

# ***SEPLS in Timor-Leste and government initiatives to promote their sustainable management***

By

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- Timor Leste ( $\pm 15,000$  km<sup>2</sup>): full independence in 2002
- It is located northwest of Australia in the Lesser Sunda Islands at the eastern end of the Indonesian archipelago.
- One of the biodiversity hotspots in the region both in the terrestrial and marine biodiversity
- In the terrestrial sites, new endemic species have been found (next slide)
- In the marine sites Timor Leste is part of the Coral Triangle Initiative that serves >75% of the global coral reefs

# New plant species records for Timor

1. *Aglaonema marantifolia* (Araceae)
2. *Aglaonema marantifolia* (Araceae)
3. *Aglaia lancilimba* or *affin.*
4. *Alchornea rugosa* (Euphorbiaceae)
5. *Alstonia actinophylla* (Apocynaceae)
6. *Baumea rubiginosa* (Cyperaceae)
7. *Colocasia gigantea* (Araceae)
8. *Crateva religiosa* (Capparaceae)
9. *Dendrophthoe curvata* (Loranthaceae)
10. *Dimocarpus longan* ssp. *malesiana* (Sapindaceae)
11. *Euroschinus falcata* (Anacardiaceae)
12. *Ficus microcarpa* (Moraceae)

## Land use

Category Land	Land Use/Cove	Area (ha)	Percent (%)
Forest Land	Dense Forest	312,930.67	21.2
	Sparse Forests	556,199.74	37.7%
	Very Sparse Forest	63,173.45	4.3%
Grassland	Grassland/Shrubs	403,247.22	27.4%
Crop Land	Rice Field	41,387.36	2.8%
	Dry Farm	22,152.57	1.5%
Settlement	Settlement	2,988.57	0.2%
Other Lands	Water Body	22,877.31	1.6%
	Bare Land	48,717.01	3.3%

Dense forest: Forest with canopy density more than 60%;  
 Sparse forest: forest with canopy density between 20-60%;  
 very sparse forest: forest with canopy about 5-20%

Source: Timor Leste action plan to combat land degradation, A draft report, 2017

## Land use (Cont.)

- Agriculture activities employ most of the people
- Productive flat land located in the southern area of TL where it receives more rain compared to northern areas
- The middle range of the island of hills and mountains are increasingly under the pressure of the farming practices
- Causes various problems and challenges

## Problems and challenges

- Expansion of agricultural practices into forest areas reduces land cover
- Annual deforestation was 1.12% but now increased to 1.7%
- Illegal cutting of trees (including mangroves) for fuel wood, construction and for urban development
- Illegal hunting wild animals including the Timorese deer
- Climate changes
- Creates vast soil erosion, land slides, flooding, sedimentation and disrupting socio and economic activities and loss of biodiversity

# Species that may be threatened

1. *Antiaris toxicaria* – A deciduous tree common in the dry deciduous forest
2. *Neoalsomitra podagrica* (provisional id) – This peculiar Cucurbitaceous vine with a spiny, swollen base was common in dry deciduous forest
3. *Carallia brachiata* (Oi) – An occasional component of semi-evergreen rain forest and swamp forest but widespread in the region
4. *Cycas rumphii* – This taxon is listed by IUCN as Near Threatened and in decline and thus the remaining wild stands in conservation areas are particularly important
5. *Eleocharis geniculata* – a rare sedge and in the Lesser Sunda Islands only found in Timor

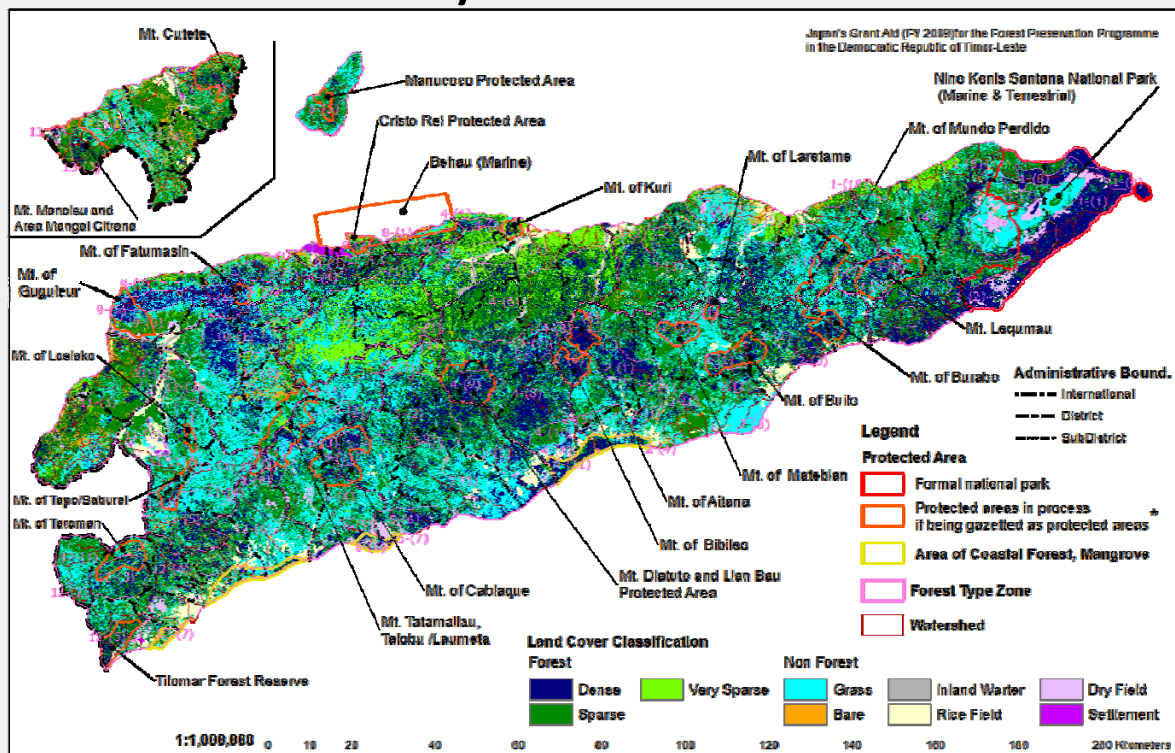
## Role of MCIE

- Roles of the directorate general for environment as follows:
  - Protect and conserve environment and use its resources sustainably
  - Establish policy and legal frameworks
  - Public awareness raising to stakeholders (among Government Institutions and Civil Societies including students and communities)
  - Incorporate with other governmental institutions/sectors and non-governmental organisation as well as international agencies
  - Seek for partnership with donors in implementing environmental programs such as climate change adaptation and mitigation, biodiversity conservation (ecosystem services, ABS and wildlife protection)

# Government initiatives

- One of the country's constitution objectives is  
**“To protect the environment and to preserve natural resources”**
- Various laws and regulations and manuals in dealing with problems and challenges:
  - environmental basic law,
  - biodiversity decree law
  - Environmental license decree law
  - forest regime
  - forest policy
  - law for protected areas,
  - national policy for disaster management
  - manual for DRR management (launched on 10<sup>th</sup> July 2017),
  - NBSAP (5 priority strategies and 21 action plan), NAPA (9 priorities e.g. **food security**), UNABD and UNFCCC National communications, etc.

## Biodiversity conservation Area





# Target for Conservation Area

## ✓ By 2023

- Approx. **73 %** of dense forests in the country will be protected by 2023;
- More than **53 % of the villages** located in and around the critical forests will be granted the long-term land use or forest management rights;
- Major parts of forests in at least **5 critically degraded watersheds** will be managed in a proper and sustainable manner.

## Research on sustainable agriculture: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture(SDG Goal 2) and Climate Action (SDG 13)

- Increased population
- Increased human pressures on land use
- Climate change
- Reduces crop yield







## Soil sampling for soil water content determination & plant measurement







**Cow pea**



### Crop appearance at maturity



**Kidney bean**



**Grass pea**



**Mungbean**

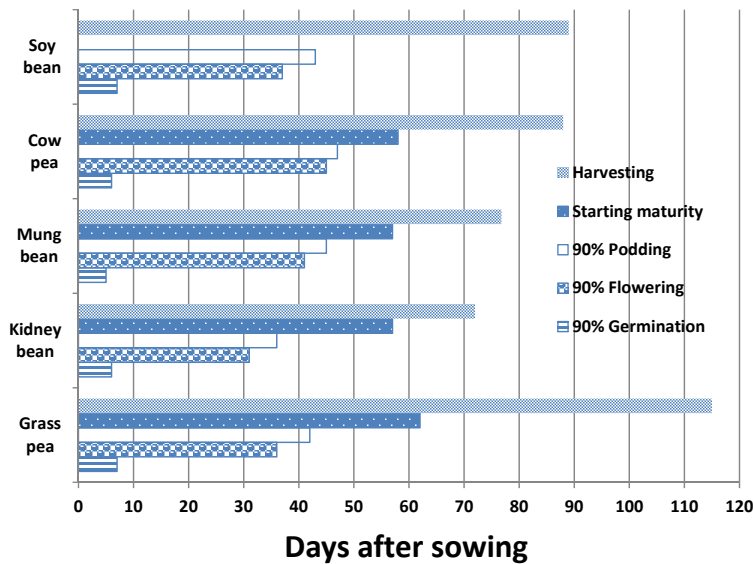


**Seeds of grass pea**



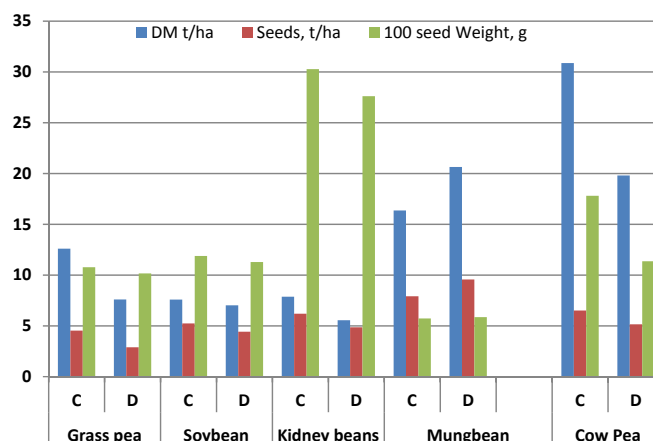


## Crop phenology



- The fastest germination species was mungbean followed by kidney bean and cowpea
- Kidney bean was the earliest flower species in about a month from sowing
- Similarly, kidney beans set pod and reached maturity (70 DAS) faster than any other species
- Grass pea starting maturity in about 60 DAS but due to its indeterminate growth habit it took longer days to complete maturity

## Yield and yield components



- Cow pea produced highest biomass of >30 t/ha @ and the lowest beans of about 5 t/ha (D)
- The highest seed production was mungbean (approx. 9.5 t/ha) and the least yield was grass pea which was 2.9 t/ha
- This was due to high number in pods and seed per pod

## Residues management for next cropping



## Publications



- UNTL Deskobre Koñesimentu Foun
- September 6, 2016, **DILI, ANTIL News Letter**
- News taken during a field day participated by more than 100 people (students, staffs, lectures, MAF staffs, etc)
- **The study result was also presented at a regional IPSI workshop in Malaysia, April 2017**



# Adoption by government

- The Ministry of Agriculture and Fisheries with financial and technical support from the government of Australia is initiating research on the same area involving socio and economic studies

## Conclusion

- Geographically, Timor Leste is positioned in the transition of Asia and Australia and thus one of the biodiversity hotspots in Asia and the Pacific both in Terrestrial and marine areas
- In the terrestrial site, most of the lands are inappropriate but still use them for crop production leading to various problems and challenges
- The government of Timor Leste has developed various legal frameworks to implement the sustainable development in all sectors
- This includes technical research support on sustainable agriculture in enhancing food security and adapting to climate change

Thank you