Section I
Information on the targets being pursued at the national level

Timor Leste National Biodiversity Strategy of Action Plan (NBSAP) provides a clear guiding framework to all biodiversity related sectors including government institutions, private sectors, NGOs, academia to take action on the conservation and utilization of biodiversity resources sustainably through its 5 pillar of Priority Strategy and 21 Strategic Action with two targets (please refer to the NBSAP for details).

Information on the 21 Strategic Action herewith is provided against their targets with a particular emphasize on the 2020 vision of the NBSAP since the 2015 vision has been reported in the 5th National Report to the UNCBD.

The information provided in this section obtained from stakeholders and partners through focus group discussion and individual consultation as well as information that are publicly available relevant to the implementation of the NBSAP. In addition, this information is further used to analyze and assess for the effectiveness (section 2) and progress towards 2020 vision of Timor Leste biodiversity conservation and sustainable use (section 3) and thus their contribution to global biodiversity conservation strategies "Aichi Biodiversity Strategy" (section 4). New available information/data is updated in the section 7 of the 6th NR. The draft report was provided to stakeholders during the validation workshop and their feedbacks have been integrated in the final draft as below.

Priority Strategy 1. Mainstreaming biodiversity into sectoral plans and programs to address underlying causes of biodiversity loss.

Target: By 2015, public awareness on biodiversity has increased and participation in conservation activities (through sustainable tourism and sustainable agriculture) by private sector, media, and local communities, including women and youth has been enhanced.

Strategic Action 1
Raise awareness on the values of biodiversity and engage various sectors including media, business sector, youth and women groups and local communities in conservation activities by implementing the CEPA Strategy.

The awareness raising activities on the values of biodiversity is the main responsibility of the National Directorate of Biodiversity Protection and Recuperation (NDBPR) within the Directorate General for Environment, Secretariat of State for Environment. The awareness raising activities aim to enhance people awareness on the values of the biodiversity and thereby take steps to conserve biodiversity and use sustainably (ABT Target 1). The awareness raising also addresses issues of climate change (SDG 13) and illegal hunting of wild flora and fauna like wild deer (SDG goal 15.7). In 2015, the NDBPR conducted awareness raising on the conservation of biodiversity and sustainable use in 17 villages (sukus) across Timor Leste with participants of over 1698 people. In 2016, the awareness raising activities decreased to 9 sukus with participants of 880 people. This awareness raising activity continued to decline in 2017 to 7 sukus with number of participants of 654 participants or almost 26 % deceased compared to the previous year of 2016 awareness raising. Participants were from local communities and authorities and the issues addressing in awareness raising was broad and less focus on underlying causes of biodiversity loss such alien species, deforestation, climate change, illegal hunting. This was probably associated

with the limited in human resources such as technical staffs with good experiences and experts and funding (please refer to the Section 2 for details). Few focus awareness raising on the seagrass and dugong conservation were conducted by the NDBPR, CI and blue ventures (RDTL, CI, Blue Ventures, 2018) during the dugong project activities (2015-2018). The awareness raising on the sea grass and dugong focused on the status and causes of the loss of dugong which included fishing to consume, sedimentation effect on its seagrass habitat, pollution, etc. Another part of the project activities was providing training for monitoring of seagrass for dugong. There were also other awareness raising activities to communities living nearby mangroves including engagement of students in mangroves tree planting delivered by the UNDP and USAID Avansa in the area of agriculture.

UNDP mangrove restoration activities for healthy ocean involving youth and various organizations including directorate of fisheries, Ministry of Agriculture and Fisheries through a Peace Fishing Camp' in Hera, Dili on 7 December 2018 in increasing awareness raising and sharing of experiences in protecting and conservation of mangroves and concluded with the renewed spirit and the commitment to promote ecotourism, biodiversity, and raising awareness about mangrove conservation http://www.tl.undp.org/content/timor_leste/en/home/newscentre/articles/2019/mangroves-restoration-for-healthy-ocean-.html.

In the future, widening engagement of the various sectors such as media, business sector, youth, women groups and academia is indeed important in reaching out values of biodiversity to all people in country.

Strategic Action 2
Promote nature-based and community-based sustainable tourism and ecotourism.

The Timor Leste National Tourism Policy: Growing Tourism to 2030-Enhancing a National Identity was recently approved in March 2017 and this is relevant to SDG Goal 8.9 that by 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products. There is still limited implementation of the policy, meanwhile the Directorate General for Tourism of the Ministry of Tourism, Commerce and Industry had some basic services and management to tourism activities through various small scale short-period projects. For example, project on human resources development delivered in 2016 funded by the UNWTO. The project had 4 sub projects. The first sub project was on the tourism and youth which delivered during 30 days training on hospitality participated by 60 people (guesthouse staffs and restaurants) from all 13 municipalities in Timor Leste. The second sub project was on a 2-day mobile training which involved both theory and practical work in three locations/municipalities including Ermera municipality, Atauro (Dili municipality) and Com (Lautem municipality) participated by 74 people. The third sub project was a 3-week training on tourism management delivered in Dili and participated by 25 people from private sectors. The last sub project was on a 3-week tour guide training participated by 58 people from guesthouse owner, restaurant, youth from 4 municipalities including Viqueque, Liquica, Lautem (Com and Tutuala) and Ainaro (Maubesi and Hatubuiliko).

Another important project was on community based ecotourism and there were 4 sub projects including web site training for staffs and as result, staffs were able to update the website on the community and eco-tourism (http://www.cbet-timorleste.com/cbt7/), field assessment on the 3 guesthouses (Com-Katiga, Hatubiliko-Namrau and Wailakaruni (Viqueque) and they

were selected for a comparative study in Indonesia, training of trainers for guesthouse services delivered in municipalities, and last trainers provided training to guesthouse staffs on sanitation, restaurant, food services to guess in 9 municipalities with 147 participants.

In addition to activities delivered by the Directorate General for Tourism, the USAID's Tourism For All project (January 2018 – January 2021) has been implementing the National Tourism Policy on Setting A Path for Timor Leste Tourism through the pillars as priority, prosperity, protection, partnership and people. For the priority, the country has now achieved with a visa entry free for tourism from Indonesia in response to the same facilities being provided by the government of Indonesia to Timor Leste. For the prosperity, activities included identification of market needs, establishment of a committee for Timor Leste Faith Base Tourism involving 5 existing religions in Timor Leste, develop Timor Leste National Tourism map, green hotel certification which implemented to hotels and adaptation to climate change (ABT 2). For the protection, some of the activities included to register Timor Leste identity cloth "Tais" in the UNESCO (which Timor Leste ratified in 2015) to be as "UNESCO's Intangible Culture Heritage". More than 13 TAIS have identified and classified as tais Liurai, Reinu and Atan to be nominated. The nomination of the Tais to UNESCO will be delivered in this Nov 2019 through a National Consultative Committee which was established on April 23, 2019 leading by Intangible Cultural Heritage under Secretariat of State for Art and Culture.

Other activities included identification of the historical sites, culture site, rock arts, application of the Nino Konis Santana National Park to UNESCO as "Man and Biosphere reserve". Identifying of the high conservation values such as diving places, cultural houses (uma lisan), Develop sustainable management plan for Atauro and Dili and support the Directorate General for Forestry for the demarcation of mount Ramelau (in progress). In addition, Partnership assign agreement with Kaebauk Institute within the Banco Nacional de Comercio de Timor Leste (BNCTL) (first Timor Leste Commercial Bank) to provide credits for tourism development activities such as guesthouses and related business in tourism sectors. Moreover, Timor Leste has established and launch Timor Leste Association on Marine Based Tourism (Asosiasaun Turismu Maritima Timor Leste) to help government marine conservation and tourism.

Strategic Action 3

Integrate biodiversity into agriculture to ensure the development of diverse and sustainable crops and sustainable agricultural practices.

A sub action of this strategy action 3 (3.1) is related to the ABT 2; By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems. The strategy action relates to Goal 2 of the SDGs on end hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Agricultura employs more than 75 % to local people and contribute to the country economy after oil and gas. Inappropriate subsistence farming activities have to some extend contributed to loss of biodiversity. Similarly lack of knowledge on the values of the local wild and cultivated crops has led to the loss of crops biodiversity. Integration of biodiversity into agricultural sectors can be a way to conserve and reduce loss of crop biodiversity.

Various biodiversity related activities/projects in the agricultural sectors aiming at conserving local species, sustainable farming through integrating farm and trees in an agroforestry systems and access to market were reported.

Ministry of agriculture through its National Directorate for Research, Statistics and GIS has been leading the collection of the local cultivated crop to conserve and promote its cultivation in the future. A total of 92 local species were collected from 6 municipalities of Baucau, Lautem, Liquica, Manufahi, Maliana and Viqueque since 2014 and the species are now at the Collection Centre of Loes and Betano for further development. On the other hand, there is lack of financial, expert and facilities like laboratory to support further investigation on the identified species/varieties (please refer to the section 2 for details).

Researcher at the UNTL have also promoted the use of local varieties particularly local grain legumes such as beans through testing of its adaptation to low coastal areas to be grown after rice harvest (Gusmao, 2016; 2017; 2018; & Gusmao et al, 2019). Further the Department of Agronomy and Centre for Climate Change and Biodiversity of the UNTL in cooperation with the Agricultural Innovation for Communities (Ai-Com), a 5 year project (2017 – 2022) funded by the Australian government has intensively researching for new technologies such as use of rice husk and rice husk plus nutrients in promoting production of various local and introduced crops and horticultures in the lowland paddy field areas after rice. The new technology achieved will be recommended to rice farmers particularly in the low-coastal areas to use and that it can provide additional income to sustain food security to rice farmers.

Another 5 year (2017-2022) project "Ai ba Futuru – Partnership for sustainable agriculture" funded by EU and led by the GIZ targeting 40 villages/sucos with approximately 4,000 households involved in 4 municipalities (Baucau, Manatuto, Lautem and Viqueque) aims at increasing the production and productivity of agroforestry systems and improve market access for agroforestry product. Project activities include growing high value trees and fruits as well as high yield crops including local varieties that have been released by the Ministry of Agriculture and Fisheries. Another project activities is providing training on access to markets which is crucial for farmers to be able to sale their product and get more income and thus more opportunity to diverse planting of trees and crops that allow them to get away from subsistence agriculture to commercial agriculture. Similar project also deliver by the USAID's five-year Developing Agricultural Communities (DAC) (2013-2018) https://www.usaid.gov/timor-leste/project-descriptions/developing-agricultural-communities and USAID Agriculture Avanca with a project duration of April 2015 – Mach 2020 and JICA projects on the community based natural resource management (JICA CBNRM) and Care International on improving livelihood of farmers in Atsabe municipality of Ermera (2016 - 2019).

Strategic Action 4
Develop and enforce a sustainable land management and land use policy.

A sub action of this strategy action 4 (4.3) is related to the ABT 2; by 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems. The target action relates to goal 15.1 of the SDGs; by 2020, ensure the conservation, restoration and sustainable use of terrestrial and

inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.

Several laws and decree laws have recently been established under the National Directorate of Lands, Property, Registration Services. These included law no 13/2017, 5 June on Regime Especial for immovable ownership property (Titularidade Bein Imovel), law no 6/2017, 19 April on the basis of territorial planning (Baze sira ba ordenamentu territóriu) and law no 8/2017, 26 April on law of expropriation on the use of the public utility (lei ba espropriasaun tanba utilidade publika). However, none of these laws in particular emphasizes on the sustainable land use management and indeed land use policy for a sustainable land use to be developed. On the ground activities, however, JICA CBNRM-PLUP project in working with 13 villages in Comoro and Laclo catchments provided and enhanced land use planning through a participatory land use planning with local communities. Conservation Agriculture by FAO is another example of the use of agricultural land sustainably to sustain crop production and food security.

Strategic Action 5
Ensure impact assessment of development projects through the EIA system.

The EIA which is described below and also in the section 4 of the 6th NR was an additional information to the ABT 2. The strategic action relates to SDG goal 6.3; by 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally and SDG goal 12.4; by 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

The decree law no 5/February/2011 provides an environmental impact assessment for all activities under projects and companies to ensure that activities are well managed and therefore will not effect on environment and biodiversity. An EIA task force based at the Secretariat of State for Environment was established to conduct activities related to EIA. The assessment on the project activities would define the category of the project to which it complies. The decree law of biodiversity also provides penalties to projects/persons do not obey to the law. The implementation of the decree law is yet fully implemented (partial) (please refer to section 2) and partly was due to the limited human resources like technical experts, funds and facilities such as laboratory to support the implementation of the decree law and is yet promulgated, but this will be achieved the end of 2019.

Priority Strategy 2. Protecting biodiversity and promoting sustainable use

Target: By 2015, rehabilitation activities in critical watersheds and degraded lands have been undertaken and at least one million trees planted per year, providing sustainable livelihoods to local communities through ecosystem restoration activities.

Strategic Action 6

Enhance and develop a national biodiversity law and relevant environmental policies on nature conservation, pollution and other related concerns, including traditional conservation laws and practices.

The national biodiversity decree law was drafted in 2011 and is yet promulgated (please also see SA 5 above). The decree law was recently approved by the council of ministers but yet promulgated by the president of RDTL due to minor corrections. The correction have been addressed and resubmitted to the cabinet of presidential to be considered and this will soon be promulgated most likely by the end of 2019 (a statement from the director of NDBPR at the validation workshop). The decree law emphasizes on the conservation, protection and restoration of the biodiversity resources including action against illegal activities such as illegal hunting. The decree law also strengthens traditional conservation law and practices of Tara Bandu which is widely practiced across the country by various institutions and partners to regulate and control environment and biodiversity.

The Directorate General for Environment, Secretariat of State for Environment implemented Tara Bandu on conservation and protection of biodiversity in 3 villages (Namlesu-Aileu, Irabin de Baixo- and Babulo-Viqueque) in 2015 and 7 villages (Uma kaduak-Manatuto, Leorema-Liquica, Maubisse-Ainaro, Uma Tolu-Viqueque, Beloi-Dili, Acumau-Aileu, Seloi Kraik-Aileu) in 2016 and same 7 villages (Lospalos Vila, Aitemua-Manufahi, Funar-Manatuto, Fatukero-Ermera, Aldeia Mane Walu-Covalima, Edi-Ainaro, Bairopite-Dili) in 2017. Tara Bandu was the final process of the participatory land use planning by the JICA-CBNRM project in each of 13 villages in the Comoro and Laclo catchments to regulate agreed regulations.

Strategic Action 7

Intensify massive tree planting including mangrove reforestation to rehabilitate critical and damaged habitats and ecosystems and degraded watersheds

This strategic section is related to ABT target 5; by 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced. The strategic action relates to the SDG Goal 15.1; by 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements, Goal 15.2; by 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally, Goal 15.3; by 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world Goal 15.4; by 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development and Goal 15.5; take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.

Timor-Leste harbors globally significant ecosystems such as tropical rainforest, mangroves, wetlands like the Lake Iralalaru basin, and agricultural and marine ecosystems. Approximately 59 percent of the land area has some type of forest cover, but only 1.7 % is covered by the remaining primary forests found mainly in Lautem and Covalima municipalities (Democratic Republic of Timor-Leste, 2013a). Timor Leste continuous

experiences losing of its forestry from year to year. A new analysis based on the UN BL shows that in 2015 annual forest loss was 0.11 % and there was a steady increased to 0.21 % in 2017 (please refer to section 4 for details). Prior to these years, the biggest forest loss was in 2014 (0.25 %) and this was mainly due to the opening of new highway road in the southern part of the country. Other contributors are illegal cutting for fuelwood and infrastructure development, etc. The cover loss decreased by 0.11 % in 2015 (compared to previous year 2014), however the trend was then steadily increased again and reached to 0.21 % in 2017.

In particular, reduction in the mangrove forest significantly occurred over years since 1940 (Table 1.1). Recent coastal mapping has revealed significant and ongoing coastal habitat loss in Timor-Leste, particularly in coastal mangroves, mainly due to trees harvested for timber and fuelwood. In some instances, hinterland mangroves have been removed for the establishment of brackish water shrimp and/or fish ponds. It was reported that a total of 1,300 ha of mangroves remains in 2013 (Table 1.1). A recent survey on the mangroves plantations in Timor Leste reported a total remaining area of 645 ha and approximately 129 ha (or 20 %) considered as highly degraded and hard to recover again (UNDP, 2017).

Table 1.1. Mangrove forest remains since 1940

Area reamain (ha)	Year reported	Reference
9,000	1940	MacKinnon et al. 1982
4,000	1982	MacKinnon et al. 1982
3,035	2000	Wilkie et al. 2003
1,802	2000	FAO 2007
899 (north coast)	2009	Boggs et al 2009
1,300	2013	Alongi, 2014
645	2017	UNDP, 2017

Source: Adapted to Alongi (2014) on estimation of mangrove coverage in Timor Leste "Mangrove Forests of Timor-Leste: Ecology, Degradation and Vulnerability to Climate Change".

Protection and reforestation are crucial to regain losses of forest and this is crucial for biodiversity and ecosystem services. Reforestation is the responsibility of the General Directorate for Forestry, Coffee and Industrial Plants, Ministry of Agriculture and Fisheries (MAF). The General Directorate for Forestry has a regular annual plan for production and distribution of tree seedlings to individual and farmers group, government institutions and other organization/NGOs. Further, the General Directorate for Forestry is also responsible for monitoring and reporting of the planted seedlings. Seedlings are mainly produced at the Permanent Nurseries Centre in Maubara, Liquica municipality managed by the General Directorate Forestry, MAF. This General Directorate had distributed a total of 748,730 tree seedlings from 2015 to 2019. In 2015, a total of 139,350 seedlings were distributed to individual and group farmers, NGOs, government institutions and agencies in 9 municipalities of Aileu, Ainaro, Baucau, Bobonaro, Dili, Ermera, Lautem, Liquica and Viqueque. In particular, in 2016, a total of 142,492 tree seedlings were distributed to 12 municipalities in Timor Leste. In 2017, a total of 139,663 seedlings were distributed to 273 individuals from 11 municipalities including Liquica, Bobonaro, Ermera, Aileu, Baucau, Covalima, Dili, Lautem, Manatuto, Manufahi and Viqueque. In 2018, a total of 207,225 seedlings were distributed to individual and group farmers, government institutions and

agencies including F-FDTL, IOM, Timor Aid, etc. In 2019, a total of 120,000 seedlings were distributed to 252 individuals in 10 municipalities including Aileu, Ainaro, Baucau, Bobonaro, Dili, Ermera, Lautem, Liquica, Manatuto, Viqueque. Overall, tree seedlings distributed were between 12 % (in 2019) and 20.7 % (2018) compared to NBSAP annual plan of one million trees planted.

The General Directorate has a regular monitoring and reporting of the tree seedlings being distributed to particularly individual and group farmers. Part of the monitoring is to identify/record area/s planted by individual farm groups. However due to the limitations in financial support and staffs (currently Department of Reforestation and Soil and Water Conservation has only 5 monitoring staffs to work with forest guards in filed), the monitoring activities were done in selected tree planting sites only and the observation was done a year after tree seedlings planted. The following data according to the year planted. In 2014, the Department of Reforestation and Soil and Water Conservation observed a total of 75,036 tree seedlings planted on an area of 76.86 ha from 19 farmers in 3 municipalities of Dili, Liquica and Manatuto. In 2015, the department observed a total of 6,550 tree seedlings planted in 5.62 ha from 7 farmers in the Municipalities of Dili, Manatuto and Baucau. In 2016, a total of 49,869 tree seedling planted on an area of 115.91 ha from 37 farmers in 8 municipalities of Dili, Baucau, Ainaro, Covalima, Manatuto, Ermera, Bobonaro and Liquica were observed. In 2017, a total of 34,170 tree seedlings planted on an area of 55.29 ha from 130 farmers in two municipalities of Aileu and Ainaro were observed. There was no monitoring data available for the year 2018 and 2019.

In addition to the tree planting managed by the government institution, General Directorate of Forestry, Coffee and Industrial Plants, the USAID Avansa also conduct reforestation activities involving communities of 10,000 tree seedlings per post administrative per year since 2016 and over 40,000 seedlings have been planted until 2019 in Aileu and Bobonaro municipalities. Further, 20,000 trees planted every year by WithOneSeed program https://withoneseed.org.au/community-forestry/ in Baguia, Baucau Municipality. UNDP mangrove project actively involved in restoration of through mangrove tree planting (but no data is available for reporting).

The biggest direct tree and fruit seedlings planted per year were from GIZ project activities where a total of 200,000 seedlings were planted in 2018/2019 rainy season in 17 villages that have been established under the project. The GIZ a lone has contributed 20 % of the 2018 year of tree planting target (GIZ Timor Leste, 2019). The UNDP facilitated project of Dili-Ainaro Corridor had 63,346 seedling planted over 38 ha (1667 seedlings/ha) for reforestation and 2,000 tree seedlings planted over 5 ha (400 seedlings/ha) for agroforestry during 3 years project activities from 2015 and 2018. The Global Climate Change Alliance Programme Timor-Leste (GCCA-TL) with a project duration of between 2013 and 2018 facilitated by German Federal Ministry for Economic Cooperation and Development (BMZ), co-financed by the European Union involved in tree plantation of more than 500,000 trees (forestry, industrial and fruit species) from 17 independent agroforestry nurseries within the implementing sucos/villages (21 sucos were involved) in the Seical catchment, with survival rates of more than 60 %. Thirty five per cent of participants in the project were women enabling communities to mitigate and adapt to climate change https://www.giz.de/en/worldwide/28354.html. A small number of tree seedlings also planted by other NGOs including Santalum. In general, there were overall progress in tree planting, however the number is still far from the target of 1 million trees to be planted each year.

Strategic Action 8
Assess impacts of invasive species and prevent and control the spread of these invasive species.

This strategic section is related to ABT target 9; by 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment. The target relates to the SDG Goal 15.8; by 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species

There is obvious invasive species in Timor Leste which brings negative impacts on biodiversity in general and agriculture in particular. A recent survey report shows 13 high impact weed species on environment and biodiversity and agriculture (Table 1.2) (Westaway et al, 2018). A further 42 species are rated as moderate impact weeds and 79 as lower impact weeds. Over 500 naturalised species or pests plants, about 20 of naturalised flora have been introduced for agricultural purposes such as pasture grasses and legumes for fodder, soil improvement or stabilization. Twenty-six percent have their origin in horticulture being introduced as ornamental garden or amenity plants. Many others (23 %) are thought to have arrived accidentally or as propagule (especially seed) contaminants of plant produce, soil, equipment or other materials. Miss flower has been reported as a weed plant that also effects on biodiversity, grass production, coffee plants mainly in high elevation of 1000 m or above from sea level (William, 2018). In addition to this, a lesser known serious coconut palm pests of Brontispa longissima (Coleoptera: Chrysomelidae) was reported. The species contains two cryptic species: the ‘‘Asian clade’’ is distributed over a wide area, including Asia and the Pacific region, and the ‘‘Pacific clade’’ is distributed in a limited area. These different pest species were assessed for the northern part of Timor Leste and revealed that the outbreaks of the Asian clade on tall coconut trees (more than 10 m tall) with a more severely damaged to the coconut palms compared to the pacific clade (Takano et al, 2017).

Further, there seems to have a potential problem from invasive Australian toad (Rhinella marina) in previous report on the black-spined toad Bufo melanostictus in Timor-Leste (Trainor, 2009), however, there is a claim that this invasiveness was misidentification as invasive species (Kaiser et al, 2016) (https://www.researchgate.net/publication/259892288). Despite of this, there is a spread out particularly in the area of Dili (based on personal observation) that new toad species exists in Timor Leste which requires further investigation.

Despite obvious evidence of the alien species in Timor Leste, there is no investigation on the degree of the impact of weed/pests/alien species on biodiversity and agriculture. Similarly no appropriate actions have been taken to prevent and control the spread of these invasive species on biodiversity and agriculture. This is mainly due to lack of human resources (experts) and financial support and more importantly the government did not prioritize in its programs.

Table 1.2. Weed species assessed as having high impact on Timorese agriculture and environment.

No	Species
1	*Ageratum riparia* (Regel) R.M.King & H.Rob.
2	*Calotropis gigantea* (L.) W.T.Aiton (*Apocynaceae*)
3	*Chromolaena odorata* (L.) R.M.King & H.Rob. (*Asteraceae*)
4	*Jatropha gossypiifolia* L. (*Euphorbiaceae*)
5	*Lantana camara* L. (*Verbenaceae*)
6	*Leucaena leucocephala* (Lam.) de Wit (*Fabaceae*)
7	*Mesosphaerum suaveolens* (L.) Poit. (*Lamiaceae*)
8	*Mimosa diplotricha* C.Wright (*Fabaceae*)
9	*Prosopis pallida* (Humb. & Bonpl. ex Willd.) Kunth (*Fabaceae*)
10	*Senna tora* (L.) Roxb. (*Fabaceae*)
11	*Sida acuta* Burm.f. (*Malvaceae*)
12	*Vachellia nilotica* (L.) P.J.H.Hurter & Mabb. (*Fabaceae*)
13	*Ziziphus mauritiana* Lam. (*Rhamnaceae*)

Source: Westaway et al, 2018

Strategic Action 9

Implement sustainable livelihood activities for local communities, promote traditional knowledge and practices, and enhance the role of women and youth

This strategic action is related ABT 10, 14, 15 and 18. The section relates to SDG Goal 1.5, Goal 2, Goal 5, Goal 15, and Goal 13.

The national forest policy was revised and approved in 2017 facilitated by FAO with a goal of sustainable management of forest resources and watersheds to provide environmental, social and economic benefits to the people of Timor Leste. Community and private sectors participation in forest sectors were the main objectives of the revised policy (Figure 1.1). Following this, a National Community Forestry Action Plan/program for a period 2018 - 2030 facilitated by FAO was developed to implement the policy, however plan/program is yet approved. Nonetheless, some activities have been delivered by donors through project activities in mobilizing communities to protect forests, sustaining livelihood options involving local communities, youth and women groups.

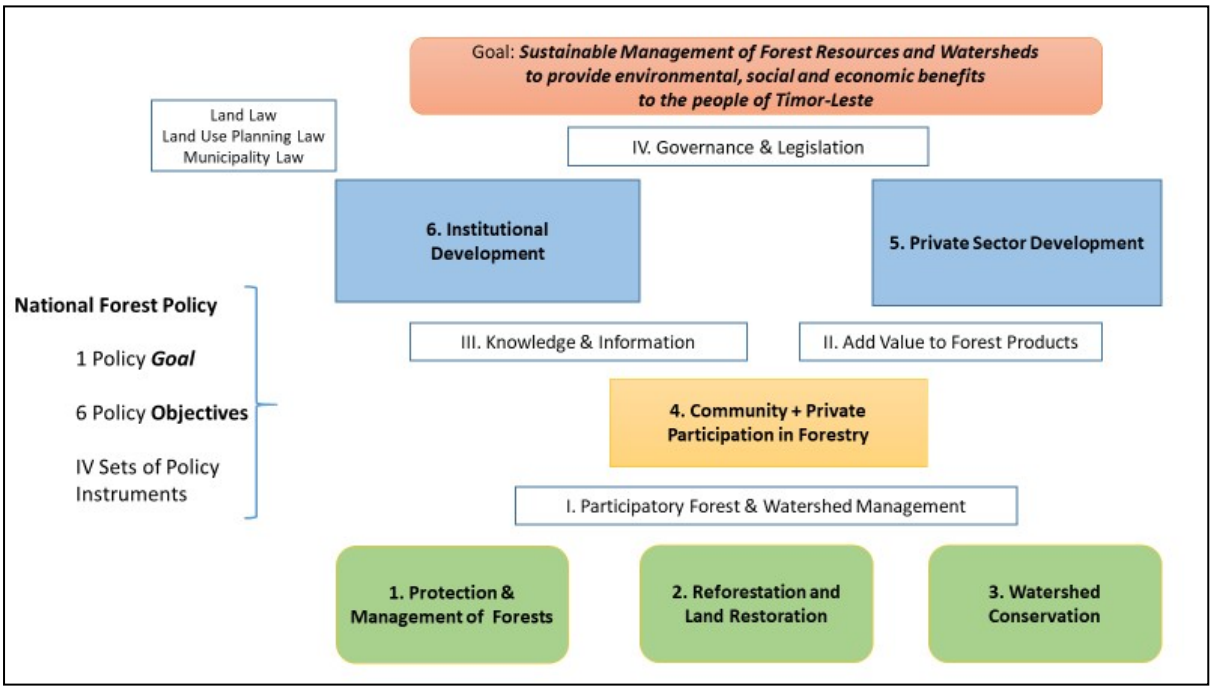

Figure 1.1 Goal, objectives and policy instruments of the revised National Forest Policy (2016)

For the protection, management of forests and ecosystems, JICA-CBNRM project, USAID AVANSA and UNDP have been working on these issues through their project activities. The CBNRM project (2015 – 2018) activities was focusing on the nature conservation through local community approaches to manage and obtain benefits from management and use of natural resources sustainably (forests, soil, water and biodiversity). CBNRM project output included reduce fire and illegal cutting, reduce grazing impact on the crops damage and unlawful act, enhance community in soil fertility amendments and crop production, use of the unproductive lands growing timber trees, fruits, coffee and fodder crops and in the end livelihood of the community improved. To achieve the project outputs JICA working with local NGOs like Raebia and Halarae and the MAF's extentionists and experts in working with community through a participatory land use planning (PLUP) to identify appropriate land uses with communities and regulate the agreed land use identified through a traditional law of Tara Bandu in each village/suku at the end of PLUP preparation. JICA-CBNRM had working with 13 villages in the two watersheds of Cumoro and Laclo.

The World Bank project on Road Climate Resilience Project for Timor Leste aimed to deliver sustainable climate resilient road infrastructure on the Dili-Ainaro corridor to improve the lives of coffee farmers and others living in rural areas of central Timor-Leste, whose incomes and access to vital services are directly impacted by the condition of the road (the World Bank, 2017) https://www.worldbank.org/en/news/feature/2017/05/18/timor-leste-a-safer-highway-means-a-better-cup-of-coffee.

Production of industrial plants/crops have significant contribution to the country's food security and economic growth. Coffee is the main contribution after oil and gas (Table 1.3). Table 1.3 shows 8 industrial plants for exporting purposes promoted by General Directorate for Forestry, Ministry of Agriculture and Fisheries. Coffee was the highest production and

exporting commodity compared to other except in 2018 where the production was below candle nut and cashew, however the dominated exporting was still coffee.

Table 1.3. Production and exporting of 8 industrial plants.

Commodity	2015		2016		2017		2018	
	Production, ton	**Export, ton**	**Production, ton**	**Export, ton**	**Production, ton**	**Expor, ton**	**Production, ton**	**Export, ton**
Coffee	16,849	3,400	17,872.01	9,901	16,849	6,569	14,344	6,301
Coconut	11,500	865	13,748	627	13,800	742	46,470	972
Candle nut	2,940.50	458	3,260.50	499	3,580	1164	17,890	904
Cashew	1,760	0	1,508	665	1,650	10	17,083	6
Chocolate	1,170	14	4,170	0.5		0	4,116	0
Vanilla	622	6	622	411.9	500	900	8,632	1
Cloves	231	6	236	26	350	10	8,665	21
Pepper	15	0	15	0	0	-	1,577	-

Source: National directorate for coffee, and industrial plants, MAF

Similarly, USAID AVANSA a 5 year project (April 2015 to March 2020) aims to accelerate sustainable and inclusive economic growth in the agriculture sector. At the end of the project, USAID anticipates that over 33,000 people in 250 communities will be earning higher incomes, realizing improved nutrition, and managing their economic assets more effectively.
https://www.usaid.gov/timor-leste/project-descriptions/usaid-avansa-agrikultura-project.
Apart from the agricultural activity, the project also mobilize community in protecting, managing and replanting of forests through tree planting as previously discussed. From 2016 to date at least 16 villages in 5 municipalities (Aileu, Ainaro, Bobonaro, Dili, and Ermera) have involved in tree planting activities and other agricultural activities. The USAID Avansa also supported communities to establish their nurseries as needed. A total of 14 nurseries were established in 4 project activities (Bobonaro: Anakau Luhan (Ritabou), Raemlarun (Ritabou), Hametin (Cailaco), Acuegas (Marobo), Moris Foun (Lourba), Haburas Malilait, Malbau; Aileu: kinta Portugal/sarlala, saboria ; Ainaro: soru kraik, Leolima ; and Ermera: Lauala, Riheu, Fatukeru).

Global Climate Change Alliance Programme Timor-Leste (GCCA-TL) describing in the Section 7 above had also mobilizing communities with 35 % of women in involving tree planting including capacity development and awareness raising activities for vulnerable communities and women https://www.giz.de/en/worldwide/28354.html.

In addition to the sustainable livelihood and food security, CRS provided a special project "Resilience mitigation of climate change" component activities in a specific access garden design called Key Hold Garden for the vulnerable communities particularly people with disabilities and elders to access to the garden to plant, water and harvest product and this has been designed for the climate change adaptation of water use efficiency "climate smart agriculture". Another important project component was to create groups for Save Internal

Loan Community with saving and loan regulations established within the group members of 15 – 25 members. The project started since June 2017 in 4 villages/post administrative, the municipality of Viqueque including Afaloicai, Babulu, Vesoru and Uatucarbau.

Priority Strategy 3. Building climate-resilient ecosystems through effectively managing protected areas and reducing threats to biodiversity.

Target: By 2020, the status of biodiversity has improved by safeguarding ecosystems, species and genetic diversity in the 46 declared protected areas.

Strategic Action 10.
Effectively manage representative samples of biodiversity in the 46 identified protected areas and create natural conservation zones to protect specific biodiversity and ecosystems

The strategic action 10 is related to the ABTs 11, 12 and 13. This strategic action relates to SDG Goal 14 and Goals 15.1.

The Timor Leste Protected areas as reported in the 5th NR was 52 PAs. This number was not correct and the correct number of designated PAs is 46 (44 PAs in terrestrial and 2 PAs in marine (Batugede and Atauro) based on the Decree Law No 5/2016.

The terrestrial and marine PAs covers 15.89 % and 0.57 % of the country's land and marine area, respectively. The PAs covers more than half of the Key Biodiversity Areas (50.61 %) and this is important for the conservation of biodiversity in country when every PA is in function. Currently, only 4 out of 46 PAs (Cristu Rei, Lagoa Maurei and Alafalu, Monte Manucoco, Mount Fatumasin) have their demarcation completed and management plans in place and the Nino Konis Santana management is still in draft and the demarcation and management of the rests of PAs (41 PAs) have yet done. The NKS has established its Steering committee. The USAID's Tourism For All is now assisting the Directorate General for Forestry for the demarcation of mount Ramelau. Details of the location of PAs are shown in the map 4 and 5 in the section 4.

Strategic Action 11
Develop and implement a comprehensive and integrated coastal and marine policy and fisheries management programme.

This strategic action is related to the ABT 2, 4, and 6. The target 6 of the ABT; by 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits. and SBT 20; by 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties. The strategic action relates to SDG Goal 14; Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Timor Leste is a hotspot to biodiversity and is not only in terrestrial site but also in the marine areas with a total area of 10,933,575 ha within its EEZ. Timor Leste is part to the Coral Triangle that hold 76 % of the global coral species. Recent survey in 2016 identified a total of 289 hermatypic scleractinian species and together with previous survey conducted in 2012 (258 species) it brings to a total of 336 coral reef species recorded for Atauro Island and this brings up to a total of 393 coral species in the country. Three species (*Echinophyllia*, *Goniopora* and *Montipora* spp.) showed significant morphological differences from their closest congeners, and are likely new to science, though requiring additional taxonomic study. The recent surveyed indicated that there is a likely to be over 450 hermatypic scleractinia present, in total, in Timor Leste (Allen & Erdmann, 2016).

Several decree law and decree laws and ministerial diploma on marine and coastal had been developed prior to 2015. These include law no 12/2004 on fishing related offenses. Government decree law including decree law no 6/ 2004 on general basis of the legal regime for the Management and Regulations of fisheries and aquaculture, decree law no 21/2008 on implementation satellite system for monitoring fishing vessels and other several decree laws and ministerial diploma. Timor Leste national ocean policy recently approved in 2017 with a vison of a healthy and secure ocean that sustains the livelihoods, prosperity, and social and cultural values of the people of Timor-Leste in a fair and equitable manner. To achieve the vision the policy has 6 strategic objectives which are 1) Working together: An integrated participatory ocean governance system, which facilitates collaboration across jurisdictions, allows for the exchange of knowledge, data, ideas, skills, and experience, and recognizes and considers local customary law, national law, and international and regional commitments, ii) Securing national jurisdictions and exercising sovereign rights over our oceans: maintenance and protection of the rights of Timorese people to equitably use and manage their marine natural resources, iii) Our future: a diverse Blue Economy based on the sea, iv) Strengthening our natural defense: protecting, maintaining and restoring coastal and ocean resources and ecosystem services, v) Investing in our people: developing the capacity of Timorese to engage in ocean based development and protection through research, education and capacity building, and vi) Climate change vulnerability, adaptation and mitigation. The document also provides clear steps on the implementation of NOP as well as monitoring, evaluation, and outlook mechanism. To further implement the NOP, in 2018, National Plan of Action (NPoA) was revised for the period 2018 – 2022. The NPoA for the Coral Triangle Initiative (CTI) is categorized into three major groups: i) encompasses activities related to Ecosystem Approach to Fisheries Management (EAFM) and Seascapes, ii) covers activities relating to Marine Protected Areas (MPAs) and threatened species and iii) last group captures activities related to Climate Change (CC) with clear goals and targets. In addition to this, the national fisheries strategy for Timor Leste is in draft for approval.

Fishing activities under the decree law no 6, it identifies as follows: 0 too 1 NM (nautical mile) (1865 m) is for subsistence fisheries, from 1 NM – 3 NM is for fishing activities using engine boat, between 3 – 18 is for semi industries fishing and this is for nationals only, more than 18 to ZEE is for industrial fishing (National and foreigner). Fishing in the marine protected areas are not allowed and categorized as no take zone.

To enhance long term fish production and marine and coastal management and conservation in Timor Leste, the Department of Marine Science was recently established within the Faculty of Agriculture, National University of Timor Lorosa'e (UNTL) in 2018. The department will serve a long term human resources capacity development in country for

undergraduate courses and research activities that will contribute to the development of fish production and management and conservation of marine and coastal resources. In addition, to enhance fish production in Timor Leste, KOICA Korea had a 4 year project (2014-2017) on strengthening the capacity of human resources on fisheries sectors in Timor-Leste through establishment Fisheries Training Center, and increasing aquaculture productivity through enhancing research capacity. The center called National Institute of Fisheries and Aquaculture (NIFA) located in Liquica municipality was handover to the government on 22nd of February 2018. The center has multi purposes that it is not for teaching only, but also for fish seed production in order to be distributed to private producers or local cooperatives that can contribute to the reduction of malnutrition in Timor Leste. Currently, annual fish consumption per capita in Timor-Leste is 6.1 kg/capita which is still about half less than the national target of between 10 – 15 kg per year. The institute will provide capacity building to government fishery officials, training to fishery of about 5,000 and experts, will secure fish seed production technologies and increase protein supply. A capacity building workshop on marine spatial planning (MSP) conducted at Hotel Timor, Timor Leste, from 6-8 September 2016 supported by UNCBD provided a framework to gain a better understanding of how marine areas are used and valued by stakeholders to facilitate informed planning and decision-making. Results of the workshop identified various priority areas and interests including establishment of MPA, awareness raising, zoning/spatial planning, mangrove conservation, tourism, fishing, fisheries management, minimizing habitat destruction https://www.cbd.int/meetings/SOIWS-2016-04 https://www.un.org/Depts/los/consultative_process/contributions_20cp/SCBD.pdf.

Another World Fish Project aimed to increase fish production in country through Rumpon technique (FAD's – fish aggregated device) which created an environment where fishes come together) – for fishing. This is an ongoing activity in Aldeia Beacou, Suku Aidabaleten, postud administrative Atabae (Maliana), Postu Administraivu Atauro (Dili), Postu Administrativu Vemase (Baucau) and Suku Fatudere (Adarae), Postu Administrativu Viqueque Vila (Viqueque). The production of fish from fisheries for a duration between August 2018 and August 2019 was 59,081 kg which is still far from estimated of 2011 ton per year to feed a person of 10-15 kg per year by 2023. In addition, the Directorate National for Fisheries also provided training and practice on a small scale diversifying fish product in different form of product e.g. shredded fish, fish ball, etc. to fishery families in all 11 municipalities on the coastal areas at irregular implementation.

One of the big challenge to fisherman whose use small canoes/boats to fish is their live risks from crocodile attacks. Timorese believes that crocodiles are their ancestor (avo) and thus it is of high conservation priority in country. However, the conservation of crocodiles in Timor Leste has become dangerous to people particularly fisherman as crocodile attacks continued to increase since 2003 (Brackhane et al, 2018). There is not much crocodile management system being established. The government official put warning boards in around the crocodile habitats, however it did not stop people from attacks. Similarly the officials has also established a captive pond crocodile in Hera near Dili to isolate crocodiles that being attacked on people, but this has not resolved the problem too. Crocodile habitats mapping is probably best initial steps towards effective crocodile management in Timor Leste (Fig 1.2) (Brackhane et al, 2018). There were claims that the crocodile attacks on human are those from Northern Territory of Australia swimming through a distance of about 500 km to the south of Timor Leste. Initial analysis of crocodile DNA sampling from northern part of Timor Leste conducted in 2019 have shown no relation to that from Australia, but further investigation is necessary for the crocodiles in southern part of Timor Leste.

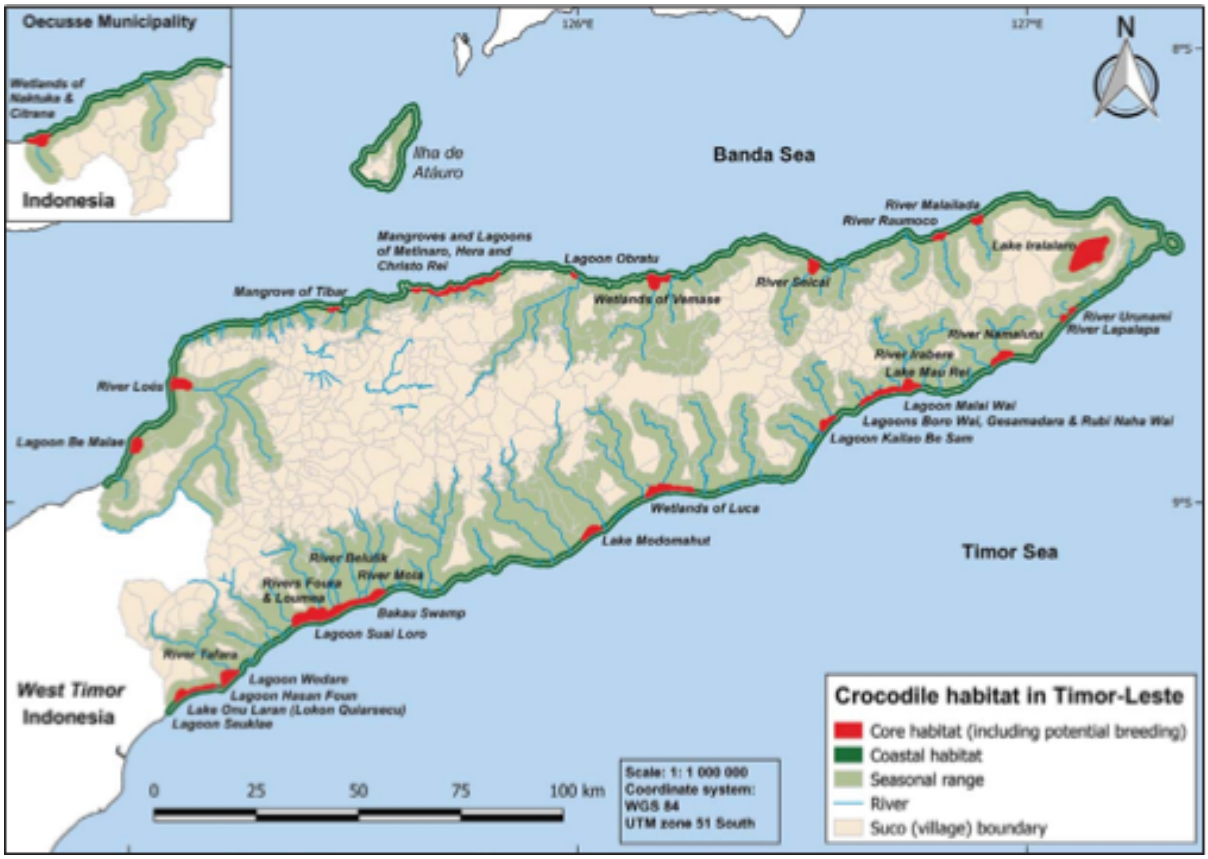

Figure 1.2 Potential core, coastal and seasonal habitats of saltwater crocodiles (*Crocodylus porosus*) in Timor Leste

Strategic Action 12
Maintain plant genetic diversity through developing and implementing a comprehensive and integrated agricultural management program.

This strategic action is related to the ABT Target 4; by 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits, ABT Target 13; by 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity. The strategic action also relates to SDG Goal 2.5; by 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed.

To maintain plant diversity, local varieties in particular, the National Directorate for Research, Statistics and GIS, MAF has been collecting a total of 92 local species from 6 municipalities of Baucau, Lautem, Liquica, Manufahi, Maliana and Viqueque since 2014. These collected species are now at the Collection Centre of Loes and Betano. Ongoing collection from other municipalities continuous. Prior to 2015, through the Centre for Climate Change and Biodiversity, UNTL supported by GIZ had collected about 500 species

varieties as reported in the 5th NR, however due to the lack of funding, the study did not continue.

A national seed system was established by the project Seeds of Life in 2016 with an objective to ensure sufficient good seed of improved varieties is produced each year to meet 33 % of total national seed requirement. Crop identification and development was at its first component and source seed and quality control was the second component. New released crops such as maize, rice, peanut, sweet potato, kidney bean, mung bean and cassava and recently CIA (purple sweet potatoes from Baucau municipality) was released and distributed to farmers for cultivation.

Strategic Action 13
Establish waste management center for composting, recycling, and re-using of domestic, commercial and other wastes.

The target action relates to the SDG Goal 12.4; by 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment Goal 12.5; by 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse, Goal 12.6; Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

The government has not established a waste management center for composting, re-cycling and re-using of domestic, commercial and other wastes. On the other hand, government and NGOs have various small scale programs to enhance clean environment particularly in the capital city of Dili. For example, all public services staffs from different institutions, schools and public and private universities are having their schedule at least once a month to clean up wastes in their area of designated included on the beaches. There are also youth volunteer groups that regularly clean up city and beach of Dili. Government through the Secretariat of State for Environment is developing policy of less use plastic bags in supermarkets and companies and are encouraged to use degradable plastic bags to consumers through event occurred on 19 September 2018 (http://timor-leste.gov.tl/?p=20522&n=1&lang=en) . This will contribute to the reduction of plastics bags wastes in the country particularly in the capital city of Dili. Following is another statement made by the director of National Directorate of Pollution Control and Environmental Impact (NDPCEI) in socializing zero plastic:

“ basic environmental law no. 26/2012, also law no. 2/2017 on a solid waste management system and decree law no. 32/2016 on a strategy to improve urban waste management, and that recently companies were given a directive informing them to inform their customers to begin using environmentally friendly bags during shopping. She added a priority program of SEA is solving the waste management issue in the country, and in Dili in particular because it strongly impacts on the environment, including in the quality of land and marine biodiversity.”

In addition, the directorate NDPCEI provided initiatives to re-use of the plastic water bottles through green school initiatives such as in the School of Kasait (in 2014/2015 and in February to June 2019) where school children and their families of about 2000 involved

project activities. The program also included re-use of cars' tires for growing trees and vegetables and part of the activity is awareness raising of the reuse wastes which involve school families. Other activities included development of school traditional regulation Tara Bandu to regulate throwing of wastes.

PS 4. Enhancing biodiversity and ecosystems services to ensure benefits for all

Target: By 2020, enhanced ecosystems services through promoting economic values of biodiversity and ecosystems and promoting benefits sharing

Strategic Action 14
Valuate and account direct and indirect goods and services of biodiversity and ecosystems.

This strategic action is related to the ABT Target 3; by 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions. The strategic action relates to the SDG Goal 15; Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

There is not much work done on the valuating of the direct and indirect services of biodiversity and ecosystems. There are however, few activities that provides direct or indirect services to biodiversity and ecosystem services such as reforestation activities for biodiversity and ecosystems services. Particularly reforestation in the watersheds and its contribution to water quantitate and quality, reduction in soil erosion and siltation. For example, JICA-CBNRM in the Comoro catchment introduced a better land use planning for a sustainable crop and fruit production and reforestation in the upland Comoro river to preserve water resources which supplies to the capital city of Dili and reduce soil erosion and siltation. Similar activity in the Seical catchment by the GCCA-GIZ projects occurred. The direct impact on the farm groups directly involved in the project activities particularly use of the sustainable agriculture practices on crop yield and income maybe measurable. However, to the wider impact of such activities on water quantity and quality, soil erosion and siltation is hardly monitored since monitoring on this is complex that requires more resources particularly funding and field staffs/experts which are still lacking.

There has been an improvement in water supplement and sanitation since 1995 (WaterAid, 2017). Water supplement between 1995 and 2015 had increased by about 25 % and 5 % in urban and rural areas, respectively. This achievement has significantly contributed to the SGD Goal 6.4; By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity. To enhance water resources more sustainably one needs to have taxes over the use of water and other natural resources and this is usually through a well-known service called Payment for Ecosystems Services (PES) which is widely practice elsewhere. In Timor Leste, there is still lack of the guiding principles to make this happening. Despite this, government has initiated payment for accessing to clean water particularly in the capital city of Dili as well as taxes from mining

activities. However there still much needs to be done to make the PES effectively applying in this country.

Strategic Action 15
Safeguard and maintain ecosystems services through promoting Integrated Water Resource Management.

This strategic action relates to the SDG Goal 6; Ensure availability and sustainable management of water and sanitation for all. National implementation of the Strategic Action is provided in SA 14 above.

Strategic Action 16
Promote understanding and develop national policies on access and benefit-sharing arising from utilization of genetic resources, including biosafety measures.

This strategic action is related to the ABT Target 16; by 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation. The strategic action also relates to SDG Goal 15.6; Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed.

As noted that Timor Leste is hot spot to biodiversity, Access and Benefit Sharing (ABS) arising from the utilization of genetic resources would bring benefit to Timor Leste particularly users of the genetic resources from outside of the country. Despite of the potential benefit, Timor Leste is still slow in progress in acceding the Nagoya Protocol and developing its national frameworks to implement the Nagoya Protocol on Access and Benefit Sharing. However, in a short period of time, Timor Leste will start its national process with the support from GEF 6 grants under the project "Establishing the National Framework and Operational Capacity for Implementing the Nagoya Protocol in Timor-Leste" with a period between 2019 and 2022. Few other progress Timor Leste have achieved so far were the guidelines, identification of stakeholders and partners and capacity building for stakeholders. The ABS is well covered in the biodiversity decree law which is close to its promulgation by the President of RDTL and the General Regime for forestry which was approved together with the revised Forest Policy in 2017. The country, in the recent national consultation for the GEF 6 project on ABS, identifies ABS implementing partner of Nimura Genetic Solution Co., Ltd, Japan to lead in undertaking bioprospecting research and development projects activities in Timor Leste.

PS 5. Enhancing implementation of the NBSAP through participatory planning, knowledge management and capacity building, including district and sub-district and community levels.

Target: By 2015, a national biodiversity monitoring and reporting system on biodiversity has been established, using the CHM as a platform for information, knowledge management and networking.

Strategic Action 17.

Enhance technical and managerial capacity of officials and staff on biodiversity conservation and management as laid out in the Strategic Action Plan (SAP) and the Capacity Building Plan on Protected Areas under the PoWPA Project of the MAP (cf. also NBSAP Capacity-building Plan Chapter).

This strategic action ABT Target 19; by 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

The implementation of country's NBSAP remains challenging due to mainly lack of financial and human resources and coordination between institutions and private sectors (Section 2 provides details of the obstacles and ways to address the obstacles). In the first place, the capacity of the officials and staffs are important to mainstream and implement the NBSAP. The main challenge was that the NBSAP which is the responsibility of the National Directorate for Biodiversity Conservation and Recuperation, Secretariat of State for Environment was only partially effective in mainstreaming into the other institutions, private sectors and academia which due to limited capacity staffs and coordination to do so. The new challenge a head would be likely to occur in the post 2020 biodiversity conservation and sustainable activities with new expanding structure within the Secretariat of State for Environment where officials and technical staffs within the secretariat rearranged in meeting with new directorates (3 new directorates) and an agency (agency for environmental control and assessment). One expect that there will be limited staffs for the National Directorate for Biodiversity (previously known as National Directorate for Biodiversity Conservation and Recuperation) and thus challenge the directorate to really mainstream and implement the NBSAP into other relevant government institutions, private sectors, NGOs, academia and the media. The directorate is indeed to recruit well qualified staffs to support mainstream and implementing of the post 2020 biodiversity conservation and sustainable activities. This will help the directorate to meet its new plan/approach in mainstreaming of NBSAP into biodiversity relevant sectors. The new plan would be to establish a Biodiversity Working Group which consists of government institutions, academia, NGOs, media, private sectors, women and youth aiming at i) mainstream NBSAP into sectoral plans/programs, update of the biodiversity related activities, and iii) sharing of the data and issues arising from project activities through a regular meeting led by the directorate.

In the protected Areas, the department of PA, National Directorate for Nature Conservation, Directorate General for Forestry, MAF is responsible for the management of all 46 protected areas as described in the decree law no 5/2016 on protected areas. On the other hand, the department is facing limited staffs with good experiences and skills and experts in the area of PAs. Particularly staffs with good skills in research and management to conduct research and management in the protected areas. Increase PA departments technical staffs at national level and for each of the PA and providing their sufficient capacity in PA management would important for PAs management successfully. Currently, CI and USAID Tourism for All assisting in establishing management and demarcation of NKS and Mount Ramelau, respectively, and part of the project activities also providing capacity development training for the PA official staffs. In addition to this, increasing regional cooperation in specific training specially in the area of biodiversity research and PAs is important.

On the ground level, there some training activities in enhancing capacities of the local staffs and community in activities that relevant to biodiversity particularly in the area of agriculture and forestry. For example, projects such as Conservation Agriculture, USAID AVANSA,

CBNRM-JICA, and other small projects provide intensive training to local field staffs and communities in delivering project activities. For example, capacity development for CA field staffs of 12 staffs in CA activities particularly on the assessing of the soil textures, erosion control, the role of mulching in preventing soil erosion but improving soil quality was delivered from 2013 to 2017 (in a communication with CA field staff).

Strategic Action 18
Develop an integrated research programme for Timor-Leste and intensify research efforts on the different aspects of forestry, protected areas, agriculture and other ecosystems, such as population studies, ecological studies, water quality assessment, and impact of alien invasive species.

There were no integrated research programs developed and conducted including in the newly established botanical garden in Remexiu, Aileu in 2016 under the Directorate National for Natural Conservation, Directorate General for Forestry, Ministry of Agriculture and Fisheries.

Strategic Action 19
Maintain and put into operation the CHM as the platform for knowledge sharing and networking.

This strategic action is related to ABT Target 19; by 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

There is no progress on the CHM system data base in Timor Leste. Timor Leste used to have a focal point on CHM, but the authorized person has resigned and the new Focal Point has yet identified. As result, there is no progress on the CHM and the server and information system database for CHM have yet established.

Strategic Action 20
Document and promote indigenous and traditional knowledge, techniques and practices for biodiversity conservation and environmental protection.

This strategic action is related Target 18; by 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

One of the well documented traditional knowledge/practice in the biodiversity conservation is Tara Bandu. Tara Bandu is widely accepted and has been integrated into the national legislation and practices.

Strategic Action 21
Coordinate with donor partners, the United Nations and regional organizations and explore ways to substantially increase levels of funding and develop joint programs.

The SDG Goal 17; Strengthen the means of implementation and revitalize the global partnership for sustainable development finance.

Timor Leste has a good partnership with UN agencies including GEF, UNDP, UNEP, FAO, CI and bilateral partners like EU, the World Bank, ADB, etc. in formulating projects on environment and biodiversity. This global partnership has significantly helped Timor Leste in implementing NBSAP through financial and technical supports.

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Section II

Implementation measures taken, assessment of their effectiveness, associated obstacles and scientific and technical needs to achieve national targets

The section provides implementation measures taken, assessment of their effectiveness, associated obstacles and scientific and technical needs to achieve national targets. Measures in this section refer to the 21 strategic action of 5 Priority Strategy of the NBSAP. The NBSAP was developed during the country processes on its 4th National Report and was then revised in adapting to the Global Biodiversity Targets (The Aichi Biodiversity Targets-ABTs) during the processes of the 5th National Report to the UNCBD which was submitted to the Secretariat in 2015. The revision processes all biodiversity relevant stakeholders from government institution, academia, private companies, local and international NGOs and partners.

Assessment methodology

The assessment was delivered based on the assessment guidelines/template provided by the secretariat of the UNCBD based on Decision XIII/27 as follows:

- Measures taken were the 21 Strategic Action from 5 Priority Strategies of the Timor Leste NBSAP. The detail of the Priority Strategy and its 21 Strategy Action are shown in the Table 1 against its implementation effectiveness.
- Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes:
  1) Measure has been effective 2) Measure has been partially effective 3) Measure has been ineffective 4) Unknown
- Explain the selection in 2 and indicate the tools or methodology used to assess it. Include relevant websites, web links and files. If it cannot be assessed, explain why.
- Provide other relevant information to illustrate how the measure has resulted in, or is expected to result in, outcomes that contribute to NBSAP implementation. Include relevant websites, web links and files.
- Describe the obstacles that have been encountered and any scientific and technical needs for addressing them, including technical and scientific cooperation, capacity development activities or the need for guidance materials. Include relevant websites, web links and files.

FGD consultation strategy

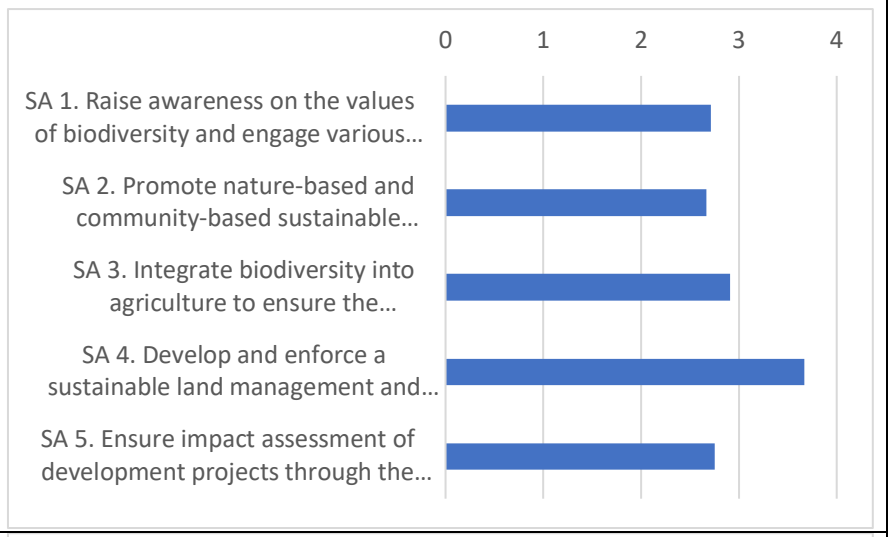
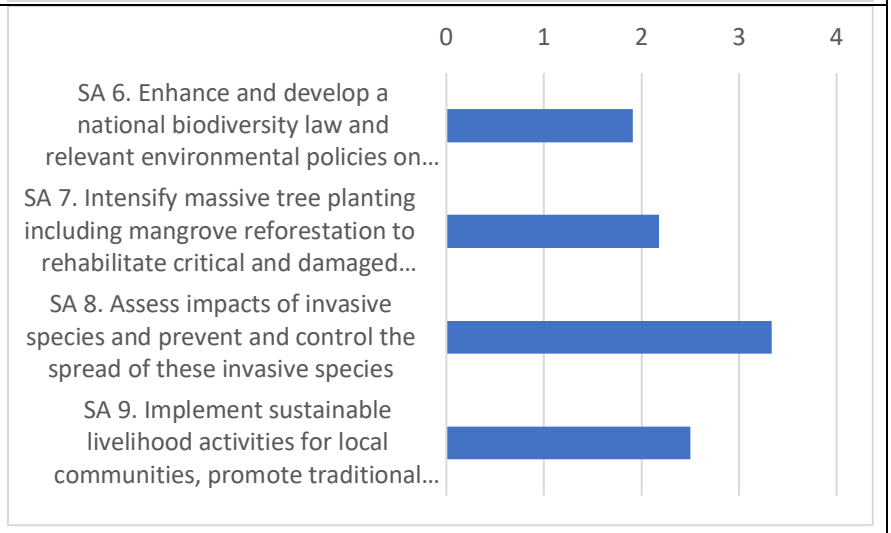
A Table of matrix was developed and used for consultation activities during the Focus Group Discussion (FGD) activities (Annex). For an effective discussion, stakeholders were divided into 5 groups according to the five priority strategies of the NBSAP. Each group was then filled out the table of assessment provided in the annex. The assessment was made based on the implementation sub-actions of each 21 Strategic Action and 5 Priority Strategies of the NBSAP. The assessment on the effectiveness (1, 2, 3, and 4) was mostly based on project level activities and their overall implication/significant effect to the country. It was assumed that each of sub-action was equally important and thus the average from the assessment of the effectiveness were taken for each Strategic Action (SA) and this presented in a figure presented in the Table of results. These results together with other sections (section I, III, IV and VII) of the 6th NR were provided to the stakeholders for their feedbacks during the validation workshop. Those stakeholders did not participate in the validation workshop were

also provided their views on the draft report via phone call and email. Their views were then integrated into the final report.

Consultation Results

Results of stakeholders' consultation through focus group discussion and individual consultation are shown in Table 2.1 and obstacles encountered and scientific and technological needs to address the obstacles are shown in Table 2.2.

Table 2.1. Average implementation of Timor Leste Priority Strategy and its Strategy Action between 2015 and the 2019

Priority Strategy	**Average effectiveness of the Timor Leste NBSAP: 1 (measure has been effective, 2) measure has been partially effective, 3) measure has been ineffective, and 4) unknown (the unimplemented sub-action was considered as unknown)**
PS 1 Mainstreaming biodiversity into sectoral plans and programs to address underlying causes of biodiversity loss	
PS 2 Protecting biodiversity and promoting sustainable use	

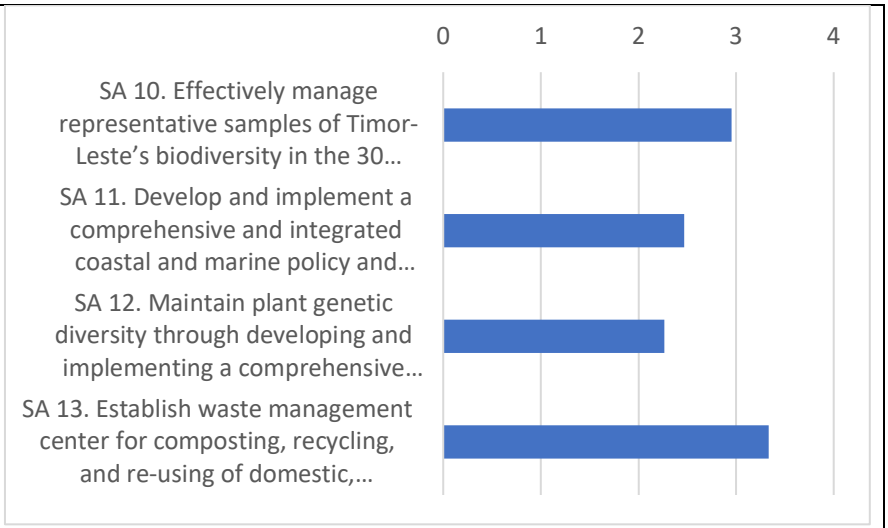
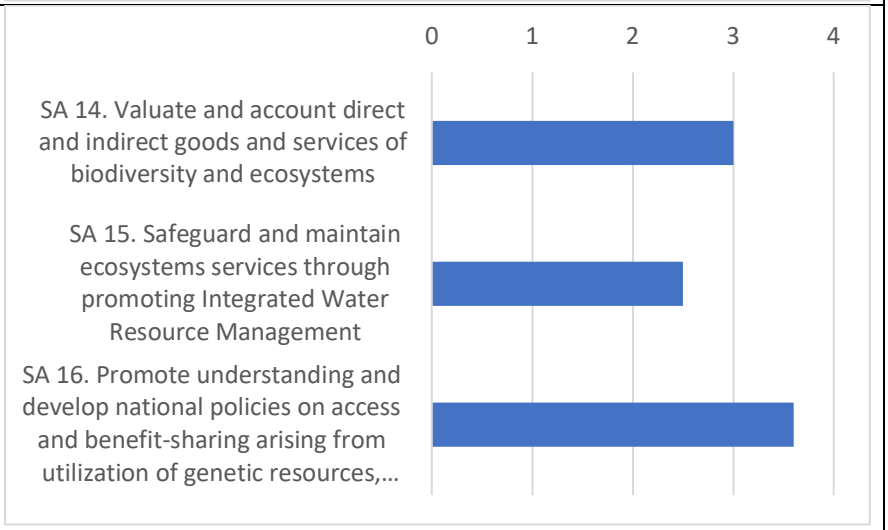
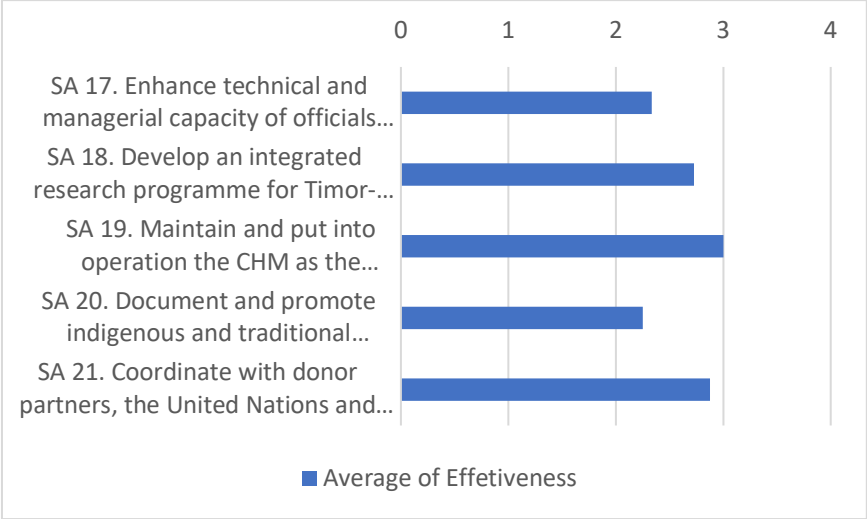
PS 3 Building climate-resilient ecosystems through effectively managing protected areas and reducing threats to biodiversity	
PS 4 Enhancing biodiversity and ecosystems services to ensure benefits for all	
PS 5 Enhancing implementation of the NBSAP through participatory planning, knowledge management and capacity building, including district and sub-district and community levels	

Table 2.2. Timor Leste obstacles encountered during the implementation of NBSAP and scientific and technological needs to overcome obstacles in the future.

Priority Strategy	Summary of Obstacles encountered in each Strategy Action	Scientific and technological needs to address obstacles
PS 1 Mainstreaming biodiversity into sectoral plans and programs to address underlying causes of biodiversity loss	**SA1.** Fund (Tara Bandu requires ritual ceremony that high cost) There is no standard of material socialization.	Funding for capacity building and continuation of capacity building activities financed by the government and project based activities from bilateral supports. Need to develop a standard guideline for awareness raising and this will be done under the new National Directorate of Environmental Education and Information Centre which was recently established in August this year.
	Government has not prioritized biodiversity conservation and thus allocating funds.	Government needs to prioritize biodiversity and thus provides funds for the relevant institutions to deliver biological conservation activities.
	There is a luck of biodiversity mainstreaming into government sectoral programs and plans There is still luck of coordinated work among government institution and its partners. Limited skills and experiences of staffs.	The directorate of biodiversity, Secretariat of environment needs to mainstream the NBSAP into sectoral annual planning and programs. The directorate of biodiversity needs to establish a biodiversity working group from relevant stakeholders aiming at better coordination and integrate NBSAP into their annual plans and programs, update biodiversity project activities, discuss on issues arising from project activities and find ways to overcome the issues through a regular meeting led by the Director of Biodiversity. The director has agreed to consider this and possible to stablish working group in 2020.
	There is also luck in facilities particularly those require labs	Support facilities particularly laboratories eg pollution

	and research center and development. Similarly there is also luck in human resources particularly experts such as plant taxonomist and botanists. Law and policy enforcement is still lucking. Socialization of the zero plastic has not reached community level and its decree law has yet promulgated. Tree planting has been difficult due to regular burning during dry season and unfenced animals. Limited of technical expertise in EIA. **SA 2.** There is luck of people awareness on biodiversity. Luck of human resources (staff and expert).	control and establishment of required centers. Establish R3 and more research on plastic recyclizing. Long term capacity building (Masters and PhD studies) on plant taxonomy and botany (the Secretariat of Environment needs to coordinate with other institution like Ministry of Education to include these areas of expertise into annually offered scholarships from particularly SEARCA EU sponsored scholarship, ACIAR Australia scholarship with the ministry of Agriculture, etc. Enhance law and policy enforcement. It is anticipated that the decree law on biodiversity will be promulgated by the end of 2019. Provide facilities (and recruit more forest guards) for a regular monitoring on new planted forest seedlings. This can be addressed through a long term capacity development as indicated above. SA 2 Strengthening mainstreaming of NBSAP into sectoral plans and programs to increase awareness raising to communities as described in SA 1 above. Develop a better coordination systems between biodiversity relevant institution and partners and identify key leading institution on specific areas like mangrove Long term capacity development as described in

	There is luck of guidelines and regulations and facilities. There is also luck of law and policies enforcement and coordination between biodiversity relevant institution There is luck of leading institution a specific biodiversity targeted areas such as who/which institution is leading the mangrove conservation and restoration activities. Lack of mainstreaming of NBSAP into sectoral plans and programs. **SA 3** Budgeting program to continue Capacity building for Staff Need expertise Limited funds. **SA 5** Limited fund both government and agencies. Limited and appropriate information reaching to schools Standardize guidelines awareness raising materials.	the SA 1 and short period capacity buildings are important. The short term capacity building can be achieved through government financial support and more importantly through government partners and donors. Strengthening implementation of law and policies and mainstream NBSAP into sectoral annual plans and programs. SA 3 Expertise for staff training in Ecotourism Adding ecotourism budget in annual action plan. SA 5 Training for innovation. Increase financial support for awareness raising to schools Standardize guidelines for awareness raising.
PS 2 Protecting biodiversity and promoting sustainable use	**SA 6** Limited fund. The decree law on biodiversity has not promulgated. There is lack of coordination between government institution relevant to biodiversity Lack of law and policy enforcement. Unstable governance and budget approval took years eg in 2017 and 2018 where government rely on duo desimu (budget for	SA 6 Government to prioritize biodiversity and provides funds Capacity building, data Collection, Laboratory establishment and new staff and financial support Lobby for the immediate ratification, consider sustainable budget allocation (OGE).

	government services staffs) only and thus no field activities. Lack funds for monitoring and control of biodiversity related activities. Lack of cost and benefit analysis of ABS in Timor-Leste context to ratify RAMSAR and other related conventions. There is no sufficient guidelines to implement laws and policies.	Require funds, research and prepare guidelines to implement laws and policies.
	SA 7 Project like Avansa has positive impact on agriculture but its extends is still limited.	SA 7 Required to extend project activities to bring a wide range of the impact.
	Lack of monitoring from forest guards due to limited staffs and support funds. Replanting of mangrove has been challenging due limited survival seedlings.	Need to increase no of forests guards and support funds to control tree seedling planted. For the mangrove required an expert to see species adaptation to mangrove sites in Timor Leste.
	There is lack of maps showing degraded areas where tree planting needs to be conducted.	Mapping of the degraded areas.
	Law and policy enforcement, limited financial support and lack of coordination between Forest Department, NGOs and watershed management approaches.	Strengthening law and policy enforcement and enhance a better coordination between institutions particularly forest department, NGOs and watershed management.
	SA 8 Lack of funds technical capacity and expert to monitor and control of Chromolaena odorata (Insect is *Cecidochares connexa*, Mimosa Pigra (Insect is Shypilis) and Lantana Camara (Lantana Weevil), mistflower and coconut beetle including their impact on ecosystem and biodiversity. There was no government program on Invasive Alien Plant	SA 8 Government needs to allocate funds for long and short capacity development and control and monitor of the alien species including their impact on ecosystem and biodiversity. Capacity development should focus on plant taxonomy, botany and entomology for both technical staffs and experts.

	Species (IAPS), Lack of study, limited fund, taxonomist, botanist and entomologist (Expert).	Fund, laboratory, Taxonomist, Botanist and entomologists Fund, Training for forest and soil staff, Laboratory, Soil mapping for restoration and rehabilitation. Fund, Capacity building for forest staff, soil staff, agriculture staff, irrigation staff and environment staff, Laboratory, soil mapping and watershed management for upland, medium and low land. HRD and technical training and allocation of sustainable budget (OGE). New research approach to eradicate bellyache bush (Jatropha Gossypifolia) by using fire intensity. Introduce new agents such to control Chromolaena odotara such as Conotrachelus reticulates for upper parts and in the soil and Dichrorampha odorata Brown & Zachariades for shoots. Capacity building for staff and other research supporting facilities.
	SA 9 Lack of commitment from the government and other partners to organize and mobilize more communities. Limited fund to regularly sensitize and raise awareness and lack of effective coordination among stakeholders, lack of feedback mechanisms to determine clearly the level of community understanding. Lack of scaling up of pilot sites and effective awareness	SA 9 Set viable and practical targets for number of community mobilize. Provide fund and establish mechanisms.

	campaign to protect and manage the forest, limited fund. Lack of information on alternative fuel sources. Limited fund, lack of efficient documentation on the best practices of partner institutions on livelihood. More involvement with other relevant institutions in the identification and development of livelihood opportunities. The community based enterprises are not yet existing, lack of viable market for forest product enterprises and lack of documentation or proper recognition of community based forest product.	Assess the scalability of pilot sites and establish more appropriate sites. Provide and develop alternative options on livelihood. Establish a viable extension program in every ministry relevant to biodiversity. Promote the establishment of community based enterprises and provide an enabling environment.
PS 3 Building climate-resilient ecosystems through effectively managing protected areas and reducing threats to biodiversity	**SA 10.** Lack of detail mapping of areas occupied by local people & lack of budget to demarcate other PAs. Lack of experts to conduct flora assessment (taxonomists and botanists). Specific programs for protecting endangered species etc. are still yet to be in place (e.g. no particular habitat/species to be protected in NKSP. The PA management plans are not publicly available to assess the level of implementation by other stakeholders. No baseline data for PA national system. Limited funds for coordination and mobilization.	SA 10 Provide detail mapping of PA (refer to Be Lulik Watershed) and provide additional funds. Long-term and Short-term human resource development. Review the PAs management plans and ensure that specific programs related this action is taken into consideration. Access to management plans should not be limited allowing other stakeholders to make an assessment if this action was effectively or efficiently responded to. Support additional funds and strengthening coordination between government (SEA and local authority) The government needs to prioritize the PAs. Long no short capacity development no facilities such camera, telescope, car, labs, etc.

	The government has not prioritized the PA yet. Lack of human resources (technical staffs no experts) and supporting facilities. There is no baseline data on the PAs. NKSP rich in its history and culture and yet recorded meanwhile people who knew the history and culture are limited. Government has not prioritized infrastructure to NKSP including accessibility to eco-tourism Committee (which involve all stakeholders such as representative of women, youth, veterans, church, autoridade municipal and postu administrative and head of village and government institution like fisheries, environment, agriculture etc.) for all PAs except NKSP due to limited funds.	Government need prioritize coverage of the NKSP history and culture as soon as possible and this will also enhance the eco tourism of this historic PA Government and its partners to provide funds for the establishment of 45 PAs committee and strengthening committee work in NKSP.
	Limited information for public consumption on the existence of botanical garden which is run by the government.	Government has to have a clear program including budget on establishing conservation sites and facilities specifically for endangered plant or animal species.
	Academic and other research institutions are not also fully involved in establishing and managing in situ facilities.	Research institutions are needed to involve in the establishment and management of in situ facilities.
	Sites for in-situ and particularly ex-situ conservation for endangered plant and animal (like lenuk, ikan lai sapi, timor deer and woson kaki timor bird [megapodeus rainwardt] have not identified.	Government needs to identified sites for ex-situ conservation.
	Establishing wildlife and rescue refugee centers is not a priority of the government and there is a	Government needs to establish wildlife and rescues refugee centers and provide short and

	limited skill in managing and operating such.	long term capacity building for the management of the centers.
	Lack of funding from government to fully cover all the KBAs.	Provision of sufficient funding to cover all KBAs with PAs.
	Limited fundus and coordination between institutions and local authorities in mobilizing community is challenging. There are limited actions on these (10.12) due to limited funds, technical skills to develop and disseminated information based best practices and limited participation in the regional and international meetings due to language barriers.	Provide additional funds in annual budget plan and strengthening coordination between government institutions (SEA and local authorities). Support funds and technical capacity building both long and short terms for the staffs.
	There PA reserve forests near Indonesia borders (10.13) such as Tiliomar forest (Suai), Mangal Citrana (oecuse) and Foho Ornai of Mountain Kutet (Oecuse) where illegal hunting and logging activities from Indonesia occurring however no collaborative actions between the countries has so far done.	From Timor Leste side strengthen forest guards to control forests in the borders and other facilities such as transports and funds.
	10.14 Government use the POWPA's standards in PAs management however additional funds and capacity building are required to fully implement the POWPA standard.	Require additional funds and long and short capacity development to manage PAs based POWPA global standards.
	10.15 In general maintain biodiversity connectivity is lacking.	Government does not prioritize on this.
	10.16 Most of the PAs has not managed yet (except NKSP) and thus their monitorization.	Needs to establish management committee in all PAs and thus their monitorization. Require capacity building for staffs and experts and funds and facilities to make this happening. The USAID's Tourism for All project (January 2018 – January 2021) for all has started discussion in assisting demarcation of the mount Ramelau.

	10.17 No educational program specifically on PA management	Develop and offer a curriculum on PA management.
	10.18 There is limited data to measure action on recover/re-introduced rare and endangered species.	Require capacity building and technical experts and research in these actions.
	10.19 Lack of funding from government to fully cover all the KBAs.	Provision of sufficient funding to cover all KBAs with PAs.
	10.20 There is a limited data on the threatened tree species and thus no pilot demonstration and/or plantation areas develop.	Need to identify (and this requires experts to do so) which threatened tree species following by establishment of the pilot demonstration and/or plantation areas.
	11.1 Lack of law and policy enforcement.	Government to follow up these laws and policies on an integrated marine and coastal policies and establish their management.
	11.2 Availability of tools and equipment to monitor water quality. Lack of human resources to monitor.	Plan to increase number of staffs and provide high quality equipment.
	11.3 KOICA has established a fish seed production canter called National Institute of Fisheries and Aquaculture (NIFA) in Maubara for community in 2014 and was handover to the government in 2018, but funds for its maintenance and technical staffs support is lacking.	Government to provide funds and long and short training for staffs and expert.
	11.4 Financial institution for fisher man and fisher farm communities has not created.	Support needs to go through a special financing credit system (BNCTL) with law taxation system.
	11.5 Fish processing technology has not developed yet and similarly fish processing plants has not established Sustainable financing to supports fish farms is lacking.	Investment in these two areas are important and there need to have human resources including technical staffs and experts capacity development at first. In addition facilities are need to be in place. Involvement of the private sectors is important.

	11.6 There is limited information/data available on the envenomization and assessment of sites for commercial fishing. 11.7 Lack of funds and facilities to protect water resources and conserve aquatic biodiversity. Limited actions have been done to section 11.8 due to financial support, human resources and facilities except dugong and sea grass conservation. **11.9** There is no direct benefit to community if cutting of mangroves is prohibited. Restoration of mangroves has been challenged by a very low seedling survival, for example 1000 seedlings were planted in on May 20 to celebrate independence day in 2018 and there were almost no survival. Infrastructure development in the mangrove sites reduce mangrove areas. Natural regenerating through fencing has been effective, however, in Metinaro there is place that culturally secret and local people don't allow to fence Monitorization involved local authorities and community was not effective. There is no clear leading institution in mangroves conservation and restoration activities. **11.10** Community are not aware that mangrove is a very sensitivity plant that after cutting it will be very hard to grow again. There is lack of policy on the coastal management including coordination.	Capacity building for technical and experts on the inventory and assessment of commercial sites and support facilities. Additional financial support for protecting water resources and conserving aquatic biodiversity. Additional financial support is required and long and short technical capacity building and facilities used for conservation and protection of marine habitats. Need to strengthened awareness raising on the benefits of mangroves Enhance dialog with communality on the secret areas to protect mangroves through fencing for natural regenerating. Strengthening implementation law to prevent people from converting mangrove sites into infrastructure development. Government institution needs to identify a single institution to lead/responsible on mangroves through a better coordination. Needs also expert involvement in identifying species adaptation to particular sites. Increase awareness raising in both the importance of mangrove and its sensitivity to survival. Strengthened institutional coordinatization to ensure that land property does not allow people to buy or access into identified mangrove areas such as it is happening in behind the

		Cristo Rei and Metinaro by ETO company.
	11.11 Lack of awareness that people continue to throw rubbish (plastic bags and bottles) everywhere in the coastal and waterways areas. Coastal cleaning up only happening in Dili areas elsewhere does not practice.	Continue awareness raising and establish policy on the use of coastal areas such recreation. Integrate coastal and waterways cleaning in the school curriculum.
	11.12 There is lack of law enforcement. Lack of funds and facilities to monitor expansion and/or intensification activities in aquaculture to minimize or prevent destruction of mangrove and pollution of coastal areas.	Strengthening law enforcement to limit activities in the coastal areas where mangroves exist. Provide financial support to increase monitoring mangrove plantations.
	11.15 Lack of human resources (expert), facilities transport and lab and funds to identify and rehabilitate coral reefs.	Provide funds for capacity development (expert and technical staffs), facilities and laboratory.
	12.2 Government has not prioritize IPM, ICM and SRI Limited funds and there is no policy to regulate use of chemicals, limited technical staffs and experts.	Government needs to prioritize IPM, ICM and SRI and support funds and capacity development for technical and experts. Establish policy for the use of chemicals.
	12.3 Limited funds, and facilities to maximize seed banks	Support funds and facilitate for seed banks.
	12.4 Limited funds, human resources and facilities to establish an animal laboratory and medical center.	Support funds and capacity building for technical and expert in animal science and lab and medical center
	12.6 limited funds and facilities and technical staffs to establish on-farm grain storage and improve post-harvest facilities, and technologies and the use of resistant varieties to cope with post-harvest rot and to stop the spread of fungi; establish demonstration plot for fodder and livestock waste processing for organic fertilizer.	Support funds and facilities and technical staffs.
	12.7 Maintenance budget and irrigation water management committee (board).	There needs to have a sustainable financial system for the irrigation maintenance through eg water use taxation through water management

		committee. Needs to strengthened water management committee for water distribution and taxation.
	12.8 Limited funds and technical staffs and farm facilities to establish on farm agrobiodiversity conservation centers. **12.12** Policy and guidelines on the use fertilizers and pesticides are lacking.	This establishment can be coordinated with the Centre for Climate Change and Biodiversity, UNTL to establish the center. Needs to develop policy and guideline on the use of fertilizers and pesticides.
	13.1 and 13.2 Some public awareness campaign on waste management were done through school activities particularly on reuse of the plastic bottles, unused car tires in their school yards as part of the green school activity (involve their families) and other schools were motivated and delivered their proposals to the Directorate of Pollution Control and Environmental Impact, but there were limited funds to implement more.	Need to stablish policy and provide guidelines to implement. Provide additional funds to implement waste management through school activities which involve their families.
PS 4 Enhancing biodiversity and ecosystems services to ensure benefits for all	**14.1** An appropriate system to monitor/collate information on actions taken is still not in place.	There is a need to develop an appropriate system of monitoring/collating information on actions taken in order to measure its effectiveness.
	14.2 The biodiversity decree law has been yet promulgated in order to fully implement the provisions on the system of incentives and penalties.	Lobby for the immediate promulgation of the law by the President of TL. As confirmed in the validation workshop the law will be promulgated by the end of 2019.
	14.3 The private sector in general remains uninterested on matters that pertains to the production and consumption of biodiversity. **15.1** The establishment of water management authorities are project dependent. Examples	Enhance promotional activities to encourage the private sectors to invest on business enterprises on production and consumption of biodiversity. The establishment of water management authorities should not be too dependent on

	includes Food Security project in Raumoco, the WB funded project or SAPIP that covers some of the country's major watershed.	projects but rather be treated as a regular program of the Government with appropriate funding allocation (OJE) Enabling Environment should exist to support the watershed activities such allocation of sufficient budget, formulation of specific rules and regulations, and human resource development program.
	15.2 Gauging Stations to include monitoring quality of water are still not in place.	Establish water quality monitoring stations in all watersheds.
	Lack of manpower to conduct regular monitoring.	Allocate additional funding support to ensure efficiency in data collection and analysis
	Documentation of restoration/reforestation activities specifically focusing on decreasing the rate of erosion, improving water quality, and decreasing sedimentation rate are still lacking.	Explore the possibilities of involving communities and academic institutions like Centre for Climate Change and Biodiversity, UNTL in monitoring water pollution/quality. Establish as system of documentation specifically on activities on decreasing the rate of erosion, improving water quality, and decreasing sedimentation rate are still lacking.
	15.4 Absence of national institution/council who will be mainly responsible in assessing and implementing PES for all water extractive activities.	Establish or designate a national institution who will be responsible in the use of the countries natural water resources which includes all river system and groundwater.
	16.1 IEC activities are still lacking in focus and redundancy and TL has not accede fully to the Nagoya Protocol	Enhance and implement a massive IEC campaign on ABS.
	There is a need to formulate a framework and ABS	Formulate implementing rules and regulations (IRR) on ABS (develop ABS legal framework).
	Consultation activities are still lacking in focus and redundancy.	

	16.2 Consultation activities are still lacking in focus and redundancy	Enhance and implement a massive consultation on ABS Enhance and implement a massive consultation on ABS
	16.3 Absence of a national government institution who will mainly focus on issues concerning genetic resources.	There is a need to accredit or designate a national Research Development Institutions (RDI) who will be mainly responsible on areas which involve the documentation, utilization of the TL genetic resources that includes the development of the protocol.
	16.4 TL is yet to develop an appropriate protocol on the access and utilization of genetic resources based on international standard norms.	One of the specific role of the designated a national RDI is the development of the protocol for the access and utilization of genetic resources.
	16.5 TL is yet to develop and implement an Intellectual Property Rights (IPR) Law.	Needs to develop, approve and promulgate an IPR Law which includes specific provisions on traditional knowledge The above possible solutions including establishment of ABS legal frameworks and acceding to the NP will be achieved through the new signed ABS GEF 6 project (2019-2022) on strengthening implementation of NP in Timor Leste.
PS 5 Enhancing implementation of the NBSAP through participatory planning, knowledge management and capacity building, including district and sub-district and community levels	**17.1** Lack of technical staffs with good skills and experiences to implement biodiversity decree law. **17.2** Lack of technical staffs with good skills and experiences to implement biodiversity decree law. **17.3** There is lack of information drought mitigation measures, species domestication and breeding for production which is associated with limited human resources (experts) and facilities including labs.	Need to continue to provide capacity development for staffs to implement the biodiversity decree law. Need to continue to provide capacity development for staffs to implement the biodiversity decree law. Government and partners to make fund available, provide long and short term capacity building.

	17.4 There is lack of management of the protected areas and this is associated with limited technical and experts availability and funds and facilities to manage protected areas.	Government and its partners to make funds available, recruit experts and staffs and develop their capacities on the management of protected areas.
	17.5 Government prioritize on the management of protected areas including tourism/eco-tourism is lacking. There is still lack of the capacity of protected areas staffs on tourism/eco-tourism with focus on education and vocational training.	Government to continua capacity building for staffs of the protected areas (also recruit more staffs) with focus on tourism and eco-tourism.
	17.6 Centre for Forestry Training has not established yet. The establishment would need human resources (technical and experts) as well as facilities including office and lab which are still lacking.	Government to make fund available through planning, long term and short term capacity building staffs, provide facilities like office, lab, etc.
	18.1 At the sectoral level, there are some areas being identified for researching for example at UNTL intends to continua ABD program on identifying more local crop species/varieties, survey on the status and trend of Timorese deer and other animals, however funds and experts (particularly survey on deer) and facilities are lacking. Other biodiversity relevant sectors are not aware and prioritize the importance of biodiversity and ecosystem services.	Government to make funds available, Mainstreaming of biodiversity into sectors and sector to integrate into their annual programs, Labs, and comparison study.
	18.2 Limited funds, human resources (technical staffs and experts), facilities like laboratory.	Government to make fund available through planning, long term and short term capacity building staffs, and experts and to provide facilities like lab, etc. for species inventory.
	18.3 Management of the botanical garden, herbarium and zoos are not in place yet due to	Government and its partners to make fund available through annual planning, recruit staffs

	the limited in funds, human resources (including technical staffs and experts) and thus it has not serve as the center for taxonomist and conservation biology research yet.	including and increase capacity of staffs on management of botanical garden, etc. Taxonomical experts and facilities like lab need to be available serving as center.
	18.4 The study on birds was published which was reported in the previous 4th and/or 5th NR report/s, meanwhile many plant and animal species is still widely unknown except timor sea turtle (Lalenuk kakorok naruk), coffee hybrid de Timor, and santalum (sandal wood) where replanting activities is going on. Limited information on the endemic and rare species is due to the limitation of funds, human resources (technical staffs and experts), facilities like lab to identify them.	Government and its partners to make fund available through annual planning, long term and short term capacity building for staffs, experts, and provide facilities like office, lab, etc. to conduct research on ecological and population of ecosystems.
	18.5 The management and research activities is the 46 PAs are missing except NKSP where CI has done some work on basic management and research activities. This is mainly due to limited funds, human resources (technical staffs and experts), and facilities to deliver management and research work.	Government and its partners to make fund available through planning, long term and short term capacity building staffs, provide facilities like office, laboratory, etc.
	18.6 Limited studies is subjected to limited funds, human resources (technical staffs and experts), facilities, labs etc.	Government and its partners to make fund available through planning, long term and short term capacity building staffs, provide facilities like office, lab, etc.
	18.7 There is a very limited research and no project on pollution due limited funds, human resources (technical staffs and experts), facilities like labs and equipment.	Government and its partners to make fund available through planning, long term and short term capacity building staffs, provide facilities like office, lab, equipment, etc.
	18.8 The is very limited study and projects on a wide spread alien species of chromolaena	Government and its partners to make fund available through planning, long term and short

	odorata, mistflower etc, due to limited funds, human resources (technical staffs and experts), facilities like laboratory.	term capacity building staffs, provide facilities like office, lab, equipment, etc.
	18.9 There is limited more sophisticated prediction tools such as radar to provide fast information on eg unpredicted rainfall and/or drought events. This is due to limited funds, human resources (technical staffs and experts) to operate such facilities.	Government and its partners to make fund available through planning to obtain new sophisticated tools, long term and short term capacity building for staffs and experts to run the equipment and data analysis, etc.
	18.9 Government and its partners provide less support for population studies and studies on reintroducing of important species. There is limited funds, human resources (technical staffs and experts) and facilities to deliver these studies.	Government needs to prioritize population and ecological studies and studies on reintroducing important species and make fund available through annual planning, long term and short term capacity building staffs.
	19.2 Data on biodiversity is widespread and the CHM is not in operation. There is lack of human resources to make CHM in operation. Inter-agency collaboration/coordination is very weak particularly sharing of biodiversity related data.	Government needs to prepare technical staffs and experts to establish the CHM. Strengthening inter- agency collaboration to provide biodiversity related data to the CHM when it has been established.
	20.1 Monitoring and assessment of the Tara bandu is lacking due to mainly limited funds and technical staffs.	Government to make fund available for capacity building of the researcher/ technical staffs to monitor and assess the effectiveness of Tara Bandu.
	21.4 There is limited work involving both public and private sectors in addressing knowledge gaps to farmers.	Government needs to cooperate with private sectors for their partnerships in identifying knowledge gaps and disseminating effective approaches and technics to farmers.
	21.6 There is no system in place and at this stage all financing system is centralized at Minister of Finance of the RDTL.	Government to make fund available to establish regulation and systems in

		place, and provide capacity building for community.

Section III

Assessment of progress towards each national target

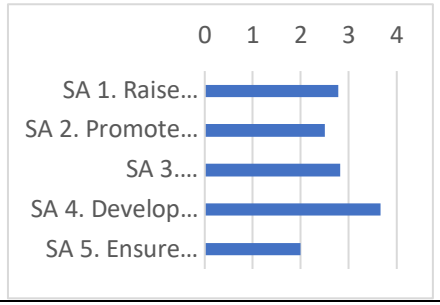
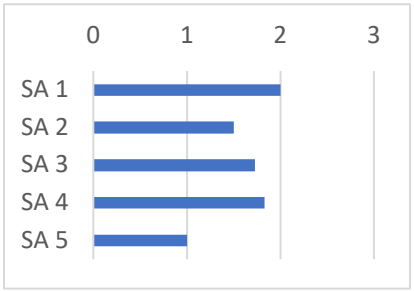
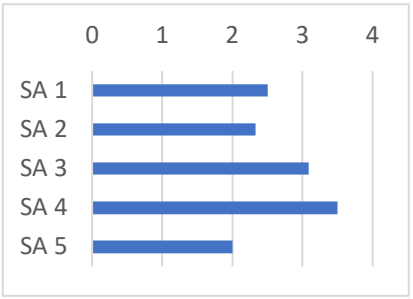
This section provides information on the achievement of the Timor Leste national targets through the implementation of its 21 Strategic Actions (5 Priority Strategy) of the National Biodiversity Strategic Action Plan for a period of 2011 – 2020. The NBSAP was first summitted to the Secretariat of the UNCBD in 2012 together with its 4th National Report (https://www.cbd.int/reports/search/). The NBSAP was then revised in adapting to the Global Biodiversity Targets (Aichi Biodiversity Targets) and resubmitted together with Timor Leste fifth National Report. The country's 5th National Report which was submitted to the UNCBD in 2015 had provided progress of implementation of the NBSAP with a very little achievement (https://www.cbd.int/reports/search/). It is expected that within 3 and half years after the submission of the 5th NR, further implementation of the NBSAP occurred. There is however, not much information available at one place/institution to predict how much progress has been met within this time frame. As the priority strategic of the NBSAP has been integrated into the government sectoral institutions, private companies, NGOs, Academia, the process of obtaining of all relevant information to the conservation and sustainable use of biodiversity as well as access and benefit-sharing arising from the utilization of the genetic resources requires their participation through a national consultation processes. Groups like women group are also involved in the consultation process. These national consultation call stakeholder consultation.

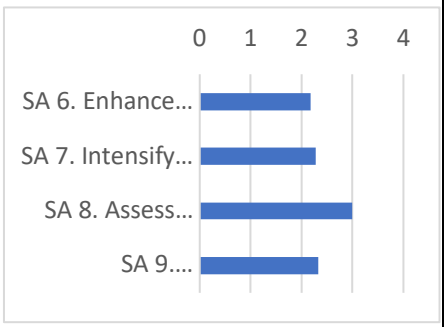
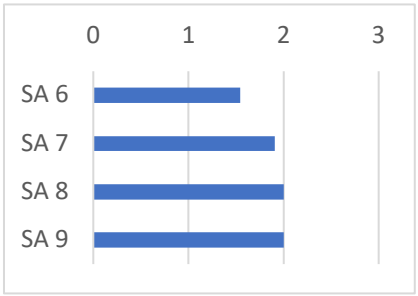
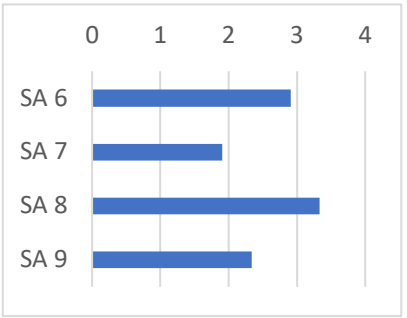
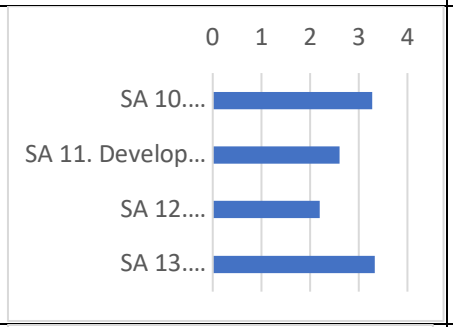
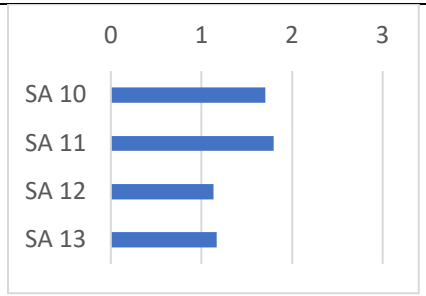
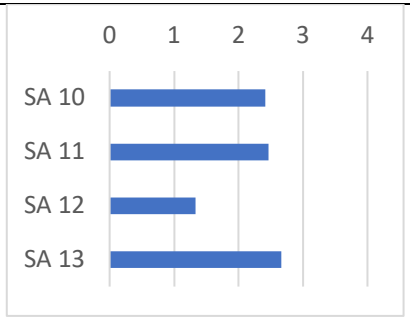
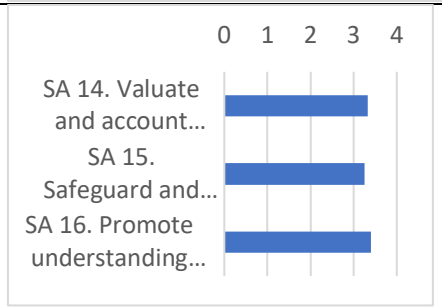
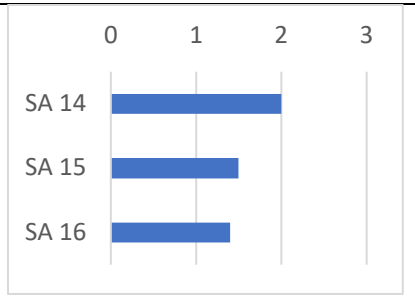
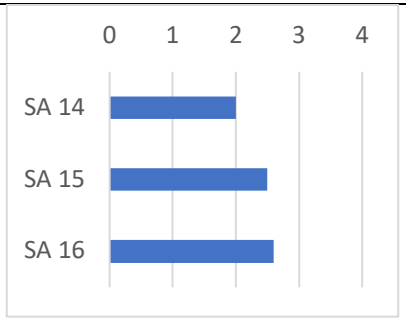
In the Inception workshop, stakeholders were asked to choose at least one of the 5 Priority Strategy to involve in during the stakeholder focus group discussion. Implementation of stakeholder consultation which occurred on June 27-28, 2019, however used a slight different strategy to maximize information inputs from all stakeholder. The new strategy used was in a rotational system where every group (there were 5 groups in total) got opportunity to provide their inputs in all the five Priority Strategy. The Focus group consultation was delivered on a-two day discussion groups from 27 to 28 June 2019. The FGD was delivered using a consultation matrix contained 21 Strategic Action and 174 sub-actions where each of these sub-actions were checked against assessment guidelines for the 6th NR adopted in Decision XIII/27. In addition, sub-action to each of the Strategic Action were also provided to stakeholder as annex to the invitation letter which was delivered approximately a week before the FGD to better equip stakeholders understanding in providing the assessment based on their project activities. Further, an example of providing assessment was also provided in the matrix to allow group facilitator and stakeholder to follow in filling in the information. In addition, important stakeholders that did not participate in the 2-day workshop such as Conservation International, Care International, GIZ, Agricultural Innovations for Communities (Ai-Com) project, Protected Areas Department, etc. were also consulted individually before analyzing of the consultation results.

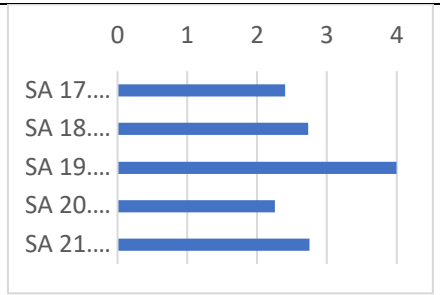
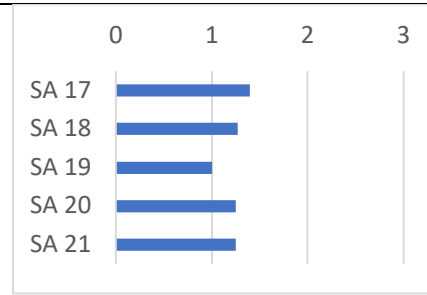
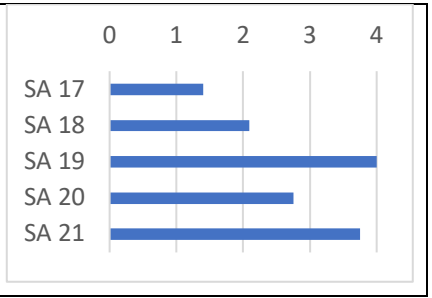
Consultation Results

Results of stakeholders consultation through focus group discussion and individual consultation on assessment of progress towards national targets are shown in Table 3.1.

Table 3.1. Average progress of the implementation Timor Leste Priority Strategy and its Strategy Action between 2015 and the 2019

Priority Strategy	Average category of progress of the Timor Leste NBSAP: 1) on track to exceed target, 2) on track to achieve target, 3) progress at insufficient rate, 4) no significant change, 5) moving away from the target, 6) unknown	Describe the indicators used in this assessment, and any other tools and methods.	Select your level of confidence of the above assessment and explain verbally: 1) Based on comprehensive evidence 2) Based on partial evidence 3) Based limited evidence	Assess the adequacy of monitoring information to support this assessment: 1) Monitoring related to this target is adequate 2) Monitoring related to this target is partial 3) No monitoring system in place 4) Monitoring is not needed
PS 1 Mainstreaming biodiversity into sectoral plans and programs to address underlying causes of biodiversity loss		Consultation with national and project level stakeholders and secondary data gathering from reports		

PS 2 Protecting biodiversity and promoting sustainable use		Consultation with national and project level stakeholders and secondary data gathering from reports		
PS 3 Building climate-resilient ecosystems through effectively managing protected areas and reducing threats to biodiversity		Consultation with national and project level stakeholders and secondary data gathering from reports		
PS 4 Enhancing biodiversity and ecosystems services to ensure benefits for all		Consultation with national and project level stakeholders and secondary data gathering from reports		
PS 5 Enhancing implementation of the NBSAP through participatory		Consultation with national and project level stakeholders and		

planning, knowledge management and capacity building, including district and sub-district and community levels		secondary data gathering from reports		

Progress towards each of the 21 national Strategic Actions (from 5 Priority Strategy) which is shown in the Table 3.1 is further described below. The methods used in the assessment was based on stakeholders consultations at national level. Numbers in brackets illustrate average assessment from all sub-actions of each Strategic Action (SA).

Priority Strategy 1
Mainstreaming biodiversity into sectoral plans and programs to address underlying causes of biodiversity loss

Target: By 2015, public awareness on biodiversity has increased and participation in conservation activities (through sustainable tourism and sustainable agriculture) by private sector, media, and local communities, including women and youth has been enhanced

Strategic Action 1.
Raise awareness on the values of biodiversity and engage various sectors including media, business sector, youth and women groups and local communities in conservation activities by implementing the CEPA Strategy
Analysis over 14 sub-actions showed:
Progress towards the Strategic Action: At insufficient rate (2.8)
Level of confidence: Based on partial evidence (2)
Adequacy of monitoring information to support assessment: Monitoring related to this target was between partial and no monitoring system in place (2.5)

Strategic Action 2.
Promote nature-based and community-based sustainable tourism and ecotourism
Analysis over 6 sub-actions showed:

Progress towards the Strategic Action: between on track to achieve target and progress at insufficient rate (2.5)
Level of confidence: between comprehensive and partial evidences (1.5)
Adequacy of monitoring information to support assessment: Monitoring related to this target was partial (2.3)

Strategic Action 3.
Integrate biodiversity into agriculture to ensure the development of diverse and sustainable crops and sustainable agricultural practices
Analysis over 11 sub-actions showed:
Progress towards the Strategic Action: at insufficient rate (2.8)
Level of confidence: based on partial evidence (1.7)
Adequacy of monitoring information to support assessment: No monitoring system in place (3.1)

Strategic Action 4.
Develop and enforce a sustainable land management and land use policy
Analysis over 6 sub-actions showed:
Progress towards the Strategic Action: no significant change (3.67)
Level of confidence: based on partial evidence (1.8)
Adequacy of monitoring information to support assessment: between no monitoring system in place and no monitoring is needed (3.5)

Strategic Action 5.
Ensure impact assessment of development projects through the EIA system
Analysis over 2 sub-actions showed:
Progress towards the Strategic Action: on track to achieve target (2)
Level of confidence: based on comprehensive evidence (1)
Adequacy of monitoring information to support assessment: monitoring related to this action was partial (2)

Priority Strategy 2
Protecting biodiversity and promoting sustainable use

Target: By 2015, rehabilitation activities in critical watersheds and degraded lands have been undertaken and at least one million trees planted per year, providing sustainable livelihoods to local communities through ecosystem restoration activities

Strategic Action 6.
Enhance and develop a national biodiversity law and relevant environmental policies on nature conservation, pollution and other related concerns, including traditional conservation laws and policies
Analysis over 11 sub-actions showed:
Progress towards the Strategic Action: On track to achieve target (2.2)
Level of confidence: Based on between comprehensive and partial evidence (1.5)
Adequacy of monitoring information to support assessment: No monitoring system in place (2.9)

Strategic Action 7.
Intensify massive tree planting including mangrove reforestation to rehabilitate critical and damaged habitats and ecosystems and degraded watersheds
Analysis over 11 sub-actions showed:
Progress towards the Strategic Action: On track to achieve target (2.3)
Level of confidence: Based on partial evidence (1.9)
Adequacy of monitoring information to support assessment: Monitoring related to this was partial (1.9)

Strategic Action 8.
Assess impacts of invasive species and prevent and control the spread of these invasive species
Analysis over 3 sub-actions showed:
Progress towards the Strategic Action: Progress at insufficient rate (3)
Level of confidence: Based on Partial evidence (2)
Adequacy of monitoring information to support assessment: No monitoring system in place (3.3)

Strategic Action 9.
Implement sustainable livelihood activities for local communities, promote traditional knowledge and practices, and enhance the role of women and youth
Analysis over 6 sub-actions showed:
Progress towards the Strategic Action: On track to achieve target (2.3)
Level of confidence: Based on partial evidence (2)
Adequacy of monitoring information to support assessment: Monitoring related to this target is partial (2.3)

Priority Strategy 3
Building climate-resilient ecosystems through effectively managing protected areas and reducing threats to biodiversity

Target: By 2020, the status of biodiversity has improved by safeguarding ecosystems, species and genetic diversity in the 30 declared protected areas

Strategic Action 10.
Effectively manage representative samples of Timor-Leste's biodiversity in the 30 declared Protected Areas and creating natural conservation zones to protect specific biodiversity and ecosystems
Analysis over 22 sub-actions showed:
Progress towards the Strategic Action: Progress at insufficient rate (3.3)
Level of confidence: Based on partial evidence (1.7)
Adequacy of monitoring information to support assessment: Monitoring related to this target was partial (2.4)

Strategic Action 11.
Develop and implement a comprehensive and integrated coastal and marine policy and fisheries management programme
Analysis over 15 sub-actions showed:
Progress towards the Strategic Action: Progress at insufficient rate (2.6)
Level of confidence: Based on partial evidence (1.8)
Adequacy of monitoring information to support assessment: Monitoring related to this target was between partial and no monitoring system in place (2.5)

Strategic Action 12.
Maintain plant genetic diversity through developing and implementing a comprehensive and integrated agricultural management program
Analysis over 16 sub-actions showed:
Progress towards the Strategic Action: On track to achieve target (2.2)
Level of confidence: Based on a comprehensive evidence (1.1)
Adequacy of monitoring information to support assessment: Monitoring related to this was adequate (1.3)

Strategic Action 13.
Establish waste management center for composting, recycling, and re-using of domestic, commercial and other wastes
Analysis over 6 sub-actions showed:
Progress towards the Strategic Action: Progress at insufficient rate (3.3)
Level of confidence: Based on comprehensive evidence (1.2)
Adequacy of monitoring information to support assessment: No monitoring system in place (2.7)

Priority Strategy 4
Enhancing biodiversity and ecosystems services to ensure benefits for all

Target: By 2020, enhanced ecosystems services through promoting economic values of biodiversity and ecosystems and promoting benefits sharing

Strategic Action 14.
Valuate and account direct and indirect goods and services of biodiversity and ecosystems
Analysis over 3 sub-actions showed:
Progress towards the Strategic Action: Progress at insufficient rate (3.3)
Level of confidence: Based on partial evidence (2)
Adequacy of monitoring information to support assessment: Monitoring related to this is partial (2)

Strategic Action 15.
Safeguard and maintain ecosystems services through promoting Integrated Water Resource Management
Analysis over 4 sub-actions showed:
Progress towards the Strategic Action: Progress at insufficient rate (3.3)
Level of confidence: Based on between comprehensive and partial evidences (1.5)
Adequacy of monitoring information to support assessment: Monitoring related to this target was partial and no monitoring system in place (2.5)

Strategic Action 16.

Promote understanding and develop national policies on access and benefit-sharing arising from utilization of genetic resources, including biosafety measures
Analysis over 5 sub-actions showed:
Progress towards the Strategic Action: Progress at insufficient rate (3.4)
Level of confidence: Based on comprehensive evidence (1.4)
Adequacy of monitoring information to support assessment: No monitoring system in place (2.6)

Priority Strategy 5
Enhancing implementation of the NBSAP through participatory planning, knowledge management and capacity building, including district and sub-district and community levels

Target: By 2015, a national biodiversity monitoring and reporting system on biodiversity has been established, using the CHM as a platform for information, knowledge management and networking.

Strategic Action 17.
Enhance technical and managerial capacity of officials and staff on biodiversity conservation and management as laid out in the Strategic Action Plan (SAP) and the Capacity Building Plan on Protected Areas under the PoWPA Project of the MAP (cf. also NBSAP Capacity-building Plan Chapter)
Analysis over 5 sub-actions showed:
Progress towards the Strategic Action: On track to achieve target (2.4)
Level of confidence: Based on comprehensive evidence (1.4)
Adequacy of monitoring information to support assessment: Monitoring related to this target was adequate (1.4)

Strategic Action 18.
Develop an integrated research programme for Timor-Leste and intensify research efforts on the different aspects of forestry, protected areas, agriculture and other ecosystems, such as population studies, ecological studies, water quality assessment, and impact of alien invasive species
Analysis over 11 sub-actions showed:
Progress towards the Strategic Action: Progress at insufficient rate (2.7)
Level of confidence: Based on comprehensive evidence (1.3)
Adequacy of monitoring information to support assessment: Monitoring related to this target was partial (2.1)

Strategic Action 19.
Maintain and put into operation the CHM as the platform for knowledge sharing and networking
Analysis over 2 sub-actions showed:
Progress towards the Strategic Action: No significant change (4)
Level of confidence: Based on comprehensive evidence (1)
Adequacy of monitoring information to support assessment: No monitoring was needed (4)

Strategic Action 20.
Document and promote indigenous and traditional knowledge, techniques and practices for biodiversity conservation and environmental protection
Analysis over 4 sub-actions showed:
Progress towards the Strategic Action: On track to achieve target (2.3)
Level of confidence: Based on comprehensive evidence (1.3)
Adequacy of monitoring information to support assessment: No monitoring system in place (2.8)

Strategic Action 21.
Coordinate with donor partners, the United Nations and regional organizations and explore ways to substantially increase levels of funding and develop joint programmes
Analysis over 8 sub-actions showed:
Progress towards the Strategic Action: Progress at insufficient rate (2.8)
Level of confidence: Based on comprehensive evidence (1.3)
Adequacy of monitoring information to support assessment: Monitoring was not needed (3.8)

Section IV

Describe the national contribution to the achievement of each global ABT

Describe your country's contribution towards the achievement of each global ABT. This template should be replicated for each ABT. For Parties whose national targets are identical to the ABT, some of this information may be captured in Sections II and III. In these cases, provide additional descriptions of your country's national contribution to the achievement of each global ABT.

1. State the ABT name.
2. Describe how and to what extent your country has contributed to the achievement of this ABT. Summarizes the evidence used to support this description.
3. Describe other activities contributing to the achievement of the ABT at the global level.
4. Based on the description of your country's contributions to the achievement of the ABT, describe how

Timor Leste NBSAP was revised in line with the global Aichi Biodiversity Target (ABT) during the preparation of the 5th National Report which was submitted to the Secretariat of the UNCBD together with the 5th NR in 2015. Thus Timor Leste's national contribution to the achievement of each global ABT is herewith referring to the Section II and Section III of the 6th NR. Moreover, additional national contribution to the achievement of identified ABT is added. The requirement of the specific maps developed based on the UN BL analysis to the ABT target 5 focusing on reducing habitat loss, fragmentation and degradation, target 11 i) focusing specially on important biodiversity areas and important ecosystem services and ii) emphasizing effective, equitable, representative and well-connected areas and other effective area-based measures that are well integrated into landscapes and seascapes, target 12 focusing on preventing the extinction of species, target 14 i) focusing on restoring and safeguard in critical ecosystem services – water, health, and livelihoods ii) particularly focusing on woman, indigenous people, local communities, and poor and vulnerable populations, and target 15 focusing on strengthening climate resilience and carbon sequestration through ecosystem restoration were also added based on available data.

ABT Target 1
By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

Please refer to NBSAP Strategic Action 1 (sub action 1.1, 1.2, 1.3 and 1.4) of the Priority Strategy 1 provided in the Section II and III on raise awareness on the values of biodiversity and engage various sectors including media, business sector, youth and women groups and local communities in conservation activities by implementing the CEPA Strategy.

ABT Target 2
By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems

Please refer to the NBSAP Strategic Action 2.1, 3.1, 4.3, 11.1, 15.1, 16.2

Additional contribution from Timor Leste NBSAP to ABT Target 2 is EIA framework. The decree law no 5/February/2011 provides an environmental impact assessment to projects/activities carried out in country. The EIA task force based at the Secretariat of Environment was established to conduct activities related to EIA. The assessment on the project activities would define the category of project to which it complies. The decree law also provide penalties to projects/persons do not obey to the law. The implementation of the decree law is yet fully implemented (partial) and partly was due to its supporting sub action i.e. development of policies regarding responsible assessment of the environmental impacts and implementation of investment projects (Priority Strategy 1, Strategic Action 5.4) which yet to occur. In addition, the progress on the component to investigate and determine possible impacts of exploration and other development projects to ensure that proper mitigation methods are employed (Strategic Action 5.3) is at insufficient rate. The reasons of a partial progress on the EIA was mainly due to the limited human resources like technical experts, funds and facilities such as laboratory to support the implementation of the decree law.

ABT Target 3
By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions

Please refer to Strategic Action 14.2

ABT Target 4
By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

Please refer to strategic Action 4.1, 4.2, 9.4, 11.2, 12.3

Additional contribution from Timor Leste NBSAP to ABT Target 4 is Partnership for Sustainable Agriculture (Ai ba Futuru) aiming at increasing the production and productivity of agroforestry systems and improve market access for agroforestry product has been commencing since 2017 with a beneficiary targets of 4,000 households in 40 sucos (villages) in four municipalities (10 sucos from each municipality) by the

end of November 2022 implemented by GIZ Germany. Project targets to plant 3 million timber tree and fruits to be planted by the end of the project. The project has achieved 17 sucos involving in the project during the 2018/2019 and had planted a total of 200,000 seedlings of fruit and trees. Thus the project is on its tract to achieve the target. Trees and fruits will be integrated with high yield crops recommended by MAF. In addition to this Conservation Agriculture (CA) has long implemented by FAO Timor Leste since 2013 and finalized in 2019 aiming at improving soil quality for crop production to improve household food and nutrition security and reduce disaster risks associated with climate change. A total of 2880 farmers from over 200 farmer groups involved in the CA project activities. An initial survey carried out in two municipalities of Ermera and Same by the team from National University of Timor Lorosa'e observed a positive impact of the CA technologies used in the production of basic crops such as maize, cassava, sweet potatoes, etc. The maize yield increased by a 2-fold in 2017 compared to control a non-CA technology used in maize production. Agricultural Innovations for Communities (Ai-Com) projects for a duration of 2017-2022 aims at identifying new technologies to improve crop production sustainably through research activities. The project funded by the Australian government and implemented by Ministry of Agriculture and Fisheries, National University of Timor Lorosa'e and the World Vision. Further, Community Based Natural Resource Management implemented by JICA have also contributed to sustainable upland farming for crop and fruit production and establishment of 13 Suco/village regulations including natural resource management and future land use plan through a Participatory Land Use Planning (PLUP) system.

ABT Target 5

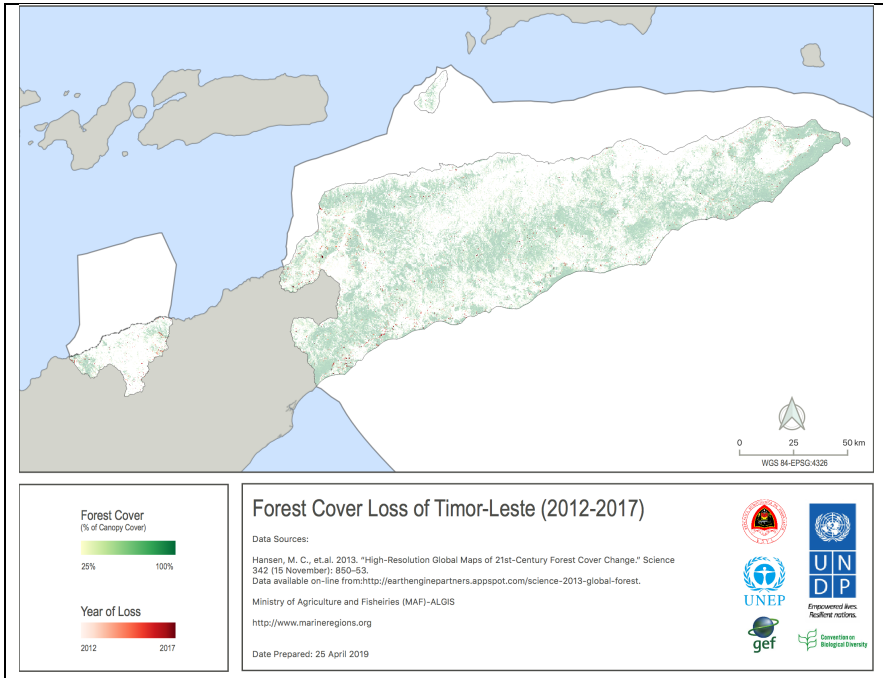
By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced

Please refer to strategic Action 7.3, 7.4, 9.1

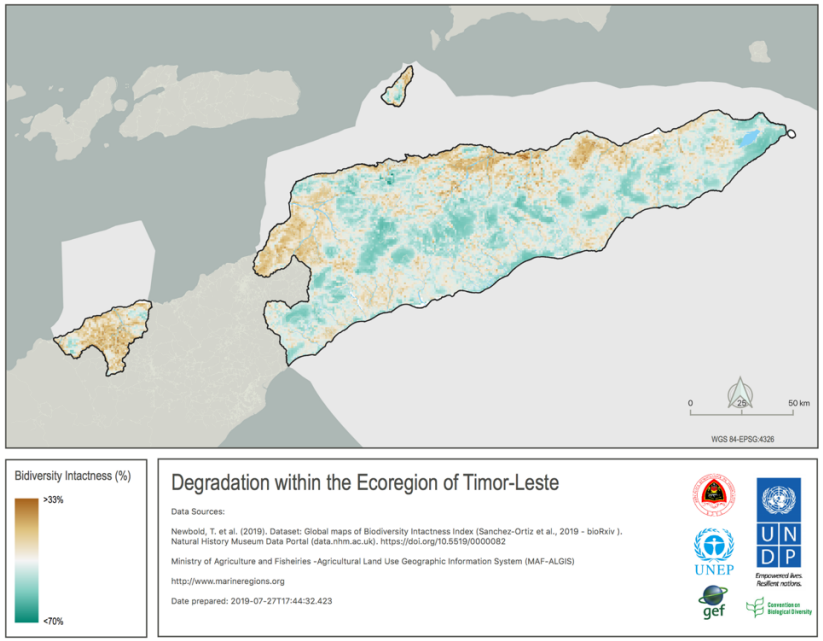
Additional maps based information which were developed based on UN BL map analysis are herewith provided. Map 4.1 shows forest cover loss of Timor Leste from 2012 to 2017. More forest cover is seen in the middle range and east-south coast of the country, while less forest cover is mostly seen in the north site of the country. Figure 4.1 shows area forest lost in hectares (Fig 4.1A) with a cumulative loss of almost 1 % from 2012 to 2017. This is a new figure based on a comprehensive analysis to correct previous reports including 5th NR where annual forest loss was 1.12 %. The most forest cover loss occurred in 2014 (0.26 %) and this was mainly due to possibly opening of new highway road in the southern part of the country, in addition to illegal cutting for fuelwood and infrastructure, etc. (Fig 4.1B). The cover loss decreased by 0.14 % in 2015 compared to previous year 2014, however the trend was then steadily increased again and reached to 0.21 % in 2017. As a result of the forest loss cover, there was steady reduction in the percentage of forest remaining from 58.2 % in 2012 to 57.7 % in 2017 (Fig 4.1C), despite the fact that a total of 748,730 tree seedlings from 2015 to 2019 to farm groups, government institutions, NGOs, etc by the Directorate of Forestry and Catchment Area Management, General Directorate for Forestry, Ministry of Agriculture and Fisheries and there were more tree planting

activities by donor like UNDP on mangrove project and SSRI projects and local NGOs like Santalum. Nonetheless activities are yet to improve forest cover in the country.

Map 4.2 below describes degradation within ecoregion of Timor Leste. In the absence of data explicitly quantifying how degraded a habitat is, a proxy data that can act as a surrogate for defining degradation was use. Here, we use the Biodiversity Intactness Index (BII) as a way to measure degradation of natural habitats. The BII presents the modelled average abundance of originally-present species in an area relative to their abundance in an intact ecosystem. In essence, it can be seen as a measure of how far an area is from its original intact ecological state – which tells us how degraded the area is. Table 4.2 shows that the highest percentage of intactness of 27 % falls between 53-57 % of BII and only 20 % classified between 57-70 % of BII and this mainly occur in the middle range and eastern end (Nino Konis Santana National Park) of the mainland of Timor Leste. Meanwhile the lowest percentage of intactness (9 %) ranges between 33-44 % of BII and this mainly occur in the northern part of the country including enclave of Oecusse where higher population density and low annual rainfall (between 800-1000) occurs.



Map 4.1. Forest cover loss of Timor Leste between 2012 and 2017



Map 4.2: Degradation within ecoregion of Timor Leste

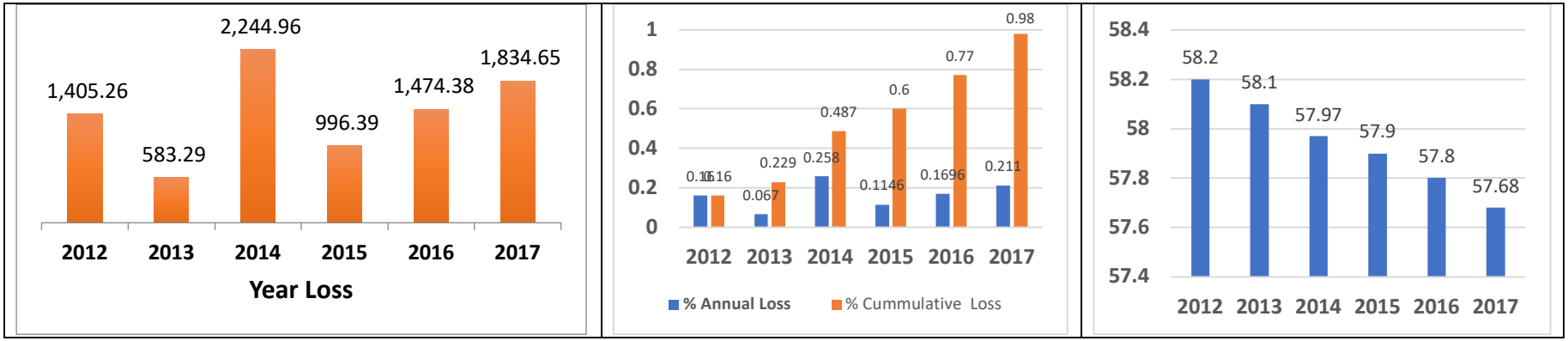
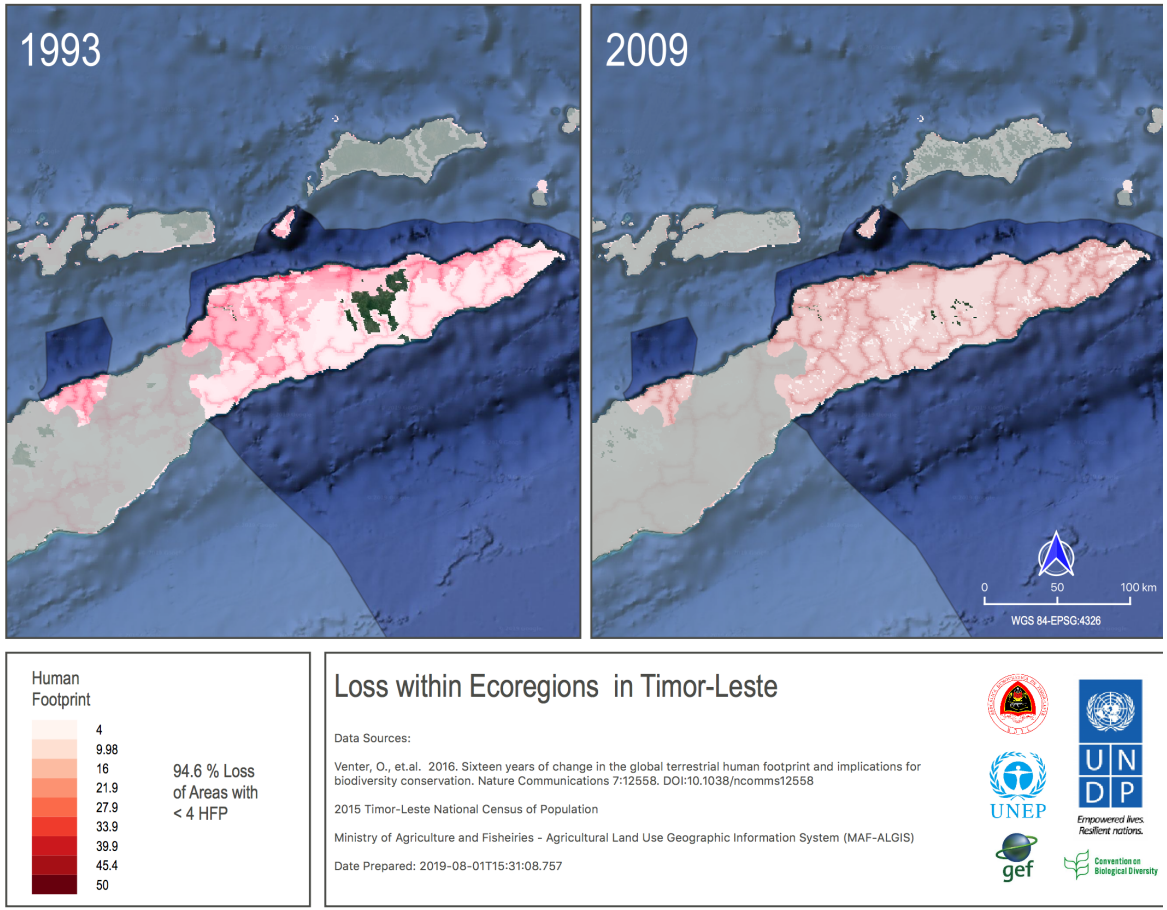


Figure 4.1. Rate of forests cover loss and remaining (A = annual loss in ha, B = percentage of annual and cumulative loss and C = percentage of remaining) from 2012 to 2017.

BII Percentage	Area_ha	%
33-44%	136198.4	9%
44-49%	271619.5	18%
49-53%	363339.6	25%
53-57%	404535.9	27%
57-70%	299256.4	20%
Total	1474950	100%

Table 4.1. Percentage according to the BII classified percentage

Map 4.3 below shows loss within ecoregion in Timor Leste from 1993 to 2009. The figures shows changes in human footprint in 1993 to 2009. In 1993 (Timor Leste was still controlled by the Indonesian regime), the human footprint was mostly much higher in the norther part (between 16 and 21.9) and this was higher compared to post independence in 2009. In 1993, human footprint in the south and mid-range of the country was less but still higher than average of 4 and this was comparable to 2009.



Map 4.3. Loss within ecoregions in Timor Leste

ABT Target 6
By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

Please refer to Strategic Action 11.1, 11.2, 11.3

ABT Target 7
By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

Please refer to NBSAP Strategic Action 4.1, 4.2, 12.3

Additional contribution from Timor Leste NBSAP to ABT Target is GIZ project on for Sustainable Agriculture (Ai ba Futuru) and Conservation Agriculture project by FAO and Agricultural Innovations for Communities (Ai-Com) project (Please refer to ATB 4 for details).

ABT Target 8
By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

Please refer to NBSAP strategic Action 15.1, 15.2

ABT Target 9
By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment

Please refer to NBSAP strategic Action 8.1, 8.2

ABT Target 10
By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning

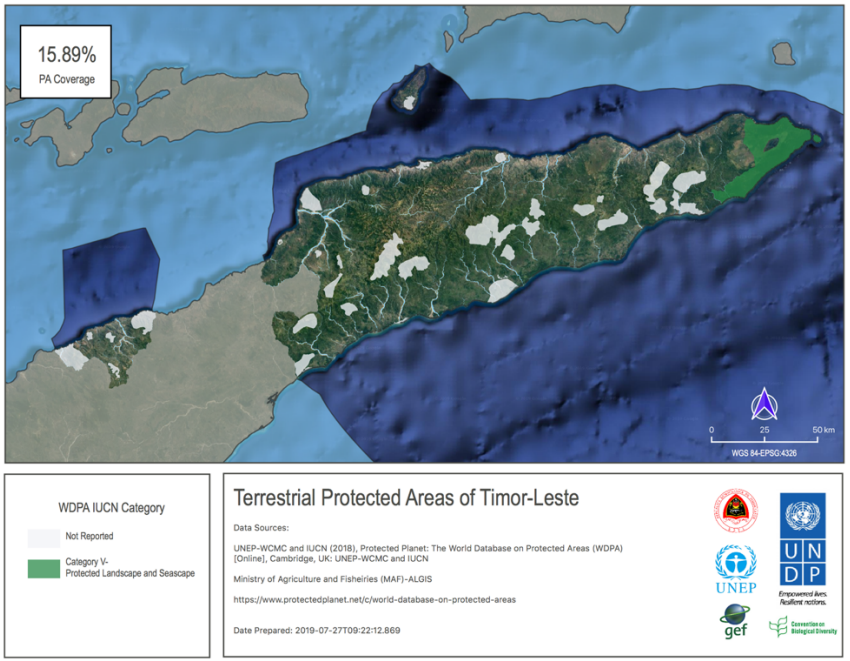
Please refer to NBSAP strategic Action 9.1, 12.1

ABT Target 11
By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes

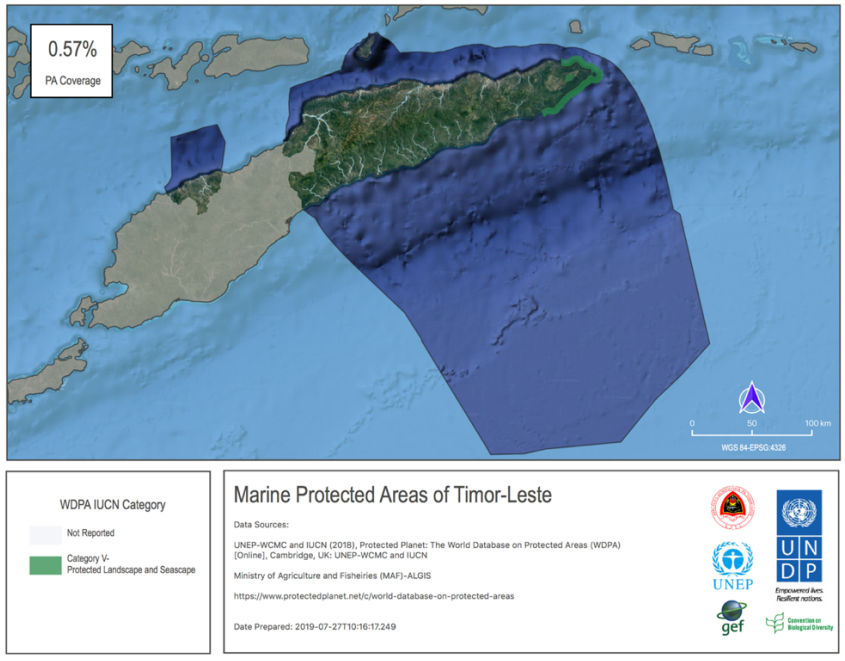
Please refer to NBSAP strategic Action 10.1, 10.4, 10.5

Additional maps based information which were developed based on UN BL map analysis are herewith provided. Map 4.4 shows terrestrial protected areas of Timor Leste which covers 79.22 % of Timor-Leste's Protected Areas (PA) and this covers 15.89 % of the country's land area. The calculation was made based on the proportion of the land protected areas (237,054.11 ha) to Timor Leste land area (1,491,887.23 ha). Over all terrestrial protected areas, only the Nino Konis Santana National Park is categorized as category V under WDPA IUCN Category of protected landscape and seascape.

Similar approaches was used to calculate marine protected area coverage (Map 4.5). The area of the marine PAs of 62,176.92 ha was calculated as difference between the total area (of the 46 PAs) of 299,231.03 ha to that of total terrestrial PAs of 237,054.11 ha and the percentage of the marine area (0.57 %) was calculated by dividing total marine PAs to that of total Timor Leste Exclusive Economic Zone (EEZ) (10,933,575.00 ha).

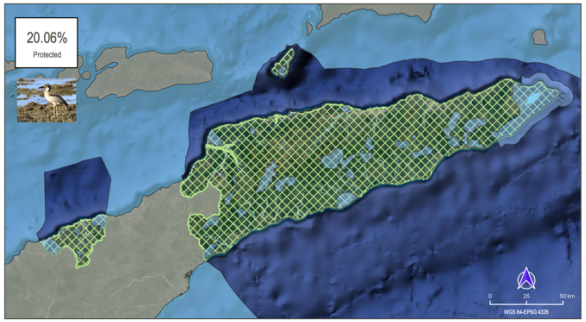


Map 4.4. Terrestrial protected areas of Timor Leste



Map 4.5: Marine protected areas

Map 4.6 (Species Richness) below was calculated and showed the protected area coverage for the range of particular species of interest in Timor Leste. Based on data gathered from the IUCN Redlist, there are 18 endemic species in TL which are either under the IUCN status as Near Threatened (NT), Endangered (EN) and Critically Endangered (CE). Each map shows each particular species with IUCN threatened status and its protection and distribution in Timor Leste. The species protection status was estimated based on each species' place of existence in the protected areas and outside of the protected areas and this is the first time to report species based location of existence. For example, species Snake-necked turtle (Chelodina mccordi) exists in the lake of Iralalaro which is within the Nino Konis Santana National Park is considered 100 % protected. Meanwhile, the Timor green pigeon (Treron psittaceus) in its existence is in the norther including enclave of Oecusse, southern and eastern but not in the mid-range of the country where most of the protected areas are located and thus its protection is the least (13.60%) than any others.



Habitat range of species in Timor-Leste

Protected Area

IUCN Category: Near Threatened

Esacus magnirostris (Beach stone-curlew) range and Terrestrial Protected Areas of Timor-Leste

Data Sources:

UNEP-WCMC and IUCN (2018), Protected Planet: The World Database on Protected Areas (WDPA) [Online], Cambridge, UK: UNEP-WCMC and IUCN

The IUCN Red List of Threatened Species. Version 3. http://www.iucnredlist.org. Downloaded on 10 June 2019.

Date Prepared: 2019-08-03T12:04:45.919

Habitat range of species in Timor-Leste

Protected Area

IUCN Category: Near Threatened

Geokichla dohertyi (Chestnut-backed thrush) range and Terrestrial Protected Areas of Timor-Leste

Data Sources:

UNEP-WCMC and IUCN (2018), Protected Planet: The World Database on Protected Areas (WDPA) [Online], Cambridge, UK: UNEP-WCMC and IUCN

The IUCN Red List of Threatened Species. Version 3. http://www.iucnredlist.org. Downloaded on 10 June 2019.

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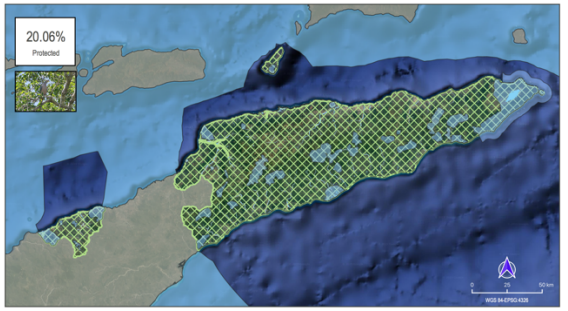

Habitat range of species in Timor-Leste

Protected Area

IUCN Category: Near Threatened

Ducula rosacea (Pink-headed imperial pigeon) range and Terrestrial Protected Areas of Timor-Leste

Data Sources:

UNEP-WCMC and IUCN (2018), Protected Planet: The World Database on Protected Areas (WDPA) [Online], Cambridge, UK: UNEP-WCMC and IUCN

The IUCN Red List of Threatened Species. Version 3. http://www.iucnredlist.org. Downloaded on 10 June 2019.

Date Prepared: 2019-08-03T12:02:20.374

Habitat range of species in Timor-Leste

Protected Area

IUCN Category: Critically Endangered

Chelodina mccordi (Snake-necked turtle) range and Terrestrial Protected Areas of Timor-Leste

Data Sources:

UNEP-WCMC and IUCN (2018), Protected Planet: The World Database on Protected Areas (WDPA) [Online], Cambridge, UK: UNEP-WCMC and IUCN

The IUCN Red List of Threatened Species. Version 3. http://www.iucnredlist.org. Downloaded on 10 June 2019.

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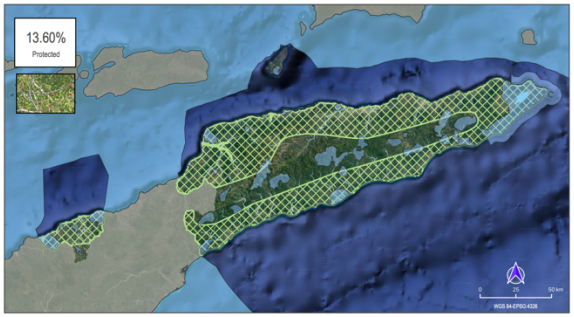

Habitat range of species in Timor-Leste

Protected Area

IUCN Category: Endangered

Treron psittaceus (Timor green pigeon) range and Terrestrial Protected Areas of Timor-Leste

Data Sources:

UNEP-WCMC and IUCN (2018), Protected Planet: The World Database on Protected Areas (WDPA) [Online], Cambridge, UK: UNEP-WCMC and IUCN

The IUCN Red List of Threatened Species. Version 3. http://www.iucnredlist.org. Downloaded on 10 June 2019.

Date Prepared: 2019-08-03T12:01:10.265

Habitat range of species in Timor-Leste

Protected Area

IUCN Category: Near Threatened

Saxicola gutturalis (White-bellied bush chat) range and Terrestrial Protected Areas of Timor-Leste

Data Sources:

UNEP-WCMC and IUCN (2018), Protected Planet: The World Database on Protected Areas (WDPA) [Online], Cambridge, UK: UNEP-WCMC and IUCN

The IUCN Red List of Threatened Species. Version 3. http://www.iucnredlist.org. Downloaded on 10 June 2019.

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Habitat range of species in Timor-Leste

Protected Area

IUCN Category: Near Threatened

Lonchura fuscata (Timor dusky sparrow) range and Terrestrial Protected Areas of Timor-Leste

Data Sources:

UNEP-WCMC and IUCN (2018), Protected Planet: The World Database on Protected Areas (WDPA) [Online], Cambridge, UK: UNEP-WCMC and IUCN

The IUCN Red List of Threatened Species. Version 3. http://www.iucnredlist.org. Downloaded on 10 June 2019.

Date Prepared: 2019-08-03T12:01:29.422

Habitat range of species in Timor-Leste

Protected Area

IUCN Category: Near Threatened

Psitteuteles iris (Iris lorikeet) range and Terrestrial Protected Areas of Timor-Leste

Data Sources:

UNEP-WCMC and IUCN (2018), Protected Planet: The World Database on Protected Areas (WDPA) [Online], Cambridge, UK: UNEP-WCMC and IUCN

The IUCN Red List of Threatened Species. Version 3. http://www.iucnredlist.org. Downloaded on 10 June 2019.

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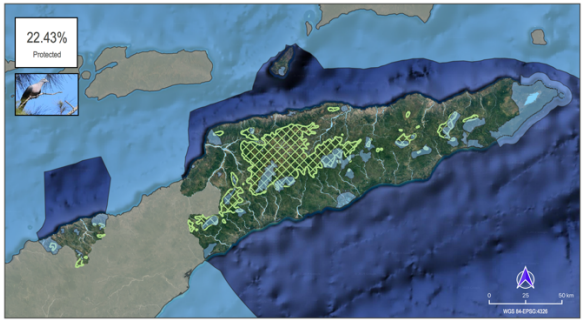

Habitat range of species in Timor-Leste

Protected Area

IUCN Category: Near Threatened

Ducula cineracea (Timor imperial pigeon) range and Terrestrial Protected Areas of Timor-Leste

Data Sources:

UNEP-WCMC and IUCN (2018), Protected Planet: The World Database on Protected Areas (WDPA) [Online], Cambridge, UK: UNEP-WCMC and IUCN

The IUCN Red List of Threatened Species. Version 3. http://www.iucnredlist.org. Downloaded on 10 June 2019.

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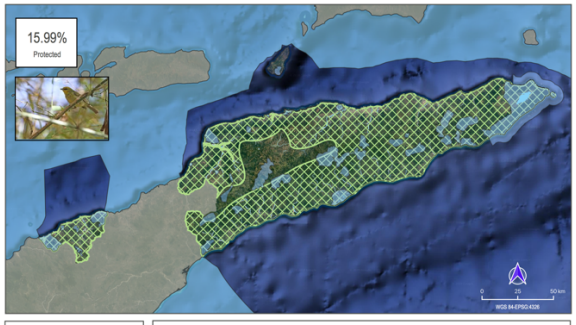

Habitat range of species in Timor-Leste

Protected Area

IUCN Category: Near Threatened

Heleia muelleri (Spot-breasted white-eye) range and Terrestrial Protected Areas of Timor-Leste

Data Sources:

UNEP-WCMC and IUCN (2018), Protected Planet: The World Database on Protected Areas (WDPA) [Online], Cambridge, UK: UNEP-WCMC and IUCN

The IUCN Red List of Threatened Species. Version 3. http://www.iucnredlist.org. Downloaded on 10 June 2019.

Date Prepared: 2019-08-03T12:01:46.548

Habitat range of species in Timor-Leste

Protected Area

IUCN Category: Endangered

Rhinolophus montanus (Timorese horseshoe bat) range and Terrestrial Protected Areas of Timor-Leste

Data Sources:

UNEP-WCMC and IUCN (2018), Protected Planet: The World Database on Protected Areas (WDPA) [Online], Cambridge, UK: UNEP-WCMC and IUCN

The IUCN Red List of Threatened Species. Version 3. http://www.iucnredlist.org. Downloaded on 10 June 2019.

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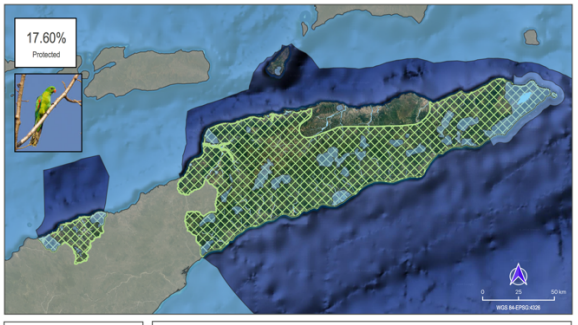

Habitat range of species in Timor-Leste

Protected Area

IUCN Category: Near Threatened

Aprosmictus jonquillaceus (Jonquil parrot) range and Terrestrial Protected Areas of Timor-Leste

Data Sources:

UNEP-WCMC and IUCN (2018), Protected Planet: The World Database on Protected Areas (WDPA) [Online], Cambridge, UK: UNEP-WCMC and IUCN

The IUCN Red List of Threatened Species. Version 3. http://www.iucnredlist.org. Downloaded on 10 June 2019.

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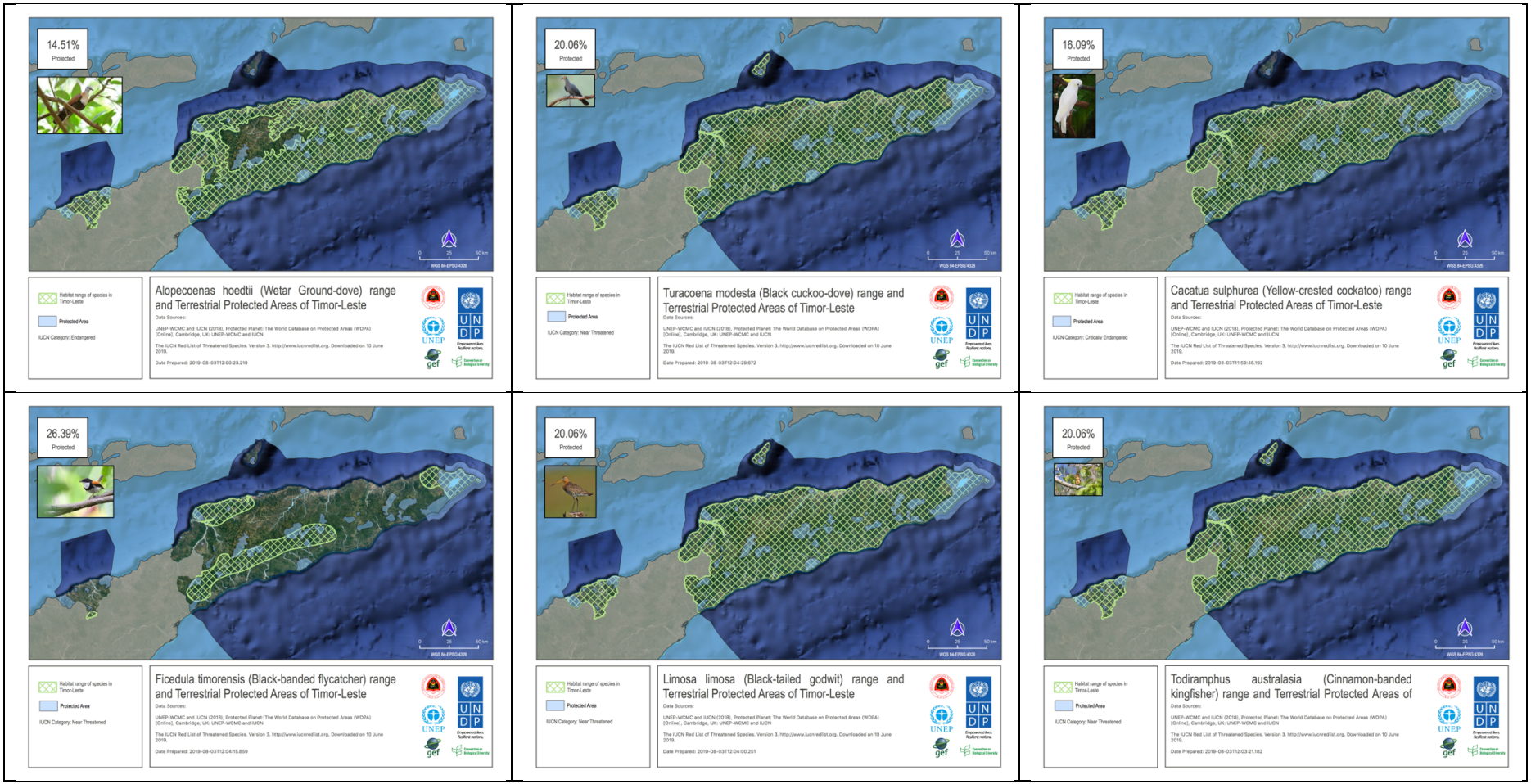
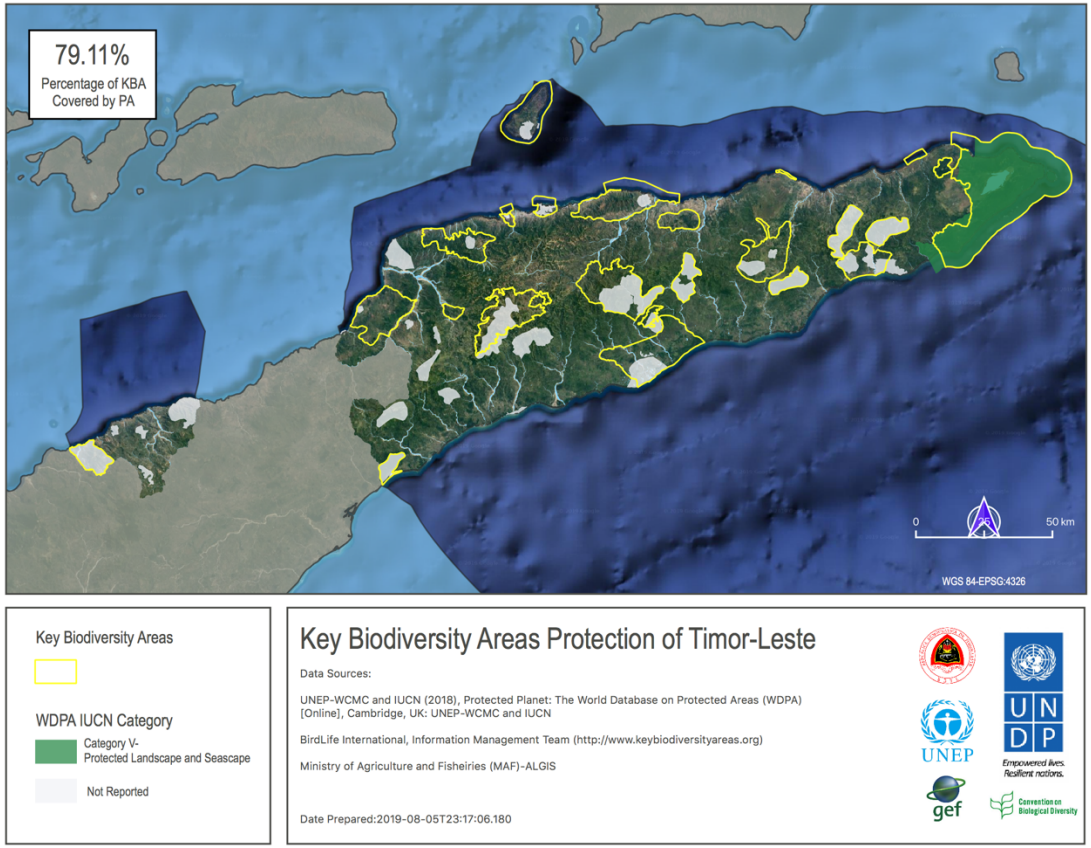
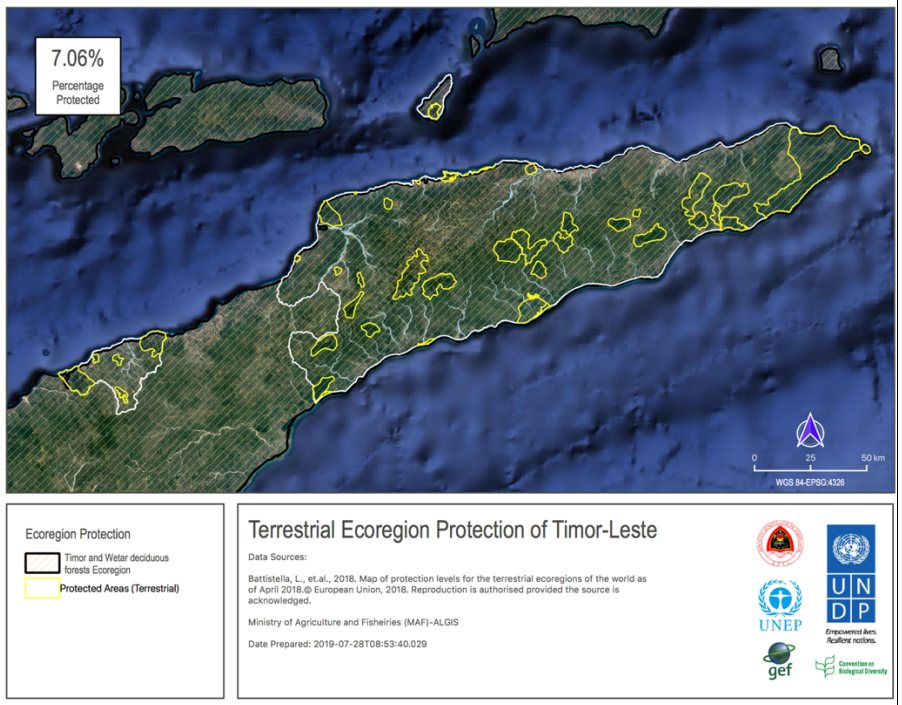


Map 4.6. Species richness and protected area network (for particular species of interest).

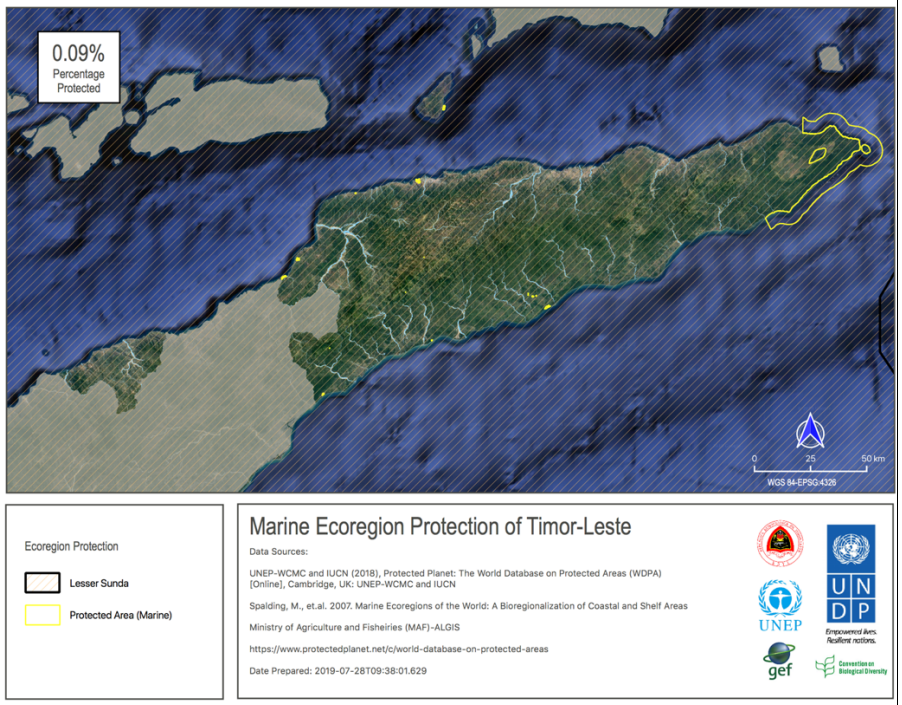
Timor-Leste has 46 designated Protected Areas (PA) with a total area of 299,979.73 ha (Map 4.7). Majority (68.18%) of the PA's or 30 of them are fully or partially covering the country's Key Biodiversity Areas (KBA's) and more than half (79.11%) of the KBA's are already covered by the PA's. Map 4.8 and Table 4.2 show terrestrial ecoregion of Timor Leste which covers 7.06% as protected terrestrial ecoregion. In addition Map 4.9 shows marine ecoregion which covers 0.09% as protected marine ecoregion.



Map 4.7: Key biodiversity areas protection of Timor Leste



Map 4.8. Terrestrial ecoregion protection of Timor Leste

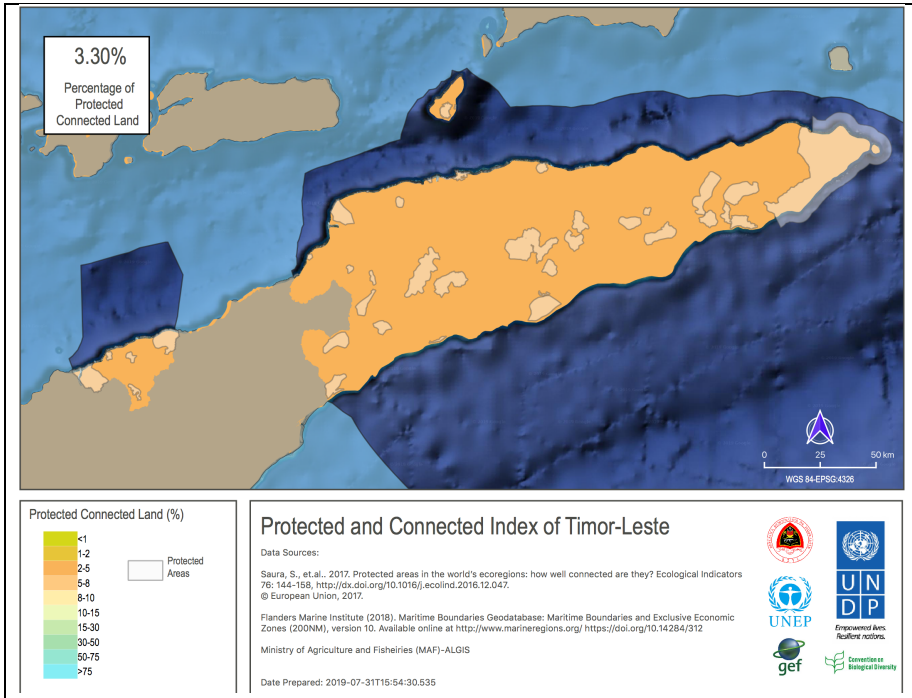


Map 4.9. Marine ecoregion protection of Timor Leste.

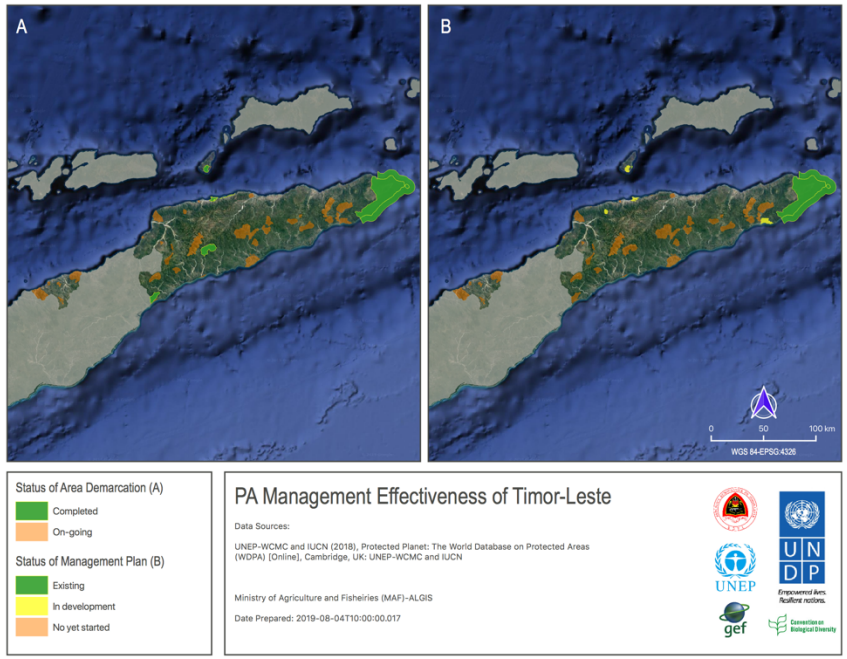
Protection	Ecoregion
Ecoregion Area in has	3359540.893820
PA Terrestrial	237054.1083879830
Protected ecoregion (%)	**7.06**

Table 4.2. Protected ecoregion of Timor Leste

Map 4.10 shows protected and connected index of Timor Leste. The ProtConn index was calculated only at the ecoregion level, and has not been disaggregated and calculated at the national level to assess progress towards the protected area connectivity commitments of ABT 11. The map 4.11 shows PA management effectiveness of the status of area demarcation (A) and status of management plan (B). A total of 7 PAs which are Mangal Hera, Area Mangal Metinaro, Cristo Rei, Monte Manucoco, Nino Konis Santana, Parke Nasional Kay Rala Xanana Gusmao and Tilomar has been demarcated completely, meanwhile the rest (39 PAs) are still on going. Regarding the management plan (map 4.11B), there are 3 existing PA management plans which are Nino Konis Santana, Suco de Vila and Batugede, and 4 PAs in development which are Lagoa Maurei no Alafalu, Monte Manucoco, Cristo Rei, and Mount Fatumasin and the rests (37 PAs) have yet started their management plan.



Map 4.10. Protected and connected index of Timor Leste.



Map 4.11. PA management effectiveness of Timor Leste

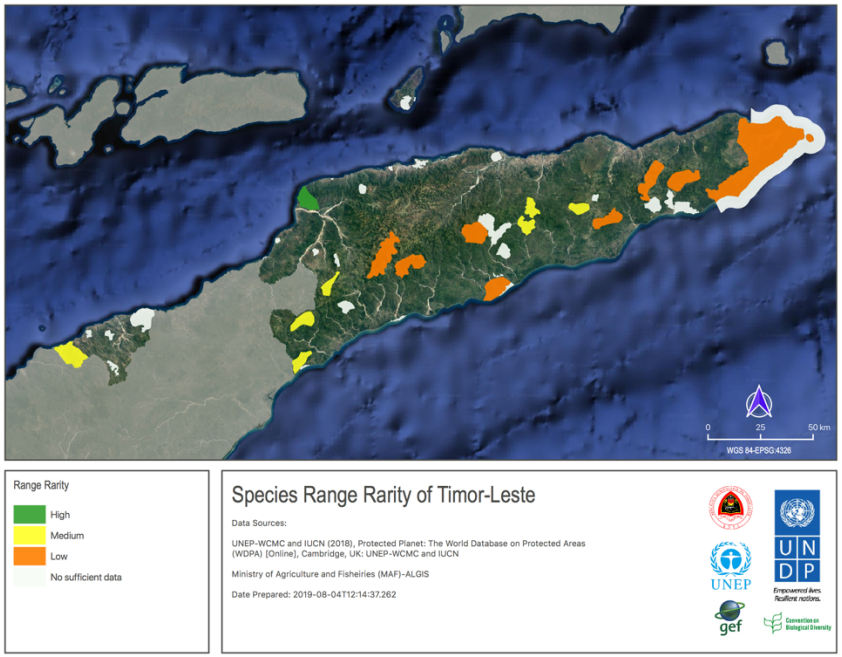
ABT Target 12

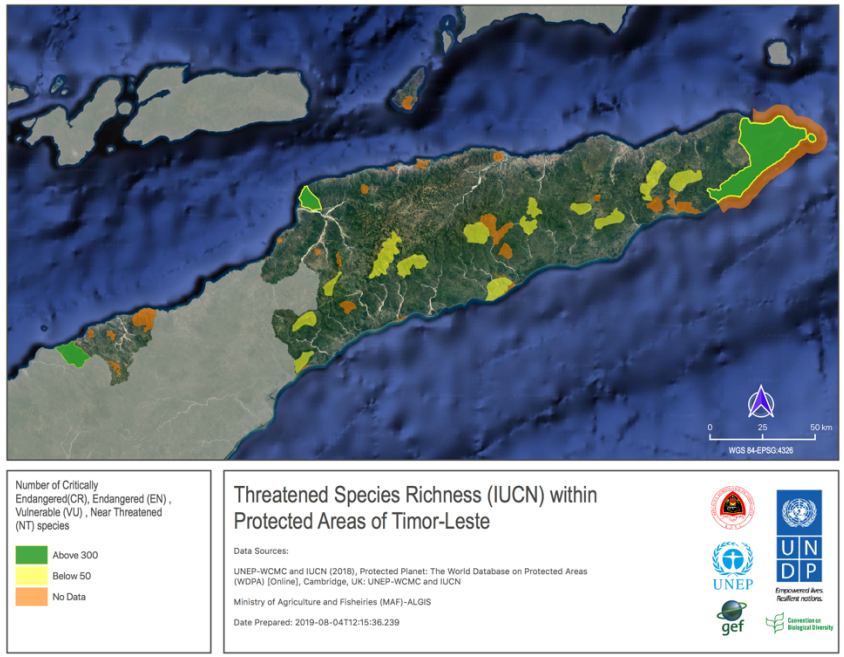
By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained

Please refer to NBSAP strategic Action 10.3, 10.6

Map 4.12 shows species range rarity with all species within the PA counted since Species Range Rarity is defined as the proportion of a total species range a given area represents.

Map 4.13 shows threatened species richness (IUCN) within PAs of Timor Leste. The species richness were categorized from no data, below 50 and above 300 species. There are 3 PAs that categorized as above 300 species and these PAs are Mount Guguleur, Mount Manoleu, and Nino Konis Santana. A total of 13 PAs was categorized as below 50 and the rests of the PAs (30 PAs) has no available data.





Map 4.12. Species range rarity of Timor Leste	Map 4.13. Threatened species richness (IUCN) within PA of Timor Leste

ABT Target 13
By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity

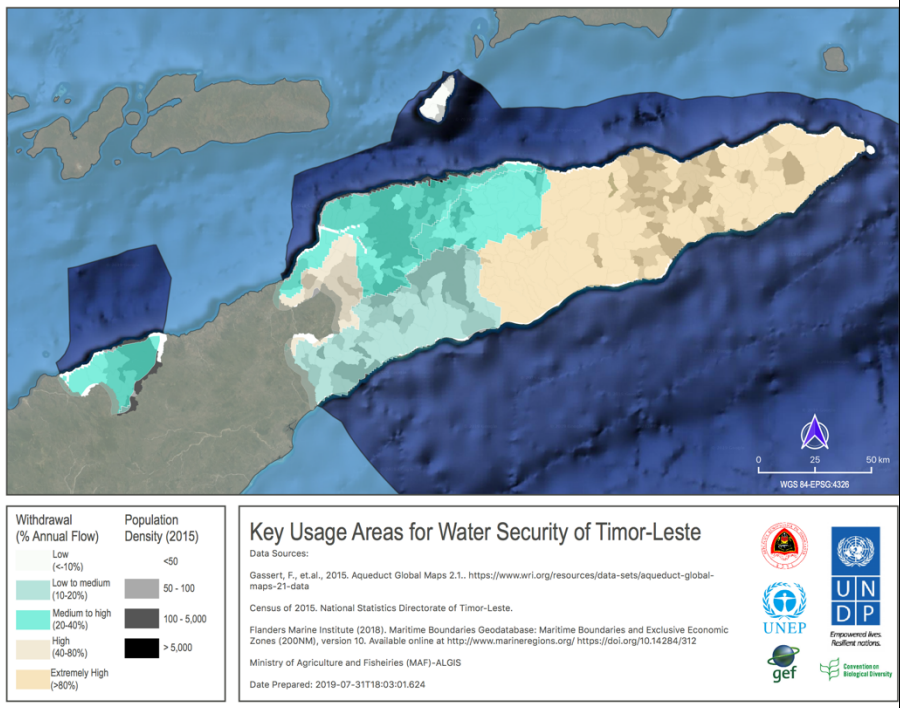
Please refer to NBSAP strategic Action 10.6, 12.1

ABT Target 14
By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable

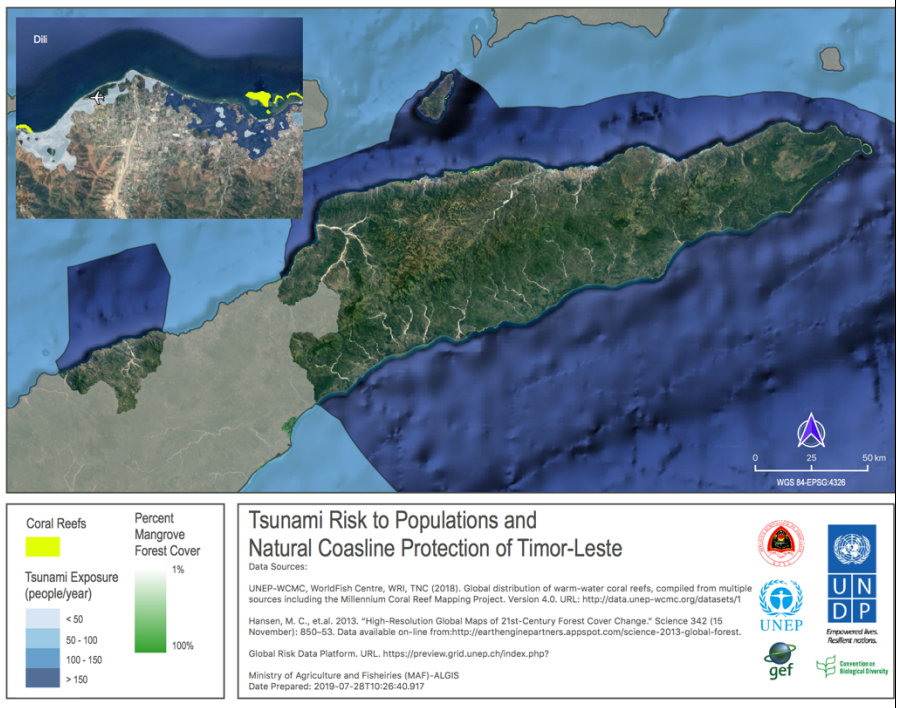
Please refer to NBSAP strategic Action 9.1, 15.4

Additional maps based information which were developed based on UN BL map analysis are herewith provided . Maps 4.14 below shows Key usage areas for water security in Timor Leste. The key usage for water security in Timor Leste depends on the population density of the particular location. About half of the country mainly in the eastern part of the country water withdrawal is extremely high (>80% of the annual flow) and this followed by west north coast including enclave of Oecusse from medium to high (20-40%) and low to medium (10-20%) in the west south coast.

Map 4.15 shows Tsunami risk to population and natural coastline protection in Timor Leste. We use coral reefs and mangroves forest as a metric of shoreline protection against large ocean waves. Timor-Leste has a total coastline of 782 km of which 8.9 % are protected by mangrove and 37.8% by coral reefs. One of the key constraints in identifying the value of coastal protection is identifying both human populations at risk, as well as built infrastructure at risk. The Physical Exposure to Tsunamis view provides data on the human populations that are at risk from tsunami. In combination with data on mangroves and coral reefs, we can begin to identify areas of these ecosystems that are of particular importance for humanity. This can help to identify the location of ecosystems that provide key services which enhance the well-being of human populations, and therefore are critical to delivering of ABT 14.



Map 4.14. Key usage areas for water security of Timor Leste



Map 4.15. Tsunami risk to population and natural coastline protection of Timor Leste

ABT Target 15

By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification

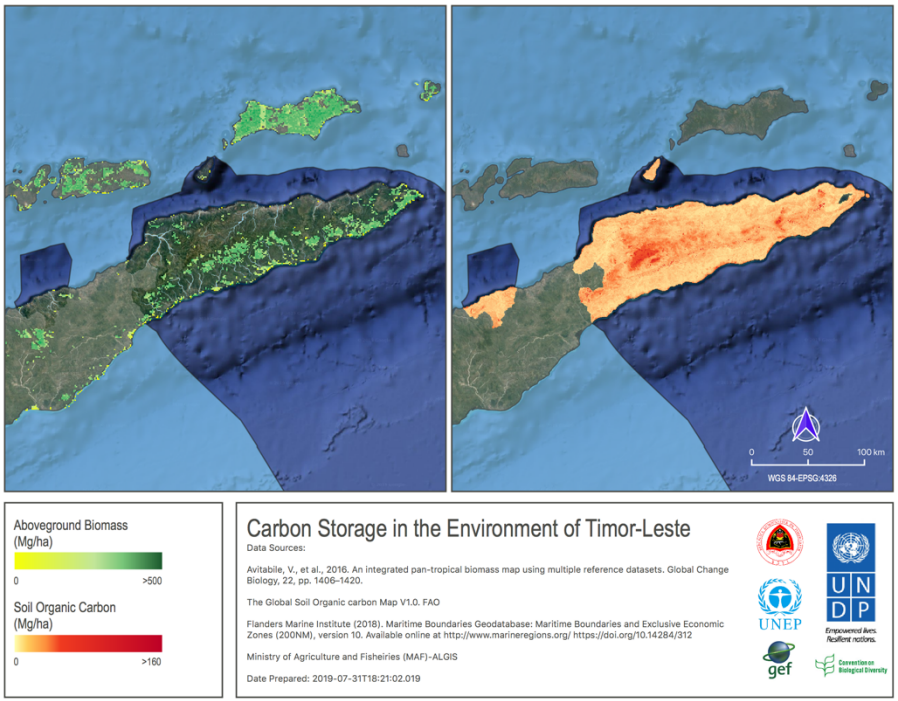
Please refer to NBSAP strategic Action 9.1, 15.2

Additional contribution from Timor Leste NBSAP to ABT Target is Enhancing Resilience of the coastal ecosystems (mangroves) project (2016 – 2020) implemented by the UNDP. The remaining mangrove area in Timor Leste after a dramatic reduction since 1940 (9000 ha) of 2000 ha requires rehabilitation and restoration interventions to maintain its ecosystem function and services. UNDP has identified a total of 11 mangrove sites which covers approximately 1,500 ha to restore them through identification species, soil, inundation, threat to mangroves (current, past and future threats). The project activities include i) formulation of policies and strategies and institutional capacity strengthening for climate resilient coastal management ii) Extensive mangroves and coastal wetlands ecosystem protection and restoration interventions iii) Strengthening alternative livelihoods options and integrated approaches to coastal adaptation to protect the coastal communities and productive lands and iv) Public awareness raising about the important role of coastal ecosystems in shoreline protection and climate change adaptation and mitigation. The project outcomes so far can be found in the following link http://www.tl.undp.org/content/timor_leste/en/home/all-projects/shoreline-resilience.html. In addition, one of the challenges that mangrove project staff of the UNDP shared in restoration of degraded mangroves through planting has been unsuccessful due to a very high portion of non-survival new mangrove seedlings planted. It requires expert to further assess on how best to obtain an adaptive species that survive from planting of seedlings. Currently, the most effective way in restoring mangrove plantation and ecosystem is prevent it from cutting through fencing, provide alternative livelihoods, etc. to allow mangroves to recover naturally.

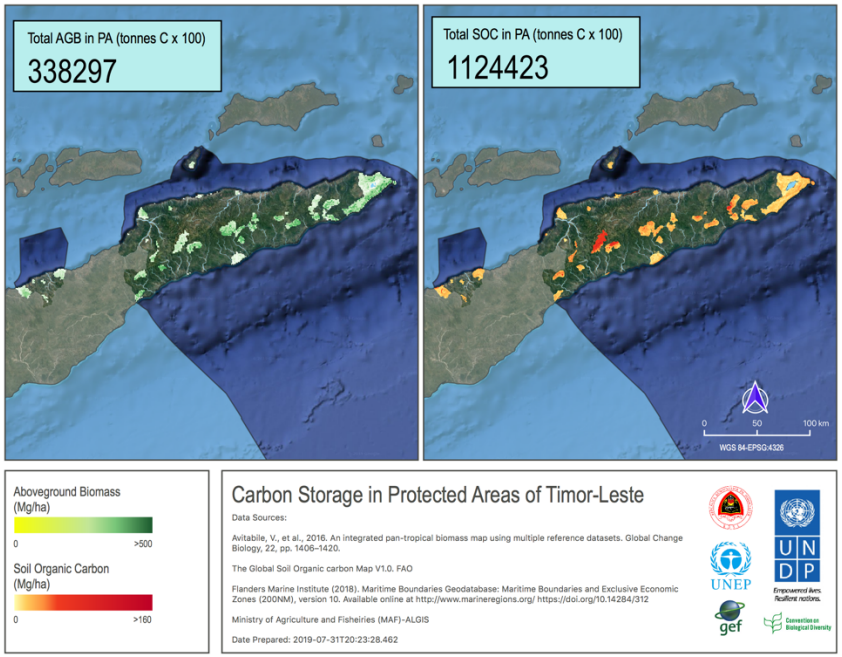
Additional maps based information which were developed based on UN BL map analysis are herewith provided. Map 4.16 shows carbon storage in the environment of Timor Leste. The left hand side map shows that high above ground biomass of more than 500 Mg/ha which are seen from mid-range to the south coast and from west to east. There are very rare high above ground biomass stored in the north coast of the country including enclave of Oecusse. In the right hand side map, it shows soil organic carbon stored in the country. The soil carbon storage reflects well with the above ground biomass that more soil carbon storage of about 160 Mg/ha are seen in the mid-range of the country from west to east.

Map 4.17 further shows above ground biomass storage (left hand side map) and soil organic carbon (right hand side map) in the protected areas of Timor Leste. The first map show that a total of 338297 tons above ground biomass stored in all terrestrial PAs (44 PAs). The total soil organic carbon stored in all terrestrial PAs are 1124423 with a variety of SOC from one PA to another. The higher SOC are mostly seen in the PAs located in the mid-range of the country, meanwhile the rests on the coastal areas are less in SOC. The SOC is the carbon that remains in the soil (in Mg/ha) after partial decomposition of any material produced by living organisms. SOC constitutes a key element of the global carbon cycle through atmosphere, vegetation, soil, rivers and the ocean.

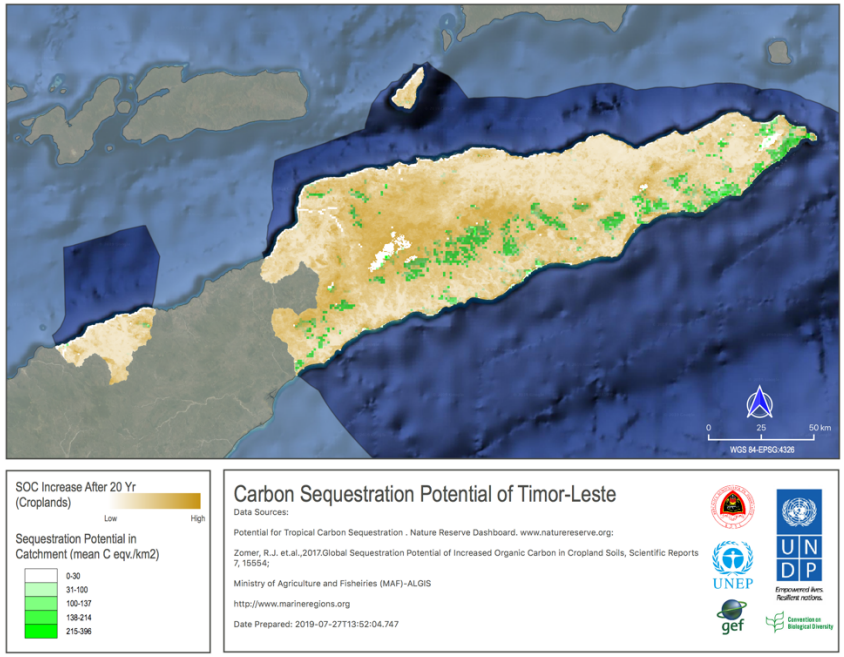
Map 4.18 shows Carbon sequestration potential of Timor Leste that the most potential areas for carbon sequestration in country is in the mid-range of country as well as in the south coast particularly in the area of Viqueque and Lautem municipalities. There are also some potential areas for carbon sequestration in the north coast of mainly in Ermera municipality.



Map 4.16. Carbon storage in the environment of Timor Leste.



Map 4.17. Carbon storage in Protected Areas of Timor Leste



Map 4.18. Carbon sequestration potential of Timor Leste

ABT Target 16

By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation

Please refer to NBSAP strategic Action 16.1, 16.2

ABT Target 17

By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan

Please refer to NBSAP strategic Action (the revised NBSAP revision).

ABT Target 18
By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels

Please refer to NBSAP strategic Action 9.1, 20.1, 20.2

ABT Target 19
By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

Please refer to NBSAP strategic Action 17, 19.1, 19.2

ABT Target 20
By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties

Please refer to NBSAP strategic Action 11.4

Section VII

Updated biodiversity country profiles

Biodiversity country profiles provide an overview of information relevant to your country's implementation of the Convention. Review and update your country's biodiversity profile that is currently displayed on the clearing-house mechanism here: https://www.cbd.int/countries.

Biodiversity Facts:

Status and trends of biodiversity, including benefits from biodiversity and ecosystem services

The wealth of Timor Leste biodiversity is well described in its revised edition NBSAP 2015 (https://www.cbd.int/doc/world/tl/tl-nbsap-v2-en.pdf). Following are some updated information under the section 1.2.2 of the revised NBSAP "Globally Significant Biodiversity and Ecosystems in Timor-Leste":

- First, Protected Areas:
    - In the NBSAP revised report, it was reported that Timor-Leste has a total of 30 declared Protected Areas (PA), containing the majority of the country's remaining primary forest cover (by the end of 2014), 22 additional protected areas had been identified adding up to a total of 52 protected areas).
    - In the 6th NR updated PAs numbers of 46 PAs with 44 PAs in the terrestrial and the marine PAs are 2 based on Decree law no 5/2016. The terrestrial and marine PAs covers 15.89 % and 0.57 % of the country's land and marine area, respectively and both PAs covers more than half of the Key Biodiversity Areas (50.61%).

- Second, Coral reefs:
    - In the revised NBSAP Timor-Leste is also part of the Coral Triangle, which harbors 76 percent of the world's coral species, six of the world's seven marine turtle species, **more than 3,000 reef fish species**, whale sharks, manta rays and a diversity of marine mammals, such as 22 dolphin species and a variety of whale species.
    - The 6th NR adding information on coral reefs species for Timor Leste that in recent survey in 2016 identified a total of 289 hermatypic scleractinian species and together with previous survey conducted in 2012 (258 species) it brings to a total of 336 coral reef species recorded for Atauro Island and this brings up to a total of 393 coral species in the country. The recent surveyed indicated that there is a likely to be over 450 hermatypic scleractinia present, in total, in Timor Leste.
- Third, Forest cover:
    - NBSAP revised version: According to the country's first detailed forest cover maps, 58.9 % of the land area has some type of forest cover in 2011
    - In the 6th NR based on the UN BL analysis: 57.68 % remaining forest in 2017

- Fourth, Forest reduction:
    - Approx. 184,000 ha of forest, i.e. 17.5% of the forest area of 2003, had been lost in that 9-year period. This translates into an average annual deforestation rate of 1.94%.
    - In the 6th NR based on the UN BL analysis, the average loses of forest between 2012 and 2017 is 0.16% with the highest observed in 2014 of 0.26% following by 2017 of 0.21%.

Main pressures on and drivers of change to biodiversity (direct, indirect)

- First, Driver to forest loss:
    - NBSAP: slashed and burned, harvesting trees for timber and fuel wood
    - In the 6th NR : added cutting trees for road and other infrastructure development eg housing and brackish water shrimp and/or fish ponds (mangroves habitats)
- Other drivers which did not mention in the revised NBSAP
    - over grazing and high impact of invasive/alien species (Table 7.1).

Table 7.1. High impact invasive species on Timorese agriculture and environment.

No	Species
1	*Ageratum riparia* (Regel) R.M.King & H.Rob.
2	*Calotropis gigantea* (L.) W.T.Aiton (*Apocynaceae*)
3	*Chromolaena odorata* (L.) R.M.King & H.Rob. (*Asteraceae*)
4	*Jatropha gossypiifolia* L. (*Euphorbiaceae*)
5	*Lantana camara* L. (*Verbenaceae*)
6	*Leucaena leucocephala* (Lam.) de Wit (*Fabaceae*)
7	*Mesosphaerum suaveolens* (L.) Poit. (*Lamiaceae*)
8	*Mimosa diplotricha* C.Wright (*Fabaceae*)
9	*Prosopis pallida* (Humb. & Bonpl. ex Willd.) Kunth (*Fabaceae*)
10	*Senna tora* (L.) Roxb. (*Fabaceae*)
11	*Sida acuta* Burm.f. (*Malvaceae*)
12	*Vachellia nilotica* (L.) P.J.H.Hurter & Mabb. (*Fabaceae*)
13	*Ziziphus mauritiana* Lam. (*Rhamnaceae*)

Source: Westaway et al, 2018

Measures to Enhance Implementation of the Convention: Implementation of the NBSAP

Timor Leste started formulating its National Biodiversity Strategy and Action Plan for a period 2011-2020 in 2010 and approved and submitted to the Secretariat of UNCBD in October 2011 together with its 4th National Report. The envisioned of the NBSAP was that By 2020, Timor-Leste's biodiversity is conserved and wisely used by all sectors, providing food security and contributing to poverty eradication and improved quality of life of Timorese People. In order to achieve this ambitious vision, through the national processes, a total of 5 Priority Strategies with 21 Strategic Actions was developed for medium (2015) and long term (2020) targets. In 2014, Timor Leste revised the NBSAP in adapting with the global Aichi Biodiversity Targets (ABTs) and resubmitted with the 5th NR in February 2015.

The implementation of the Timor Leste NBSAP is described in the section 1 of this report and its effectiveness is in the section 2 and the progress towards the national targets in the section 3 and Timor Leste contribution to the 2020 Aichi Biodiversity Targets provides in section 4 of this report. The overall progress of the NBSAP implementation towards 2020 as shown in section 3 shows between on track to achieve targets and progress at insufficient rate and this consistent with the assessment of the effectiveness provides in section 2. The main contributor to the ineffective/insufficient rate of NBSAP implementation progress was due to unimplemented some of sub action which was due one or more obstacles as described in the section 2. The main obstacles observed were lack of funding, human resources (experts), lack of mainstreaming of NBSAP into biodiversity relevant sectors and laws and policies enforcement.

There were various decree laws and policies which relevant to the implementation of the NBSAP developed during the 2011 – 2020 (section 1 covers new policies and laws developed particularly after 2015), some have yet approved/promulgated eg biodiversity decree law which was drafted at the time when the NBSAP was formulated. There, however some important policies and laws and regulations need to further developed to further contribute the implementation of the NBSAP. This include the sustainable land use policy, a National Community Forestry Action Plan/program for a period 2018 – 2030 which is still in draft. Specific program of action and effective management plan for all 46 protected areas are crucial in protecting and sustainable use of Timor Leste biodiversity. Meanwhile funding and profisionál staffs and experts remain challenge in identifying many remaining unidentified species with their threatened status and to conduct research and protection of the species particularly finding ways to restore mangroves and to control alien/invasive species. It is therefore crucial for the government to prioritize the biodiversity conservation and sustainable use for granting budget for NBSAP implementation. Some other important in contributing effective NBSAP implementation must be enhancing a better coordination mechanisms, monitoring and reviewing of the implementation and mainstreaming of the NBSAP into relevant sectors including private sectors and academia.

The following strategies were discussed with the director of biodiversity for consideration. First, the directorate of biodiversity needs to establish a biodiversity working group from relevant sectors including government institution, academia, private sectors, women groups, youth and school representatives, NGOs aiming at a better coordination and integrate NBSAP into their annual plans and programs, update biodiversity project activities, discuss on issues arising from project activities and find ways to overcome the issues through a regular meeting led by the Director of Biodiversity. The director has agreed to consider this and

possible to stablish working group in 2020. Last, regarding limited experts, the long term capacity building (Masters and PhD studies) on plant taxonomy and botany etc., the Secretariat of Environment needs to coordinate with other government institution like Ministry of Education to include these areas of expertise into annually offered scholarships from particularly SEARCA EU sponsored scholarship, ACIAR Australia scholarship with the ministry of Agriculture.

National Contacts:

CBD Primary Focal Point
Mr. Augusto Manuel Pinto
National Focal Point for UNCBD
Directorate General for Environment
Ministry of Commerce, Industry and Environment
Fomento Building, Mandarin
Dili
Timor-Leste
Tel: +670 784 27 259, Email: ano.pinto@gmail.com

Resource Mobilization Focal Point
Mr. Rui dos Reis Pires
National Directorate for International Environmental Affairs
Secretariat of State for Environment
Fomento Building
Rua Dom Aleixo Corte-Real, Mandarin Dili
Dili
Timor-Leste
Tel: +670 726 2667, Email: piresnaidiki@gmail.com

CHM Focal Point and Protected Area Focal Point
Mr. Manuel Mendes (he has resigned, however there was no formal letter directed to the SCBD yet)
National Directorate for Protected Areas
Ministry of Agriculture and Fisheries
Edificio Floresta
Caicoli
Dili
Timor-Leste
Tel: +670 727 5236, Email: lai_luhat78@yahoo.com

Nagoya Protocol on Access and Benefit-Sharing
Dr. Marcal Gusmao
Lecturer
Department of Agronomy, Faculty of Agriculture
National University of East Timor
Avenida Cidade de Lisboa
10000

Dili
Timor-Leste
Tel: +670 7894147, Email:marcalgusmao@gmail.com

Main persons developing the 6NR:

- Marcal Gusmao (developing report)
- Petronilo Munez Jr. (UN BL maps development)