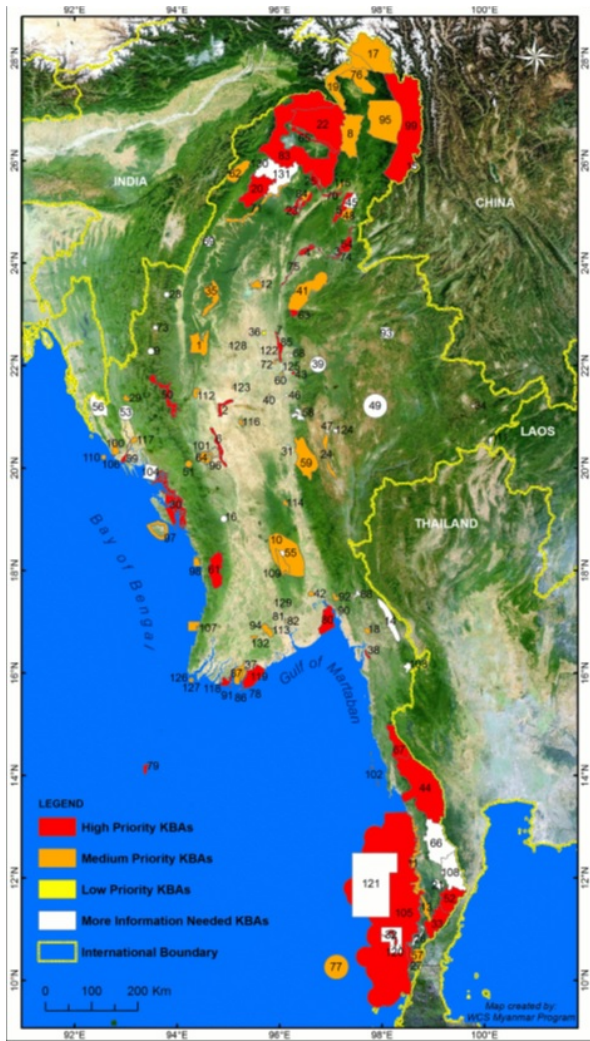
Links:

Myanmar Sustainable Development Plan <http://mya.gms-eoc.org/uploads/resources/3122/attachment/ENG%20-%20MSDP%20%282018-2030%29.pdf>

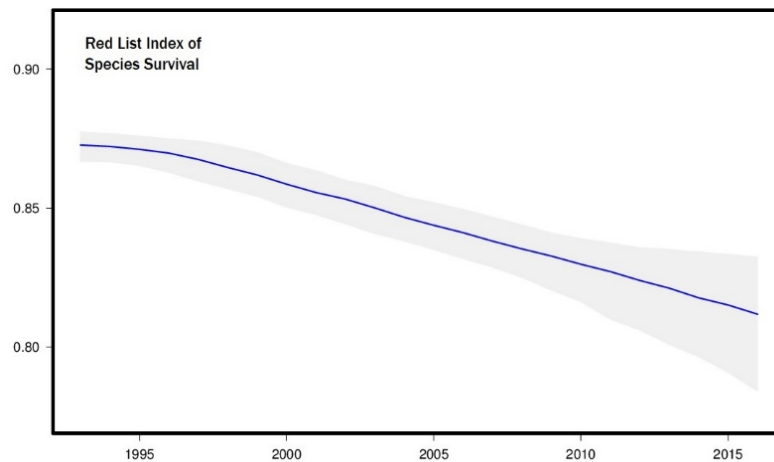
Human Footprint to 2013 (UN Biodiversity Lab)



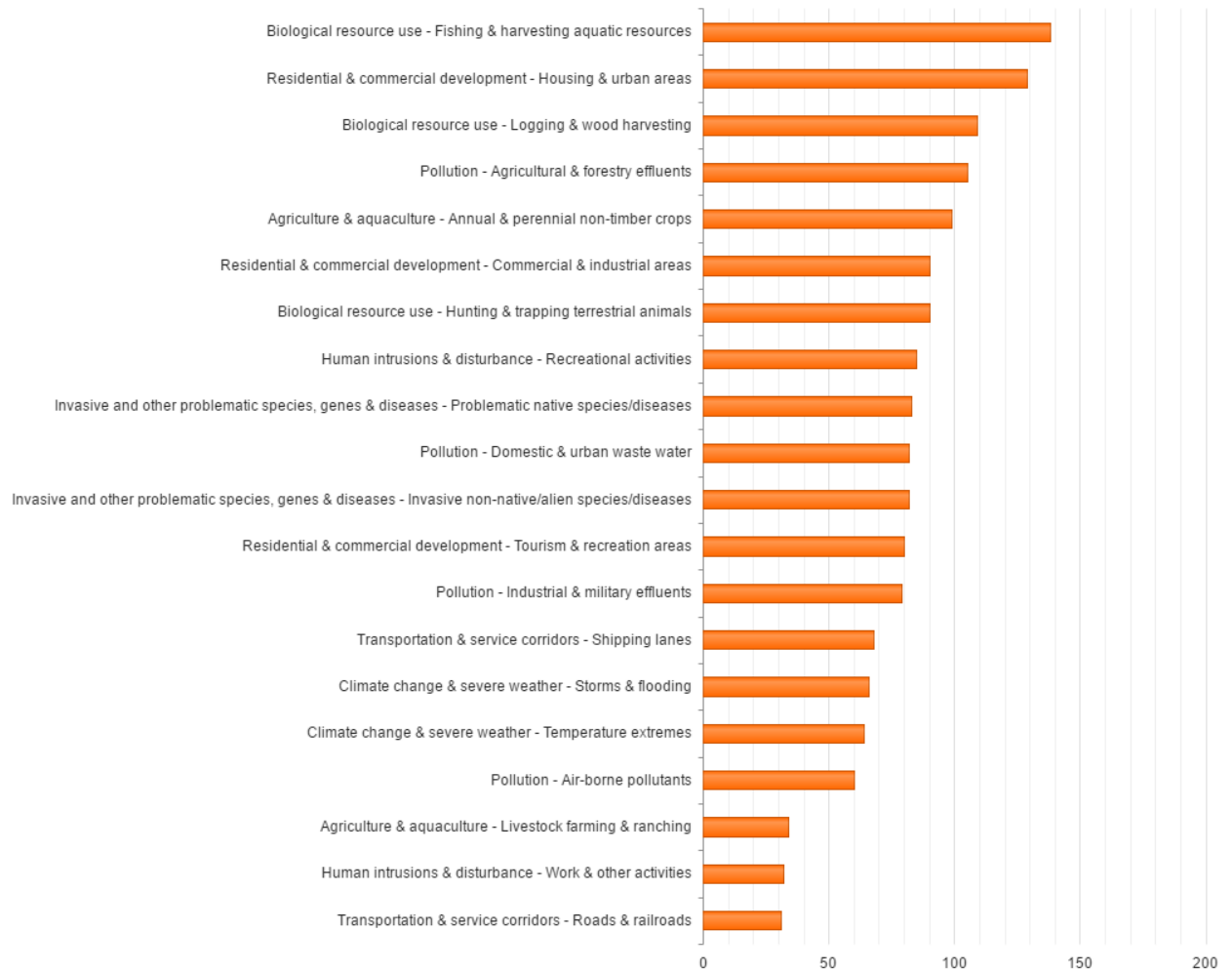
Key Biodiversity Areas in Myanmar (Wildlife Conservation Society, 2016)



Red List Index for Myanmar (IUCN, 2015).



IBAT (Integrated Biodiversity Assessment Tool)
List of factors responsible for species
Red-listing in Myanmar



Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional):

5. Loss of habitats

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

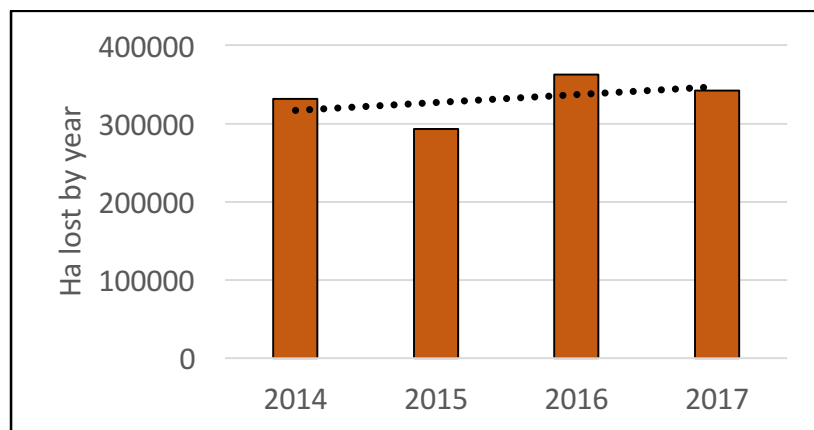
This target repeats again much of what was reported under Target 4. Myanmar has done well in inventory and protecting wetlands through the Ramsar process, with four new sites named over the past 3 years. However, in forests, Myanmar has been unable to meet this global target and, along with several other countries in Central and SE Asia, has a very high deforestation rate (1.4% in 2016 and almost 2% on average from 2005-2015) (FAO 2015, Kissinger 2017). Myanmar lost more than 300,000 ha/yr of forest between 2005 and 2018 (WRI Global Forest data, see figure) and intact forest landscapes were reduced by 31% from 2001-2013, with a loss of >112,000 ha/yr to 2017 (Potopov et al. 2017, Figure), and the current loss of 1300 ha/yr of mangroves (see figure). Loss of intact forests and deforestation also has the effect of reducing landscape connectivity. The largest driver of forest loss has been from agricultural clearing, including for rubber plantations, oil palm, rice, and jatropha, followed by sugarcane, and cassava (Kissinger 2017). Illegal logging has also resulted in huge forest losses (and consequently lost tax benefits). The Environmental Investigation Agency indicated that, from 2001-2013, 10.2 million m³ of Myanmar logs exported to global markets were not authorised, which would equate for a 47.7% illegal logging rate in the country relative to legally exported wood alone (Kissinger 2017), and the same agency reported 233,484 tonnes of illegal wood were seized between 2010 and 2016. A third main cause of forest change has been fuelwood harvesting. The amount of biomass for fuelwood harvested in Myanmar has steadily increased and is several times higher than the actual volume of legal logging. Fuelwood extraction for the period of 2000/01 to 2012/13, in fresh biomass was estimated to be 68-86 million m³ annually, of which between 48-60 million m³ was from natural forests, 17-21 million m³ from trees on farmland, and only 3.4-4.3 million m³ from fuelwood plantations (Kissinger 2017). Land cover change data at the national level for 2005 to 2015, developed by the Forest Department RS-GIS Department, showed that 136,500 ha (27%) of mangrove forests changed to 'Other Land Use' (mainly cropland), 90% of which occurred in the Ayeyawady and Rakhine regions and further declines were predicted for these two regions.

Among the ecoregions, those with the greatest loss through deforestation over the period 2014-2018 include: the IndoChina Subtropical zone, which also supports a very high number of rare species and endangered species (see UN Biodiversity Lab Maps under Target 12), which lost nearly 337,000 ha. This ecoregion is a very large area in the east-central portion of the country, bordering with Thailand, which has almost no protected areas (see figure under Target 11 Implementation). These data indicate the need for future protected areas in the ecoregion owing to high habitat loss, high numbers of rare species, and high number of endangered species. Other ecoregions suffering high forest habitat loss over the past 4 years include Kayah-Karen montane rain forests (131,026 ha), Mizoram-Manipur-Kachin rain forests (112,793 ha), and the Chin Hills-Arakan Yoma montane forests, which lost 77,180 ha.

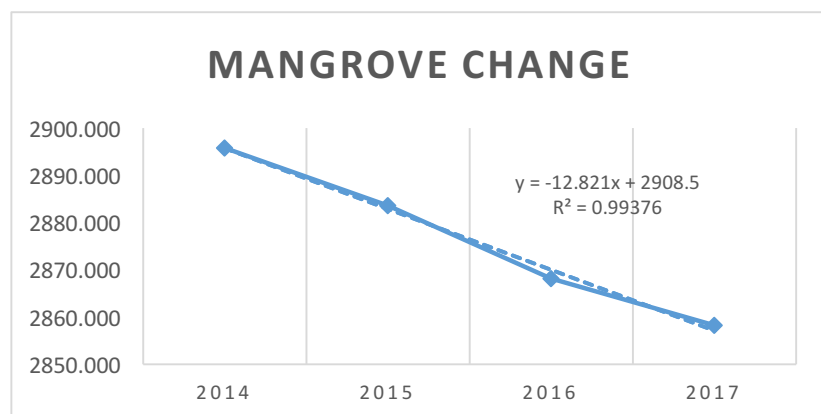
There are numerous NGOs active in Myanmar, working with local communities to improve the sustainability of use of biodiversity resources, in forests, mangroves, reefs and along waterways. Programs under development assistance are improving mangrove management, working towards forest certification and improving livelihoods among the poor to ultimately protect biodiversity. To deal with the declining forests, Myanmar legislated a raw log export ban in 2014 and more recently (2016/2017) a 10-year logging ban in the Pegu Yoma region, which is an important area for elephants, and reduced the teak quota. Myanmar is also working towards a Voluntary Partnership Agreement (VPA) under EU-FLEGT. Further, the National Forestry Master Plan (2001-2030) set objectives of 30% of land as a permanent forest estate (PFE) and 10% of land (presumably forest) in protected areas by 2030. There is also a national plan to recover forest habitats (see Target 15), as well as a revised enforcement plan but, unfortunately, no increase in the associated budget.

The new Biodiversity and Protected Areas Law substantially increases penalties for illegal activities, and there is a major effort to bring forests under community management (see Target 15). Nevertheless, large amounts of teak and rosewood continue to be cut and illegally exported, according to the government statistics (see Target 5 – under Implementation), as well as a Mongabay investigation in 2015-16. (<https://news.mongabay.com/2016/11/myanmars-logging-ban-feeds-shadow-economy-of-illegal-trade/>).

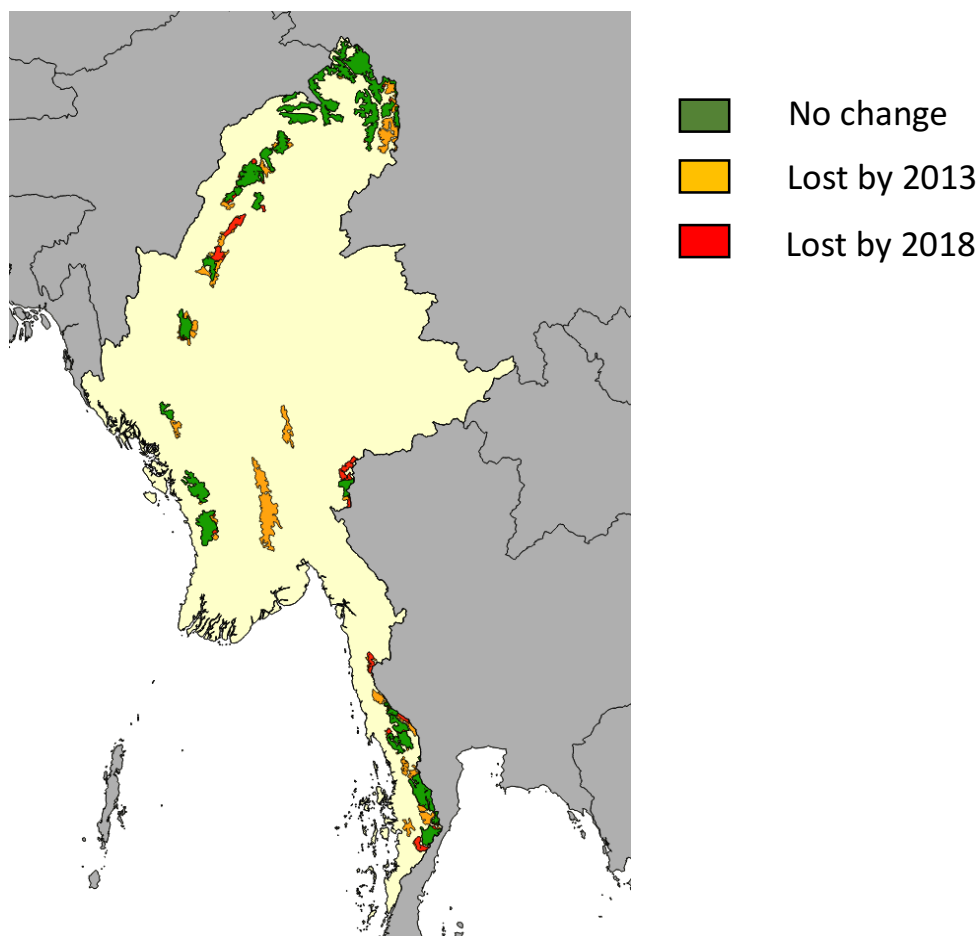
Forest loss in Myanmar from Global Forest Data (Hansen et al.)



Mangrove forest loss 2014-2017 (interpreted from global forest area and Eco region maps by UN Biodiversity Lab)



Intact forest area change (P. Potopov, pers. comm. 2018)



Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

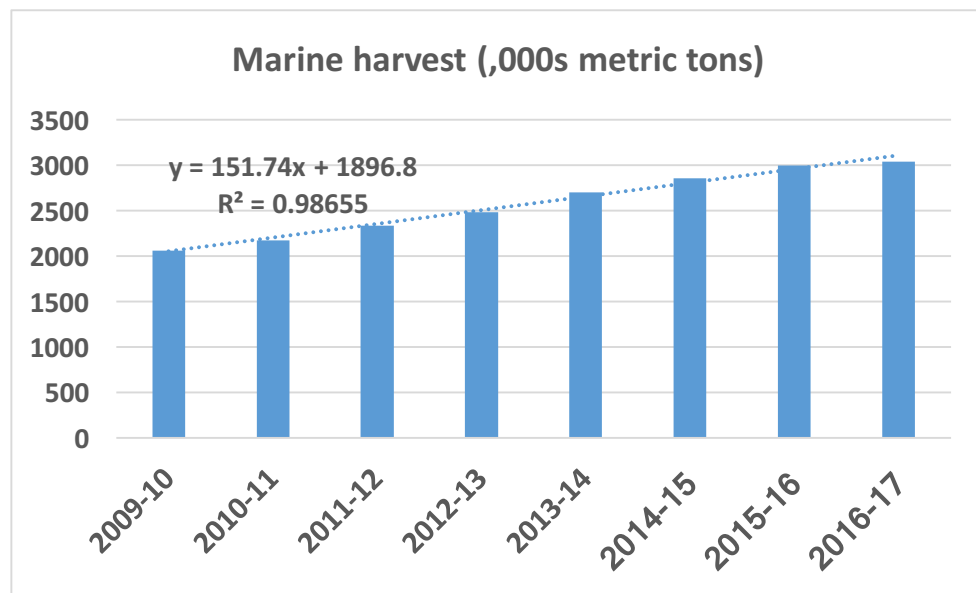
6. Sustainable fisheries

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

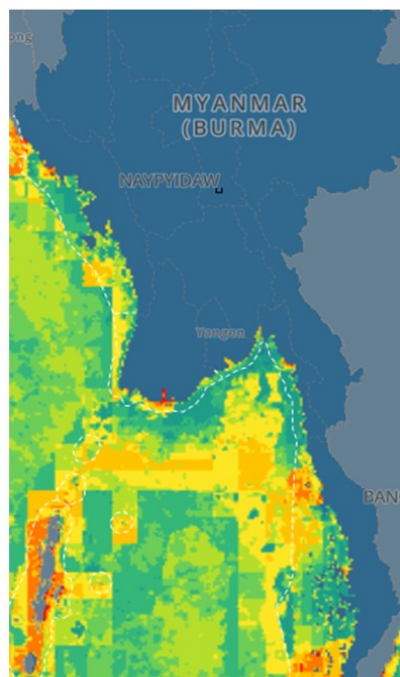
Myanmar has made efforts towards reducing the wild harvest of marine fish, in part through the increased use of aquaculture, improved enforcement, reduced fishing season length, establishment of 3 LMMAs, and registration of vessels. Nevertheless, the marine harvest has increased each year by an average of 152,000 metric tons/year (Myanmar government data, attached figure) since the NBSAP was put in place in 2011, including after it was revised in 2015 through to 2017. (The FAO SOFIA data are estimates only and so are not of any value here.) Few data are available for individual species and considerably more research is needed to understand the marine ecosystem, its productivity, which species may be over-fished, and what constitutes a sustainable catch limit for common species. The IUCN lists 44 fish species (including rays and sharks) as either critically endangered (2 species), endangered (13), or vulnerable (29). It is well-known that there is a large and lucrative illegal fishery by both national and foreign vessels in Myanmar territorial waters that has been difficult to control. Enforcement and management are in separate departments, making management problematic. Further, global ocean impact mapping clearly shows a very high impact over most of Myanmar's territorial oceans, indicating high fishing

pressure, pollution and reef damage (see attached figure). One effort in overcoming the illegal fishing has been the effort to install LMMAs, now successfully established in three areas covering >10,000 ha in the Myeik area, and with plans to establish more, especially in Rakhine State. However, no new marine protected areas have yet been announced. Information on aquaculture is provided under Target 7.

Marine fish harvest 2010-2017 (Dept. Fisheries data)



Map illustrating ocean impact in Myanmar territorial waters (Global Ocean Impact dataset):



Cumulative ocean impact to 2013:
 Greens – low impact
 Yellow - Red – higher impact
 Data from: Halpern et al. 2015, UN Biodiversity Lab

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

Myanmar contributed to the BOBLME ocean research project in the Bay of Bengal and Andaman Sea.

7. Areas under sustainable management

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

This AB Target is in three parts: forestry, agriculture, and aquaculture (and therefore duplicates, in part, Targets 4 and 5), although the National Targets for ABT 5 did not include forestry.

Forestry: Myanmar has its own forest certification system (led by the Myanmar Forest Certification Committee - MFCC), and is currently working with the Program for the Endorsement of Forest Certification (PEFC) to move towards a sustainable forestry sector. Currently only a small area of community forest (CF) is certified but training is being provided to other CFs to enable certification. No other industrial forest concessions have been certified as sustainable. The PEFC project has field tested Myanmar's timber legality assurance system (MTLAS) and the project partners have also created a national documentation system and conducted auditor training. MFCC has a multi-stakeholder platform to facilitate coordination and that acts as a central hub for partners to share experiences, project findings, tools and best practices. It also provides a network for stakeholders to access technical support for pilot testing certification solutions. Parallel to the PEFC project, there is also certification work as a part of the REDD+ initiative and under EU-FLEGT.

Agriculture: The Department of Agriculture conducts regular training in various disciplines to improve farming techniques, reduce the use of pesticides, and develop climate-based cropping. Over the NBSAP period to May 2018, MoALI had trained more than 1300 farmers on various aspects of sustainable farming and has conducted successful research into improving rice varieties. A 5-year project entitled "Sustainable cropland and forest management in priority agro-ecosystems of Myanmar (SLMGEF)" is being implemented by FAO, MoNREC and MoALI, with GEF funding. The project facilitates adoption of Climate-Smart Agriculture (CSA) policies and practices that help to sustainably increase productivity, enhance resilience and reduce/remove greenhouse gas emissions. A key effort towards sustainability is the preservation of genetic diversity including in situ, exploring under-used species, and protecting wild crop relatives and Myanmar now has programmes in place to deal with all three. Myanmar has more than 12,000 crop species accessions in cold storage and more than 2400 accessions in long-term international cold storage systems. Research is ongoing with many national and international institutes (especially in Japan) and a new program with FAO to identify under-used species has recently been funded. Efforts are being made towards improving yields on the same land base through increasing mechanisation at 119 training centres in the country and IFC is supporting a program to improve floating tomato production practices at Inle Lake.

Aquaculture: The Department of Fisheries has established the 'Good Aquaculture Practices Extension Team' in 2016, to improve techniques of fish-farmers at all of the aquaculture sites in the country and to provide other extension activities and auditing practices at certified farms. Myanmar has embarked on two recent programs to make shrimp aquaculture more sustainable. These programs involve reclaiming mangroves and using more sustainable shrimp farming techniques and, under the MYSAP program, the Fisheries Department has already established best practices at 17 shrimp farms (note: there are hundreds of aquaculture farms, although there are a relative few large farms, on 184,000 ha in Myanmar). In addition, improving freshwater aquaculture practices has been an ongoing program for several years, with programs run under the Fisheries Department with ODA from, for example, the EU and Japan. For one of these programs, the Department of Fisheries with JICA has an extension service for small-scale aquaculture which began in 2009 and is still active. The JICA project trains farmers and enables them to train others in the same regions for improving aquaculture practices. Aquaculture accounts for only about 20% of the total fishery by weight, in Myanmar, but will likely account for much more in the future as the new programs and laws are instituted.

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

8. Pollution

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

A new Pesticide Law (2016) was adopted but it is too early to assess effectiveness. There is considerable work on understanding pollution levels and sources through individual studies, especially along major rivers and the coastline, but no assessments of these pollutants on biodiversity are available and no country-wide study has yet been accomplished. There is an established water quality monitoring network along the Ayeyawady River, but this has not been expanded or included for other rivers during the NBSAP period, although there is a comprehensive water program recently initiated in association with Norway. However, there have been advances in the area of EIAs, with guides and standards produced and circulated, and a large amount of training has been provided to ECD staff on their application.

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

9. Invasive Alien Species

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

There are a known 97 invasive species in Myanmar according to the Global Invasive Species Database and 267 species listed on the GIASIP Gateway site. Other than a plant quarantine facility at Yangon Airport, Myanmar has been unable to move forward on this target owing to insufficient resources.

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

10. Vulnerable ecosystems

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

This target pertains primarily to coral reefs. For the two specific measures (i.e., NBSAP Actions under 10.2) no information was available and few measures have been taken towards achieving this target for reef protection so far, except for the 3 LMMAs (see Target 6) and planning for other CFiUGs (see Targets 6.1 and 10.1). Global data clearly show very high impacts along much of the Myanmar coast, especially in the Myeik area. Nevertheless, the establishment of 3 LMMAs is a major step forward in both the management and protection aspects for coral protection in Myanmar.

Of the 187,000 ha of Myanmar's reefs, about 51,000 ha are protected in Lampi NP and Thamihla Wildlife Sanctuary. The three LMMAs were established to improve management of exclusive management zones along some reefs in the Myeik Archipelago cover another 10,000 ha, adding another 5% reef area into some form of protection. These LMMAs are the first for Myanmar and are part of the management program to protect coral reefs from poor and excessive fishing practices. Total reef protected coverage is about 33% of Myanmar's reefs.

In Myanmar, coastal ecosystems are vulnerable to climate change as a result of the continuing loss of mangrove forests that can serve to protect coastal areas from severe storms (such as occurred in 2008). Mangroves also provide other services such as nursery areas for many aquatic species. While there has been ongoing loss of these systems, Myanmar has an ambitious plan to re-establish some 30,000 ha over the next decade.

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

Myanmar contributed at the regional level through participation in the BOBLME Project that was recently completed. This project was an international research program to understand better the ocean resources in the Bay of Bengal and the Andaman Sea.

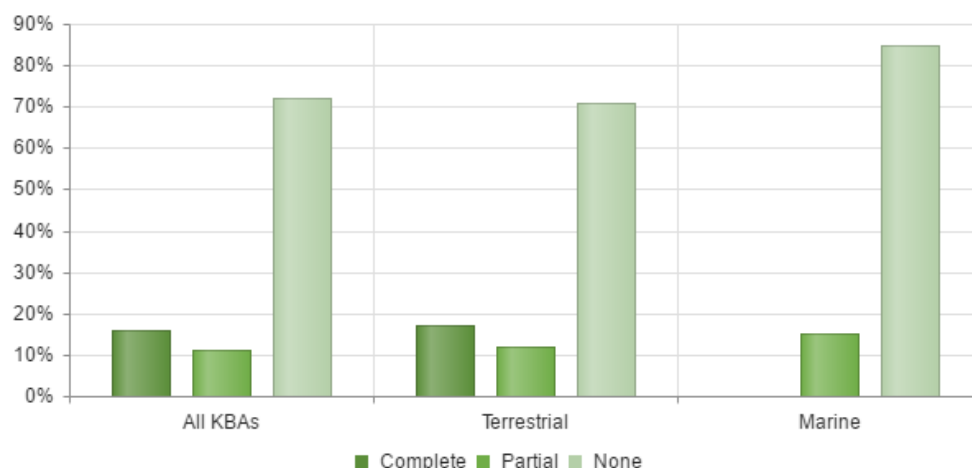
11. Protected areas

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

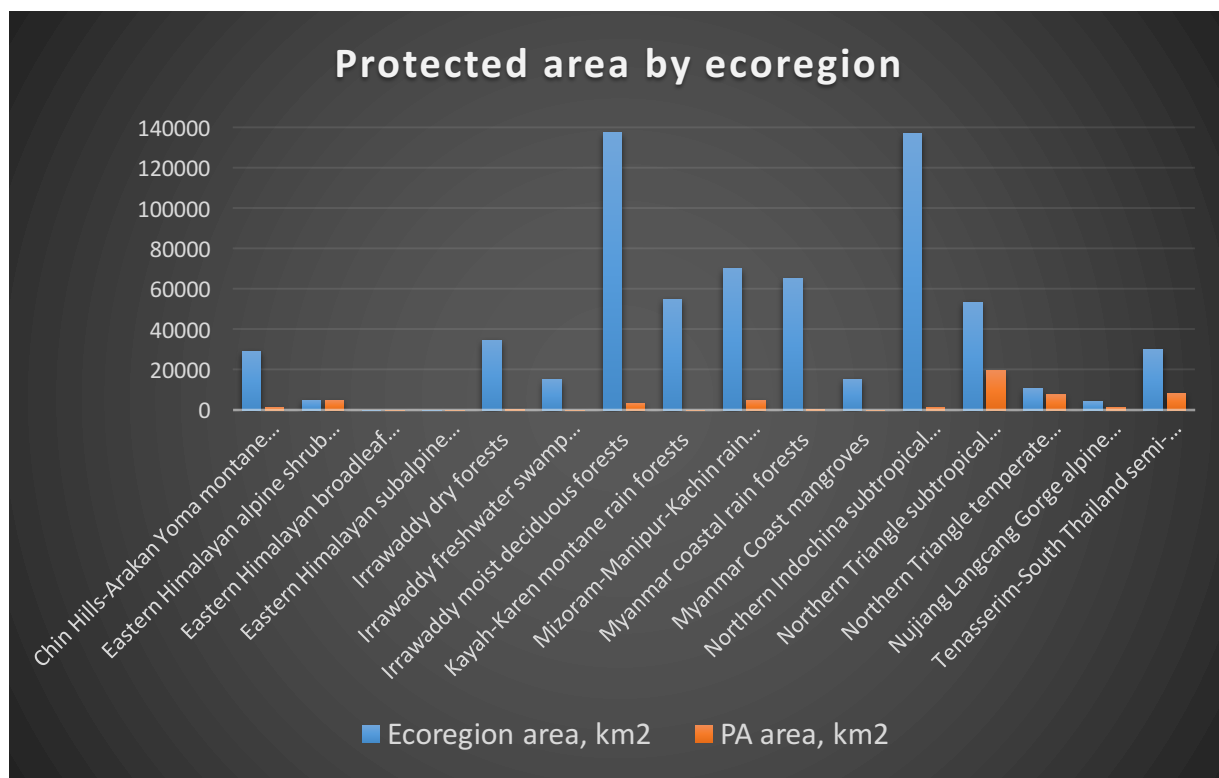
As of 2018, Myanmar has increased its protected area by about 300 km² under its National Parks coverage. Other parks will possibly be gazetted by 2020, as there are ongoing negotiations and considerable planning. However, additional to these efforts was the more than 1400 km² that were protected under the Ramsar program at three new sites, and a fourth Ramsar site was announced in late 2018. Myanmar has also nominated two additional UNESCO sites, although these have yet to be finalized. Myanmar currently has 5.75% of its landbase in national protected areas. Including all other areas, such as Ramsar sites, wildlife sanctuaries, UNESCO sites, etc., then the area under some form of protection is about 8.7%. A revised KBA map was produced and can help guide future formulation of protected areas and connectivity. The data suggest low coverage of KBAs within protected areas (see figure attached). More generally, some ecoregions are not well represented in protected areas (see attached graph) and large areas with high species rarity in the eastern part of the country are missing any form of protected area. Unfortunately, no new marine PAs were completed, although there is now a marine spatial plan.

In the southern area of the country, bordering with Thailand, there is a new effort entitled “Ridge to Reef”, which is a GEF-funded project attempting to secure several protected areas in from a marine park at the coast through the Lampi Park extension and including the proposed park at Taninthayi. This project, however, has met considerable resistance from local communities and long-term negotiations are still ongoing. At this time, the outcome is still uncertain.

Proportion of KBAs within existing protected areas.



Protected area (all types) coverage by ecoregion (Data prepared from UN Biodiversity Lab)



Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

12. Preventing extinctions

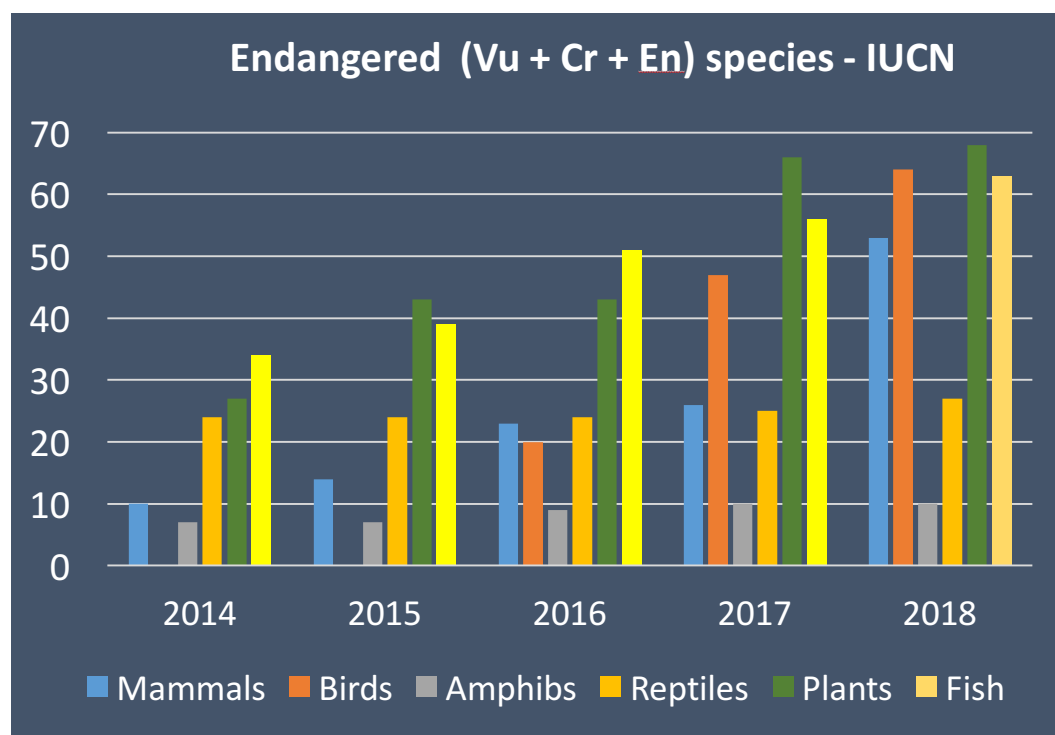
Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

This ABT has been well applied in Myanmar, with a large number of cooperative research and monitoring projects involving MONREC and several NGOs, including Wildlife Conservation Society, Flora and Fauna International, Oikos, Biodiversity and Nature Conservation Association and WWF, as well as at universities. There is completed and ongoing research on at least 35 individual vertebrate species, many of which are endangered, including several marine species. There has also been some important species-related publications including the Marine Biodiversity Atlas, a study on elephant population demographics at Bogo Yama, and a monumental publication on medicinal plants in Myanmar. Despite this work, the conservation status of most threatened species is unlikely to have been improved yet, however, as a result of considerable ongoing habitat loss and illegal wildlife harvesting. Nevertheless, a particular good news story has occurred for turtles and tortoises, as a result of successful re-introductions into the wild from ten established assurance colonies and an associated public education programme.

A major step forward has been the enacting of the 'Conservation of Biodiversity and Protected Areas Law' (in 2018). This law has modernised and increased the penalties and provisions for illegal use of wildlife and CITES-listed species, and for illegal activities in protected areas. It represents an important advance in attempting to arrest these illegal activities in Myanmar. There has been a widespread effort to reduce illegal wildlife harvest, but in the absence of an increased enforcement budget, these efforts have undoubtedly been less successful than intended. Among these efforts have been coordination among enforcement agencies, transboundary enforcement programmes with India and China, training sessions for officers and protected areas staff, and a suite of public information programs. There are also now eight alternative livelihood programmes in place, as a part of the effort to reduce illegal wildlife actions. Areas in the north of Myanmar, especially in conflict zones, remain very difficult to police to stop the illegal trafficking of wild animals and their parts.

Myanmar has moved steadily forward on accumulating information needed for listing species under the IUCN Global Red List. Individual taxa-specific expert groups have been formed to assess species and, as a result, more than 4400 species have now been assessed. Numbers of species listed has increased, largely because of improved information and the greater effort at assessment (see attached figure).

Selected Red-Listed taxa for Myanmar to 2018.



Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

Aside from listing species on the global IUCN Red List, there are many other international projects to which Myanmar contributes. For example, the Wildlife Conservation Society (Wildlife Conservation Society) cooperates with international organizations, such as Wetlands International, to research and document waterbird species (migratory and endemic species) in the Mandalay Region, Sagaing Region, and Kachin State for the Asian Waterbird Census. These data have been sent to Wetlands International and Birdlife International. Biodiversity and Nature Conservation Association participates with BirdLife and other international organisations in monitoring shorebirds, including the critically endangered spoon-billed sandpiper (*Calidris pygmaea*) in the Gulf of Mottama. The GoM is identified as the most extensive and significant intertidal mudflat system in Myanmar for shorebirds, fish and other biodiversity. Its highly productive intertidal mudflats provide a wintering site for an estimated 150,000-200,000 migratory waterbirds. Nanthar island is one of the most important wintering ground for migratory birds species, including Spoon-billed Sandpiper (CR), Nordmann's Greenshank (EN), Painted Stork (NT), Indian Skimmer (VU), and Great Knot (EN).

13. Agriculture biodiversity

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

This target is primarily referring to the conservation of agricultural crop species and genetic diversity of culturally important species, including for wild relatives. Myanmar uses using Standard Material Transfer Agreements and has more than 12,000 crop species accessions in cold storage and more than 2400 accessions in long-term international storage systems, and there is an extensive ex situ gene conservation program in place. Research is ongoing with many national and international institutes and a new program with FAO to identify under-used species has recently been funded. Efforts are being made towards improving yields on the same land base

through increased mechanisation at 119 training centres in the country. Seeds from culturally important orchid species have also been collected and preserved in cold storage, both in and out of the country. Mithun are a specific research target to maintain wild relatives, improve habitats, and improve the breed for superior captive production.

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

The Seed Bank has several international collaborations for seed conservation and study with: Bioversity, ITGRFA, FAO, gene banks in Philippines, Norway, Korea, Japan, and works with universities in Japan. (see 13.1.1). The Agricultural Research Department (DAR) collaborates at the international level with Biodiversity International, ITPGRFA, Regional FAO, International gene banks (IRRI genebank in Philippines, Korea genebank, Svalberg Global Seed Vault in Norway, Tsukuba genebank in Japan), and with Tokyo, Tsukuba, Kyushu, and Nagoya Universities in Japan.

14. Essential ecosystem services

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

No single report examining changes in ecosystem services associated with important ecosystems has been assembled. However, loss of forests, including mangroves, indicates the loss of services provided by these ecosystems is ongoing in various parts of the country. In particular, loss of mangroves has resulted in more severe damage from storms than in the past. Nevertheless, the Mountain Green Cover Index for Myanmar is 99%, suggesting that mountain ecosystems are relatively intact, partly owing to remoteness from the major population centres. For freshwater resources, considerable work has recently begun to assess values and services provided by major river basins, including the Ayeyawady, Chindwin, and Hlaing River basins. Data were not yet available from these studies for this report, but the research is assessing how these rivers contribute to the livelihoods of local people and communities. The work along the Chindwin suggested that pollution from mining is already to an extent that important services, like clean water, are harmed. Protection of reefs and coastal areas was covered under Targets 6 and 12, showing that apart from work towards local management areas, little improvement in marine management has been accomplished. The waters of Myanmar also contribute very significantly to the country's economy and provide livelihoods for an estimated 1.4 million inshore and offshore fishers. However, these ocean ecosystem services are under threat as a result of over-fishing and illegal fishing.

More information at: <https://phys.org/news/2017-02-myanmar-unveils-marine-wildlife-resources.html#jCp>

This is the only ABT under which women's issues are specifically mentioned. For Myanmar, a report was appended under Section III on gender and implementation of the NBSAP. Conclusions from that report are that women are assisting in implementing the NBSAP, often in ways and areas different from men. Among community user groups, women play key roles in maintaining equipment, gathering wood and tending nets, especially in the inshore fisheries. Gender biases, however, remain with respect to wage parity, joining advocacy groups, and travelling to meetings. Further, because of traditional family roles, most women have little time available to travel or attend meetings. Even so, the disaggregated data clearly suggest that women are involved in conservation issues, are willing to improve their skills, and are playing important roles in the implementation of the NBSAP, especially within organised user groups. Overall, among the various training sessions for which gender-based data were available for the 6th National Report, about 50% of the trained participants were women.

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

15. Ecosystem resilience

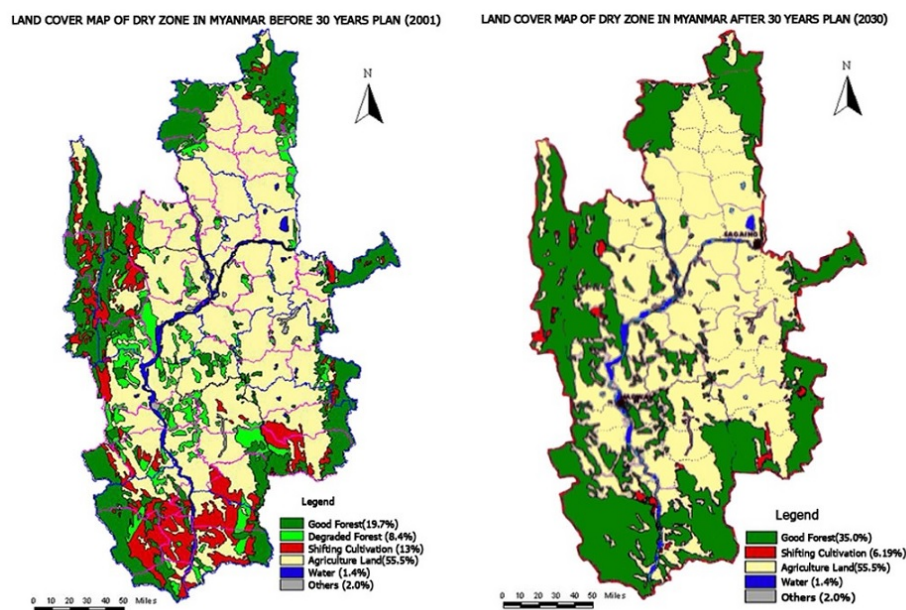
Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

Target 15 is about both restoration of degraded habitats and also about improving terrestrial carbon storage. Part of Myanmar's efforts to reduce forest degradation is to improve the community management of forests. To that end, now more than 230,000 ha of forests are managed by communities, and there is ongoing training to improve this management. There is a comprehensive forest and mangrove forest restoration plan, the National Reforestation and Rehabilitation Program in Myanmar (NRRPM), aimed at restoring 32,300-40,500 ha/year, including establishing forests, while the plan calls for local residents to recover forests on 283,000 ha, including in community and private plantations. Of the total area to be reforested, about 30,000 ha are mangroves, primarily planned for the Ayeyawady delta. However, no data were available as to how much forest has been restored under the plan. Myanmar has also embarked on a REDD+ program and has a 'roadmap' completed, although no reforestation work has yet been undertaken under REDD+. Myanmar has produced its forest reference emissions level report (2018) indicating that deforestation is causing emissions of 48,607,511 tons C per year.

Biodiversity and Nature Conservation Association (BANCA) and the Department of Forestry established tree nurseries to work with three villages in the Gulf of Mottama on reforestation and bank stabilisation, especially in mangroves, and have provided training to 163 individuals on planting of trees. Flora and Fauna International is working with 15 communities at Indawgyi Lake to help with Community Forestry and agroforestry in the reserve through reforestation projects. They have instituted an efficient cookstove program and planting coppice wood species to reduce timber harvesting for fuelwood. At Taninthayi area, Flora and Fauna International has 3 projects on mangroves management and recovery, one with UNDP through GEF (Mainmala Kyun and Bogalay in the Delta area), and Flora and Fauna International has provided training in mangrove co-management and inventory to 91 people, among whom about 30% were women. Worldview Myanmar Limited (WML) has a project in part to establish mangrove plantations through a series of Mangrove parks with Pathien and Myiek Universities to help restore and protect the mangrove forests through demonstration and research.

While Myanmar's NBSAP restoration plan specifically targets only forests, other habitat types are also being restored. For example, the Inlay Lake Conservation and Rehabilitation Project has been implemented by UNDP through funding support from UNDP and the Norwegian Ministry of Foreign Affairs. A five-year plan for conservation and restoration also of Inlay Lake (2010-15) called the 'Greening Project' is being implemented by Forest Department and together with the Shan State Government.

Expected results from the forest restoration 30-year plan:



Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

16. Nagoya Protocol

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

The only aspect of the Nagoya Protocol under current implementation in Myanmar is ‘Standard Material Transfer Agreements’, implemented to conserve seeds in the national seed bank and for international seed transfers. However, a gap analysis with respect to laws and policies needed for implementation has been completed. The next step to establish the Nagoya Protocol within the national legal framework, is to hold discussions and workshops and these will be organized with relevant ministries, departments, organisations and NGO/INGOs in the near future. Preparations are also being made to establish Competent National Authority (CNA) to implement Nagoya Protocol.

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

17. NBSAP

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

Myanmar had an NBSAP in 2011 and an updated version with National Targets was published in 2015, to cover the final period of the CBD Strategic Plan to 2020. This was submitted to the CBD in 2016. This latter version is the subject of this report and has been adopted as policy and as the workplan of MONREC, in particular, the Forest Department that has the major implementing responsibility. A “National Biodiversity Conservation Committee” (NBCC) was formed to coordinate among departments implementing the NBSAP. As can be ascertained from this report, Myanmar has implemented the majority of the proposed measures (actions) under its NBSAP and

more than 70% of the 61 National Targets have been achieved, or partially achieved, 2 years prior to the end of the plan in 2020, while work on all targets is still ongoing. In some cases, such as protecting Ramsar and UNESCO sites, targets were exceeded with more area than expected set aside. A key aspect to implementation of the NBSAP has been the enacting of a new law “Conservation of Protected Areas and Biodiversity Law” that enables a much more strategic and effective approach to natural resources management. This law required considerable effort in the National Parliament and was a successful achievement under the strong leadership effort of MONREC from 2016 to 2018. To mainstream the NBSAP into other sectors, Myanmar has implemented a several-pronged sectoral approach, including presentations to public, schools, media, and industry. The NBSAP has provided guidance and policy justification for the implementation of many programs currently being conducted by government and NGOs in Myanmar. At the same time, however, Myanmar has two important targets that are assessed as “Moving away from” in this report, and both of these will require greater effort in the near future (Targets 5.1 for loss of forests and 6.2 for unsustainable fisheries; representing Aichi Targets 5 and 6). Under the national targets for this ABT 17, Myanmar has yet to make progress in the development of state BSAPs.

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

18. Traditional Knowledge

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

This ABT is generally about customary use of resources and effective participation of local communities in management decisions. Myanmar has several regional ethnic groups and a very large rural population, spread over many small communities. Efforts have been made throughout the implementation of the NBSAP and other associated programmes, such as protected area development, REDD+, and FLEGT, to consult and work with local communities. For example, there are ongoing consultations for the development of three national parks, some of which are quite involved and extensive. The new (2016) Myanmar Land Use Policy recognizes customary land use tenure system. A new Land Law, based on the policy statement, is currently being written. Further, in “Conservation of Biodiversity and Protected Areas Law” (2018), there are sections that support the legal recognition of customary land use tenure. Similarly, under the REDD+ initiative, the roadmap calls for National Guidelines on Free, Prior and Informed Consent (FPIC) to be developed based on a study into traditional decision-making systems. These FPIC Guidelines will be field-tested prior to, and as part of, the development of REDD+ pilot projects. Staff training on FPIC has been ongoing since 2014, in-house and through RECOFTC. There are recent advances in the development of LCCAs, with a local proposal to change the Phar-Baung-Taung Nature Reserve, established on 7th August 2018 in Mon State, with an area of 188.6 ha, in to Phar-Baung-Taung Community Conserved Protected Area. The proposal is moving ahead with government approval.

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

19. Biodiversity knowledge

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

This ABT has been a major focus in Myanmar under the NBSAP, with contributions from government, NGOs, IGOs, donor agencies (JICA, Australia, EU, etc.), national universities, and international universities. Government budgets for conservation have increased, although not for

enforcement, and considerable donor project funding has come into the country. This has resulted in a large number of programs, especially at the species and human community level to improve basic knowledge and to manage how resources are used. Key international programmes including REDD+, EU-FLEGT, BOBLME and others have been implemented or are in the planning stages. There has been increased in monitoring of key species, such as sun bears, tigers and elephants, rare species including Baer's pochard, and of migratory birds, especially shorebirds at key areas such as the Gulf of Mottama. Numbers of listed species under IUCN have risen steadily, as more knowledge is accumulated and time to consider individual species by expert groups has increased.

Several Myanmar universities now have courses in conservation science, including marine ecology. Training gaps were identified and filled by working directly with three different universities (e.g., see 10.1.2). MONREC has established a program of improving the qualifications of its staff by funding employees at the master's and doctoral levels at universities outside the country, and NGOs fund students to attend foreign schools to study. For example, Australia has a program in place to fund post-secondary student education, as well as assisting collaborations between Australian and Myanmar universities. Currently, five major national universities offer conservation-related degrees. Data from one university showed a large number of graduates in the past 3 years (>380 students, including 84 women).

As an indicator of the amount of increased knowledge on biodiversity in Myanmar, a search of Google Scholar by year on 'Myanmar +biodiversity' revealed that there was an almost 50% increase in the number of papers published in scientific journals in 2015 to 2017 (mean = 3112/yr) as compared to during 2010 to 2013 (mean = 2147/yr). The number of species with sufficient information to be assessed by expert groups has increased annually, such that more than 4000 species have been examined, partly as a result of targeted research or monitoring programs for specific taxa.

Mainstreaming biodiversity remains difficult in Myanmar, but under the NBSAP positive steps have been taken through public, media and industry education programs. This work has included the translation and publication of biodiversity materials, such as the tiger conservation plan and the ecotourism strategy and policy into Myanmar language. Both government and NGOs, such as Wildlife Conservation Society and Flora and Fauna International, have provided training to communities near protected areas for sustainable management and alternative livelihoods, to reduce pressures on protected areas and in buffer zones. Further, media training events have been initiated in two cities, resulting in some networks including "The Voice of Myanmar" and "Eleven Media" broadcasting more information on biodiversity and environmental issues. The Myanmar Centre for Responsible Business (MCRB) has been working for several years to improve the conservation of biodiversity in businesses and industry. They have helped with EIA development and have conducted training to encourage sustainable resources use.

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

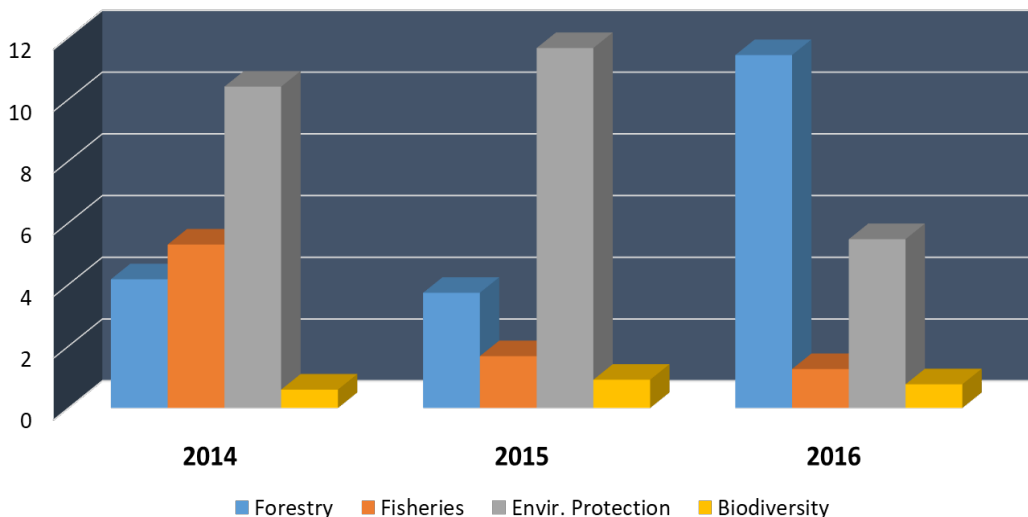
20. Financing

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

By all available measures, funding for biodiversity and conservation has increased substantially in Myanmar over the past 4 years, including government in-house budgets, with the unfortunate exception of budgets for natural resources enforcement. The latter remains an important gap moving forwards in protecting wildlife and their habitats Myanmar, owing to the known high rate of wildlife poaching, illegal fishing, and large cross-border illegal timber trade, which are all major contributors to unsustainable use and species population decline. The Wildlife Conservation Department budget has risen more than 50%, GEF funding has increased by 30%, and NGO

budgets for the country have also increased based on the increased number of programs over the past 4 years. ODA data from OECD were not available after 2016, but ODA for conservation-related issues has been greater during the period after 2013 than up to and including that year, and has averaged about \$19 million/year during the NBSAP reporting period.

OECD data on development aid in Myanmar for environment related areas (millions of USD)



Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

Section V. Updated biodiversity country profile

Biodiversity facts: Status and trends of biodiversity, including benefits from biodiversity and ecosystem services and functions:

Myanmar is rich in biodiversity due to its diverse ecosystems from the ocean to the south, through drylands in the central areas, and rising to mountains in the west and north. A new ecosystem classification indicates that Myanmar supports 64 ecosystem types. Among these, the forest types are considered to be integral to the stability of the environment, covering about 42% of Myanmar's land base, but the country also supports a large diversity of freshwater ecosystems, ranging from fast-flowing mountain streams to wide, slow-flowing lowland rivers, as well as lakes and wetlands. Myanmar is also endowed with extensive coastal and marine ecosystems, with half a million hectares of brackish and freshwater swampland that supports essential ecological functions and habitats such as spawning, nursery and feeding grounds for fish, prawns and other aquatic biodiversity of economic importance. Overall, the country sustains more than 18,000 species including 11,800 species of vascular plants of gymnosperms and angiosperms, 1200 butterfly species, 251 mammals, 1,056 bird species, 282 reptiles, 82 amphibians, 1540 medicinal plants, 96 bamboos, and many crop species, including endemic rice species. The Central Dry Zone is well known for the production of oil seeds and cotton, especially under developed irrigation systems. To the far south, the Taninthayi region is well-suited for rubber and fruit crops. Myanmar is also rich with inland water and freshwater diversity, supporting over 350 freshwater fish species (a significant portion of which may be endemic), over 800 marine fish species, 9 species of seagrass, 51 coral species, and 5 of the world's marine turtles are found in Myanmar's waters. Myanmar's genetic diversity is eroding, however, due to the introduction of modern varieties and technology to feed an ever-expanding population. The country has listed 128 globally endangered and critically endangered species, including 25 mammals, 25 birds, 2 amphibians, 10 fish and 10 reptiles among vertebrates and 32 endangered plant species. Three new gecko species were recently discovered in Taninthayi and these may be listed under IUCN as well. Myanmar relies largely on ecosystem services and biodiversity for the livelihood of its population and economic growth. A particularly important example of this dependency is the agricultural sector that, in 2017, represented 38% of the GDP, provided 23% of the country's export earnings, and employed 50% of the total labor force (of which 48% were women). With 18 million ha of total arable land and a population growth rate of 0.91% (in 2017), the agriculture sector plays a highly significant role for the future, in terms of employment, economic growth and food security. The National Seed Bank is important in sustaining the genetic diversity of key crop species, such as rice and beans, through research, collections, and long-term cold storage. Forests are fundamental to the socio-economic well-being of the people of Myanmar, providing local villagers not only numerous forest products to fulfill their basic needs, including wood fuel, but also contributing substantial foreign exchange earnings to the State economy. Teak and other hardwoods, including rosewoods, are the major export timber species of interest. Mangrove forests are important as well, for the shoreline protection that they provide, but also for shrimp aquaculture and as marine species' nursery habitats. A growing industry in Myanmar that relies on ecosystem services is ecotourism, and with new policies, training programs for practitioners, and certification all now in place, Myanmar aims to protect its biodiversity while enhancing this industry, especially in protected areas.

Main pressures on and drivers of change to biodiversity (direct and indirect)

The main indirect drivers of biodiversity loss are climate change, population growth, and recurring poverty that is at about 32% of the population (although closer to 40% in rural areas), although the number of poor people has been declining. The major direct threats to biodiversity in Myanmar include over-exploitation of wildlife and fisheries (much of it illegal, with increasing markets for wildlife and their derivatives in neighboring countries), deforestation, forest degradation, and loss of intact forests, encroachment for urbanization, forest fires, and introduction of alien invasive

species. The legal recorded marine harvest has continued to increase by 150,000 metric tons/year, despite a target to reduce the catch to sustainable levels. The Integrated Biodiversity Assessment Tool (IBAT) also lists agricultural runoff pollution and increased aquaculture as major causes of biodiversity loss. Populations of marine turtles have been declining primarily due to their capture for consumption and ornamental crafting, destruction of nesting sites and egg collection, and large flagship mammal species, including tigers and Asian elephants, are highly vulnerable to local extinction due to skewed sex ratios, illegal killing, and loss of habitat. Deforestation has increased and, at the rate of more than 330,000 ha/year, remains the main cause of terrestrial habitat loss and species declines. Much of this loss results from agricultural clearing. Likewise, declining inland waters biodiversity is common due to increased demand on freshwater resources, drainage of wetlands, pollution of major rivers, and clearing of mangroves for agriculture and urbanization. Mangrove forest loss is now estimated at 1300 ha/year, but this is substantially down from 2100 ha/year prior to 2015.

Implementation of the NBSAP

The vision of the country's revised NBSAP released in 2015 is "Conservation, management and use of biodiversity in a sustainable manner for sound and resilient ecosystems and national posterity". The mission statement is that "by 2020, biodiversity is valued, effectively conserved, sustainably used, and appropriately mainstreamed to ensure the continuous flow of ecosystem goods and services for the economic, environmental and social well-being of the present and future generations". The plan has 61 National Targets with 163 planned actions and among these, by 2018, almost 40% had been achieved. Much remains to be accomplished, however, to reduce the loss of habitats, recover lost and degraded forests, and reduce legal and illegal over-exploitation.

Overall actions taken to contribute to the implementation of the Strategic Plan for Biodiversity 2010-2020

Myanmar has embarked on a comprehensive program to enhance the protection of biodiversity under its revised NBSAP (2015). Actions taken to conserve biodiversity include: a national reforestation program, including for mangroves; establishment of forest plantations to control desertification; promotion of wood fuel substitutes and use of more efficient wood stoves; establishment of formal community forestry on over 211,000 ha by 2018; improving the biodiversity and forestry laws; characterizing and sustaining genetic diversity for the efficient and sustainable use of crop genetic resources, including through long-term seed storage; developing agro-environmental techniques including sustainable aquaculture with training for farmers; improving the knowledge base for species-based management; and enhancing international cooperation to protect threatened marine turtles. In 2018, several new laws were adopted including a new Forest Law and the Conservation of Biodiversity and Protected Areas Law, both of which modernized Myanmar's approach to natural resources management. Sustainable agricultural practices are being promoted, with soil biodiversity improved as a result of organic farming practices, and a number of research activities have been conducted for conserving plant genetic diversity. Guided by the National Forest Policy and Master Plan, the Forest Department has moreover made strenuous efforts to expand the coverage of protected areas during the last decade. Myanmar has established 42 protected areas (95% terrestrial), including 5 Ramsar sites (4 of which are new since 2015) and two new UNESCO World Heritage aquatic areas. The percentage of land area covered by all types of protected areas, including wildlife reserves, in 2018 is now close to 8% of the country, with negotiations for three more national parks currently ongoing with local communities. This is a strong achievement as the 10% policy target was set to be achieved by 2030 and protected areas constituted less than 1% of the total land area in 1996.

Support mechanisms for national implementation (legislation, funding, capacity-building, coordination, mainstreaming, etc.)

Biodiversity is integrated into the education sector, providing university-level students with an opportunity to obtain degrees in various aspect of conservation and biodiversity studies, including marine sciences. Government and NGOs are providing increased training to staff at protected areas and to local communities associated with parks to improve local management. Likewise, the health sector is taking measures to conserve traditional medicinal plants through establishing herbal gardens, while the livestock and fisheries sector encourages sustainable aquaculture, in both marine and freshwater environments. Biodiversity conservation has also been introduced in amended and new laws and policies, and the new Forest Law includes provisions to enable improved management, including community forestry. The National Sustainable Development Strategy (from 2006) promotes sustainable management, while more recent relevant strategies and policies concerning biodiversity protection include the Biodiversity and Protected Areas Law, National Reforestation Plan, Elephant Conservation Plan, Tiger Conservation Plan, Ecotourism Policy, Land Policy, and the roadmap for REDD+, among many other initiatives. The Ministry of Natural Resources and Environmental Conservation (MONREC) is the main agency responsible for implementing national policies on nature conservation in Myanmar, although other ministries, such as the Ministry of Agriculture, Livestock, and Irrigation (MOALI) also share responsibility and accountability for biodiversity conservation. Finally, the National Biodiversity Conservation Committee (NBCC) was formed to coordinate conservation activities at local and national levels. This Committee is chaired by the Minister of the MONREC and now includes 21 members from 19 ministries, thus being one of the most important tools for coordinating biodiversity protection and mainstreaming.

Mechanisms for monitoring and reviewing implementation

Partnerships with NGOs and donor agencies form an important mechanism by which species and habitats are monitored. For example, monitoring of elephant populations, tigers in key areas, migratory birds, and endangered species programs are all conducted through these partnerships. Information gathering and close monitoring have also been emphasized for important marine species including sharks, dolphins, marine turtles, and dugong. Better use is being made of global datasets, supplemented with Myanmar biodiversity data, to derive illustrative and comparative maps that can assist in conservation planning. Environmental Impact Assessment (EIA) is an important method by which impact and pre-development monitoring are accomplished. Implementation of the NBSAP and progress towards conserving biodiversity is reviewed in the National Reports, which are produced in a comprehensive manner every 4 years.

Recommendations for improving implementation of the NBSAP

Although not required by the CBD as a part of the Sixth National Report, based on the observations made during the collection of data for the report, the following recommendations are offered as a way forward to improve implementation of the NBSAP to 2020:

1. Improved coordination among Ministries and within Departments in the same Ministry would make implementing the NBSAP more effective. This could be done by holding quarterly meetings of the NBCC and developing a short-term action plan for implementing the remaining NBSAP measures over the next 2 years.
2. Ministries and Departments could be reminded of their commitments under the NBSAP, as a work plan. This is especially the case for Fisheries Department where they did not seem to understand that NBSAP commitments were made.
3. A plan could be developed to lobby cabinet and parliament for an increased enforcement budget for both terrestrial and aquatic resources, and begin to modernize enforcement staff through training and more advanced equipment. This could be done by raising the profile of the effects that illegal activities are having on natural resources in Myanmar. A part of a revised enforcement

plan should be the implementation of chain-of-custody laws for timber and valuable wildlife, supported by DNA-based technologies.

4. For the conservation of biodiversity in Myanmar, the two most important issues to address moving forward are deforestation and the ever-increasing marine harvest. Both of these issues must be strongly and rapidly addressed to enable sustainability of ecosystem services. To do this, the key elements are improved enforcement (especially at borders), a national forest inventory, far more sustainable harvest levels established for wood and fish, continued development of community-based management systems (with training and certification), data collection and modelling populations of important marine species, and a more focused and coordinated effort among stakeholders. For forestry, there could be a closer relationship between the timber management arm of MONREC and the NWCD in terms of developing sustainable forest management plans. The high deforestation rate and loss of intact forests is evidence of a 'development' priority over 'sustainable development' as a priority. Some of this could involve capacity training on setting timber quotas under a true SFM regime and landscape-level planning.

5. Consideration could be given to moving the Fisheries Department out of MoALI, where it apparently has a low priority, and into MONREC with the other natural resource management agencies. This might change the focus on fisheries management from one of development to one of conservation and sustainable use.

6. As the the implementation of the National Reforestation Programme moves ahead, it will be important to fully coordinate among all participants to ensure the best possible outcome. Currently, there are disparate and somewhat unrelated efforts by NGOs, IGOs, REDD+, FLEGT, and government that are ongoing and that might be better coordinated.

7. The mining sector SEA should be completed as soon as possible, and consider conducting SEAs for other large sectors as well, for example the forestry, agriculture, oil and gas, and aquaculture industries.

8. Invasive species need much greater attention, through research, inspections of shipments at borders, and development of eradication plans for existing species. A specific section within MONREC could be created with the sole objective of dealing with this issue.

9. The protected areas network can be improved by planning new areas in under-represented ecoregions, including especially in the Ayeyawady forest types and the Indo-China Subtropical Forest Zone. Strive to create a network of large protected areas that enable representation of the complete fauna associated with a given ecoregion.

10. Negotiations for the Taninthayi NP should continue, in order to maintain the ecological integrity of this highly biodiverse area before it is lost to development. This again seems to be a case where too many disparate efforts are lacking coordination, resulting in different agendas for the area.

11. A regular monitoring program could be developed for umbrella, migratory, and rare species. For this, MONREC would need a monitoring division and an action plan that coordinates among actors (NGOs, university, government) with a clear set of objectives, common methods, and a means to collate and analyze the data..

12. The community management program seems to be working well in Myanmar. Emphasis should be given to expanding the area managed by communities, especially for marine fisheries.

13. Fuelwood harvesting is a key driver of forest degradation in all of Southeast Asia. While some work has been ongoing, there is a need to reduce reliance on fuelwood by improving the network of natural gas distribution for heating and cooking and for the increased availability of high

efficiency woodstoves. Consideration should also be given to investigating a plan for the use of geothermal and solar energy sources.

14. An aspect of the NBSAP that has not been well implemented yet is the actions pertaining to pollution. There is a need to conduct the intended study of pollution impacts on biodiversity; and then develop a plan to work to reducing the key sources of pollutants, such as from the mining industry in particular.

15. Recovery planning for important flagship (landscape) species will be key to protecting biodiversity in Myanmar. Remaining intact forest areas should be protected and action plans for key species including elephants and tigers be implemented as soon as possible. Plans should also be developed for other landscape species that are in serious decline, including banteng and Eld's deer.

16. Down-loading greater responsibility to the States in the form of local BSAPs might help achieve improved success at this point. National staff needs to work with State staff to develop plans at the State level that mirror the NBSAP and ultimately contribute to the national effort. This is likely a capacity issue in terms of time and staff available from the national office.

17. One key issue is that much of the budget for conservation is external to MONREC, and given directly to NGOs by donors. Implementation of the NBSAP requires more effective coordination between all NGOs and government to ensure that government priorities are being met. This seems especially true of work being done by some of the smaller NGOs and through universities. Forming partnerships with government enables a unified directional approach to important issues.

Appendix 1. Gender report (attached at Target 14 in the online report)

Gender aspects for the 6th National Report of Myanmar to the CBD

Introduction

As a part of the Sixth National Report on progress towards the Aichi Biodiversity Targets, a gender component has been requested by the Convention on Biological Diversity. The action plan for this component required interviews with women's groups, where appropriate, discussing resource biodiversity issues with women generally during the data gathering phase, and disaggregating the data for the Targets into male and female participation, wherever possible and as appropriate. Not all agencies implementing the NBSAP maintained data by genders from their public meetings, trainings, or other activities, and so we have disaggregated the information only insofar as it is possible.

Gender issues in Myanmar

There have been advances for women in Myanmar, particularly for those who are educated, with women working in government and business, including in some leadership roles. Within the resources departments, such as Forestry, Wildlife Conservation, Agriculture, and Fisheries, for example, there are programmes available to send both men and women to developed countries to obtain master's and doctoral degrees. This programme has resulted in a large number of well-educated women within the ranks of these departments. Nevertheless, women remain under-represented in senior civil service positions and the parliament, with only about 10% of the

members (Minoletti 2016). Gender equality and social inclusion are of paramount importance for the eradication of poverty and for sustainable development because women participate, and often play roles different from men, in all resource sectors, including forestry, fisheries, and agriculture. Data show that aquaculture remains a male-dominated activity. Only 20% of individuals who reported aquaculture to be their primary occupation were women. Women represent only 13% of the casual workforce on fish farms. These figures are lower than the corresponding shares in crop farming, where women represent 27% of farmers and 33% of wage workers (Belton et al. 2017). Women are still largely absent in local governance decision-making, however, and persistent gender biases obscure the economic role that women play in the household and in the rural economy. In agriculture for example, unskilled daily wages for women remain consistently below those for men (FAO 2016). Women are critical actors in Myanmar's fish production where they make and mend fishing nets, feed and catch fish from ponds, and process, cook and sell fish, but they are not equally compensated with men. For example, wage rates for temporary workers on fish farms are USD 4 per day for men and USD 3 per day for women. Tezzo et al. (2018) reported that in all three fishery subsectors, women play a major role in post-harvest activities, accounting for the majority of the workforce processing (e.g. fish drying) and retail trade, which generate large numbers of jobs on land. Women also play a significant role in many wholesale trading operations.

Women still play the dominant or only role in caring for children and the homes, especially in rural societies, even if they work outside the home during the day. As a result, the formation of groups from rural areas that specifically represent women's issues is very difficult to achieve because women have no time (or money) to attend meetings. Not only do they need to return home from work to care for and feed their children but there are also social conservative norms that hinder travel by women to meetings or become involved in resources decision-making (Naujoks et al. 2017). This puts caring for biodiversity "very far from their day-to-day considerations, which relate mostly to obtaining food and caring for family" (Women's Platform for Community Resources, pers. comm. June, 2018).

Sustainable resource use by women and gender differences in the use of natural resources is not specifically mentioned in Myanmar's "National Strategic Plan for the Advancement of Women" (2013). The plan does, however, recognize the need to "strengthen systems, structures and practices to ensure meaningful participation by women in the management and safeguarding of natural resources and in adapting to climate change", and the need to raise women's awareness to natural resources management issues. Hence, there is expressed concern that women become better educated and participate more equally in sustainable environmental development. Myanmar's NBSAP has only a single national objective dealing specifically with women: "Promote environmental awareness and engagement for youth and women's groups" (18.4.2). However, the recent National Land Use Policy (2016) included involvement of women and equality of women land ownership as guiding principles.

Gender and natural resources use and perceptions in Myanmar

Studies by Allendorf and Allendorf (2013) and Zaw Min Thant (2017) found that women are less likely than men to have a positive attitude toward protected areas (although all were positive, the ratio was 3 positive to 1 negative for women, vs. 10 to 1 for men) and are less likely to express perceptions of problems and benefits associated with the areas than are men. Women also appeared to have less knowledge about rules for conservation than men within a protected area. Much of this difference may be attributable to men being more likely to perceive conservation and ecosystem service benefits than women possibly, in part, because of the long-time male-dominated society that still exists especially among rural ethnic communities (Naujoks et al. 2017) and in part because men were the main resource-users (Zaw Min Thant 2017).

Both men and women are involved in the aquaculture industry but the women's role of postharvest activities and routine management, such as mending nets and feeding fish, tends to be viewed as less important than the harvesting (Aregu et al. 2017). Postharvest activities by women are an

important value-adding stage of the fisheries value chain. Recently, some extension work has targeted these activities, such as through the Myanmar Sustainable Aquaculture Programme, funded by the EU, to increase female engagement in and benefits from fish value chain development.

NBSAP implementation and gender participation

There is only one Aichi Target that specifically mentions actions for women (Target 14), however, there have been many advances in gender rights and equality as a result of the participation of both government and many INGOs in the delivery of the Myanmar's NBSAP's objectives (Table 1). Overall, it appears that women attend all training events, making up about 20-35% of the attendees. Exceptions are for the inshore fisheries and agriculture extension training sessions, where women were in the majority. Further, there are national and local level nascent women's groups that are trying to organize Community User Groups (forest, fishery, agriculture) at the state and national levels to promote training and advocate for improved women's rights. These groups are not well-funded, however, and also have some difficulty achieving their objectives owing to cultural issues surrounding women's capacity for attending meetings.

Table 1. Summary of training events in Myanmar where the number of women attending was recorded (data from government and NGOs).

Type of event	Total participants	Number of women (%)
Media training	43	12 (28)
Protected areas training	35	11 (31)
Agriculture extension (many sessions)	1338	707 (53)
Community conservation enforcement near PAs	25	8 (32)
Marine planning	30	6 (20)
Inshore fishery management	174	95 (55)
Illegal wildlife trade	15	5 (33)
Endangered species	109	36 (33)
Migratory species monitoring	unk.	30%
Mangrove management	91	30 (33)
FPIC 18	4 (22)	
University of Forestry (UFES) graduates 2015-18	382	84 (22)
Total	1960	972 (50)

Conclusions

Women implement the NBSAP, often in ways and areas different from men and complementary to the overall effort. Among community user groups, women play key roles in maintaining equipment, gathering wood and tending nets, especially in the inshore fisheries. Gender biases, however, remain with respect to wage parity, joining advocacy groups, and travelling to meetings. Further, because of traditional family roles, most women have little time available to travel or to attend meetings. Even so, the disaggregated data clearly suggest that women are involved in conservation issues, are willing to improve their skills, and are playing important roles in the implementation of the NBSAP, especially within user groups.

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