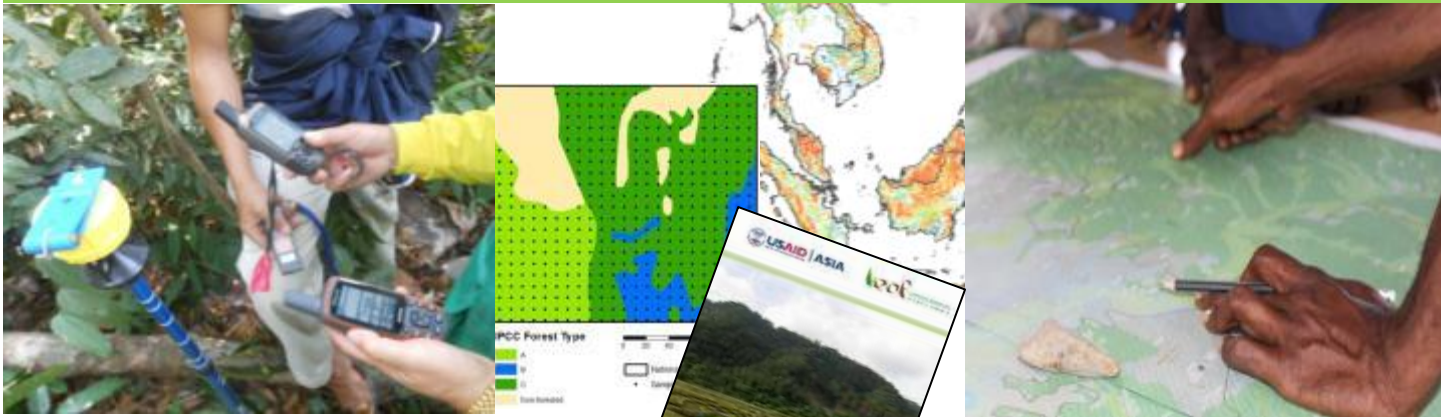




LEAF Guidance and Tools for Forest Carbon Monitoring and Measuring

National Forest Monitoring Systems for REDD+
17 October 2013



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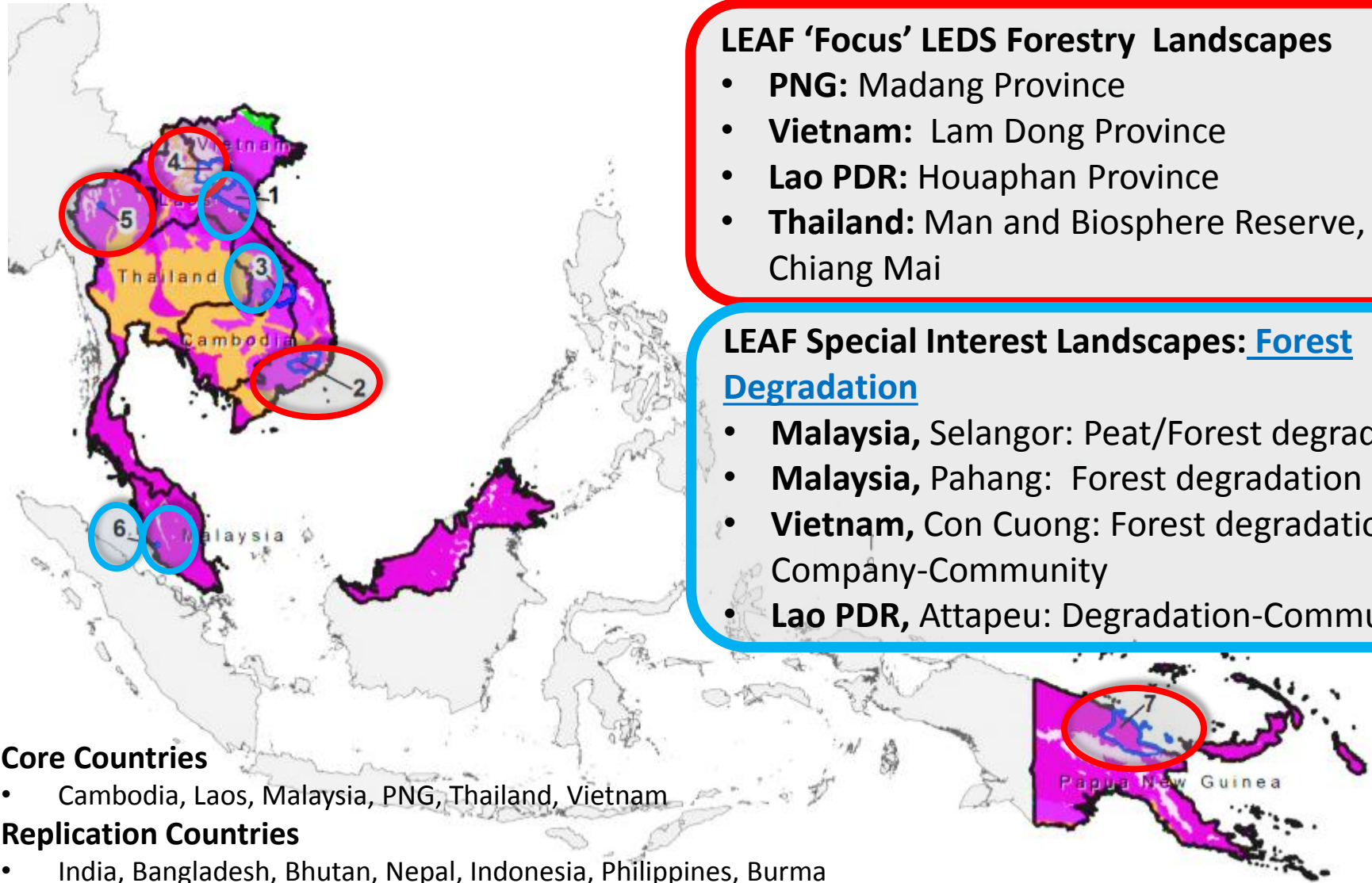
leaf LOWERING EMISSIONS
IN ASIA'S FORESTS

Lower Emissions in Asia's Forests (LEAF)

- LEAF is a 5 year (2011-2016) cooperative agreement, funded by the USAID Regional Development Mission for Asia (RDMA).
- **GOAL:** To strengthen capacities of developing countries in the Asia region to produce meaningful and sustainable reductions in greenhouse gas (GHG) emissions from the forestry-land use sector.
- Implementation:



Carbon Accounting In LEAF's Field Sites



LEAF 'Focus' LEDS Forestry Landscapes

- **PNG:** Madang Province
- **Vietnam:** Lam Dong Province
- **Lao PDR:** Houaphan Province
- **Thailand:** Man and Biosphere Reserve, Chiang Mai

LEAF Special Interest Landscapes: Forest Degradation

- **Malaysia, Selangor:** Peat/Forest degradation
- **Malaysia, Pahang:** Forest degradation
- **Vietnam, Con Cuong:** Forest degradation + Company-Community
- **Lao PDR, Attapeu:** Degradation-Community

Core Countries

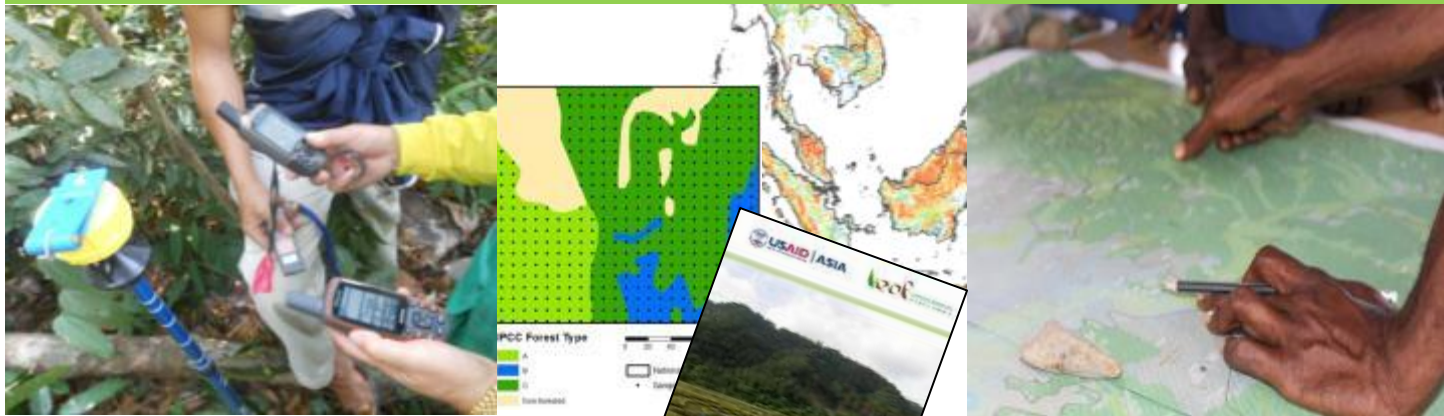
- Cambodia, Laos, Malaysia, PNG, Thailand, Vietnam

Replication Countries

- India, Bangladesh, Bhutan, Nepal, Indonesia, Philippines, Burma



Accounting for Carbon in Forestry and Land Use Sector: *LEAF's Framework*



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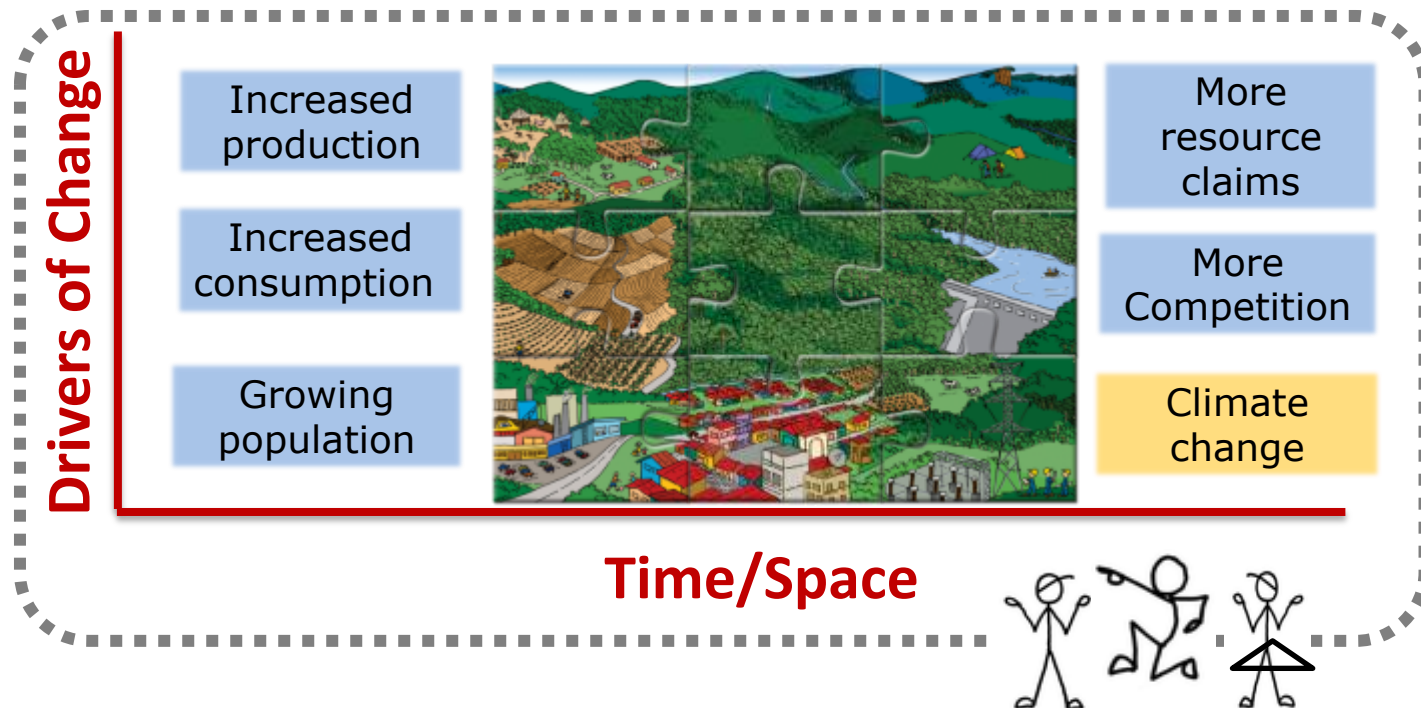
1. Design Framework

Drivers: Understanding a Changing Landscape

Guidance Series:

- **‘Identifying and Addressing Drivers of Deforestation and Degradation’**
- DRAFT - To be presented at COP19 in collaboration with ARKN-FCC
- http://www.leafasia.org/resources_tools

What is the impact of international and regional drivers of landscape change on local land-use decisions?

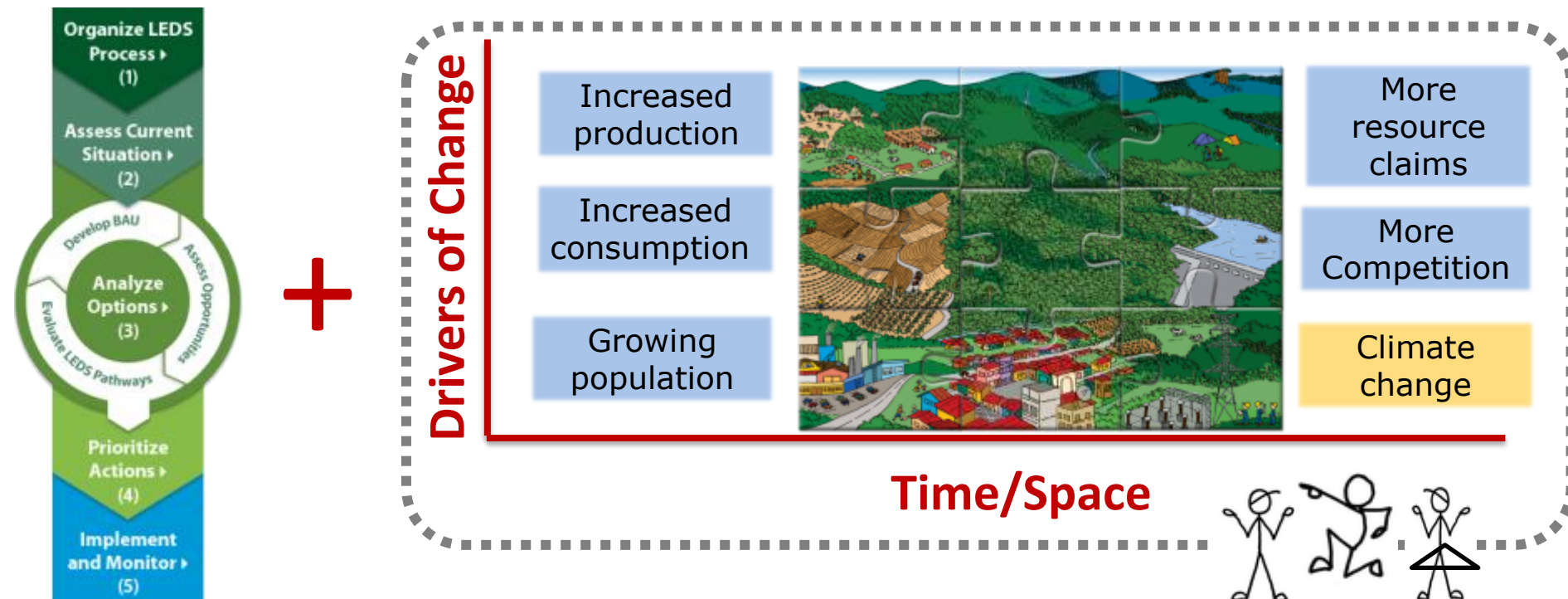


1. Design Framework

Using LEDS Framework to Measure & Monitor Carbon

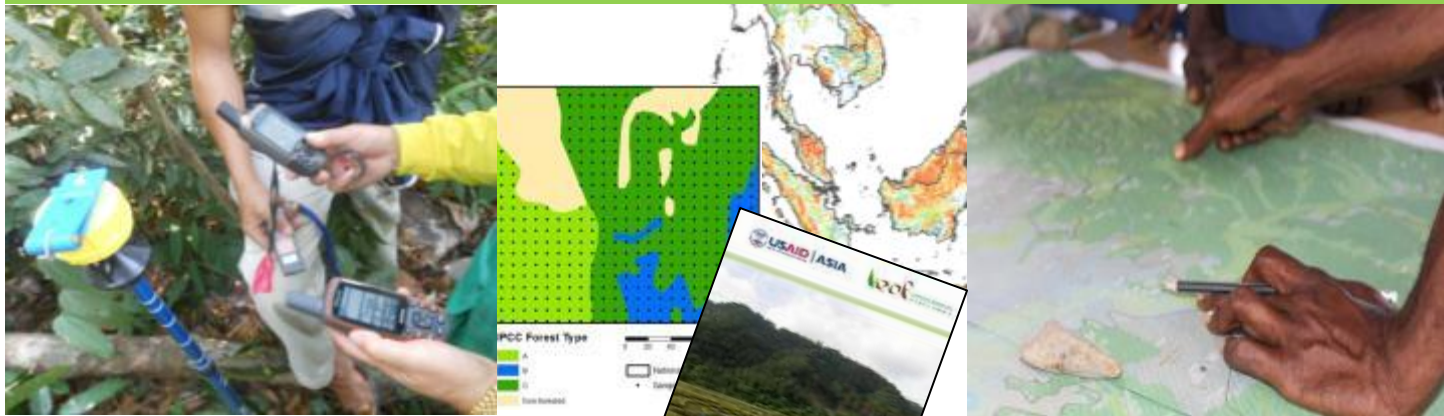
Guidance Series:

- **‘Guidelines for Effective Land Use Planning and Climate Change Mitigation’**
- DRAFT – To be published by end of year
- http://www.leafasia.org/resources_tools





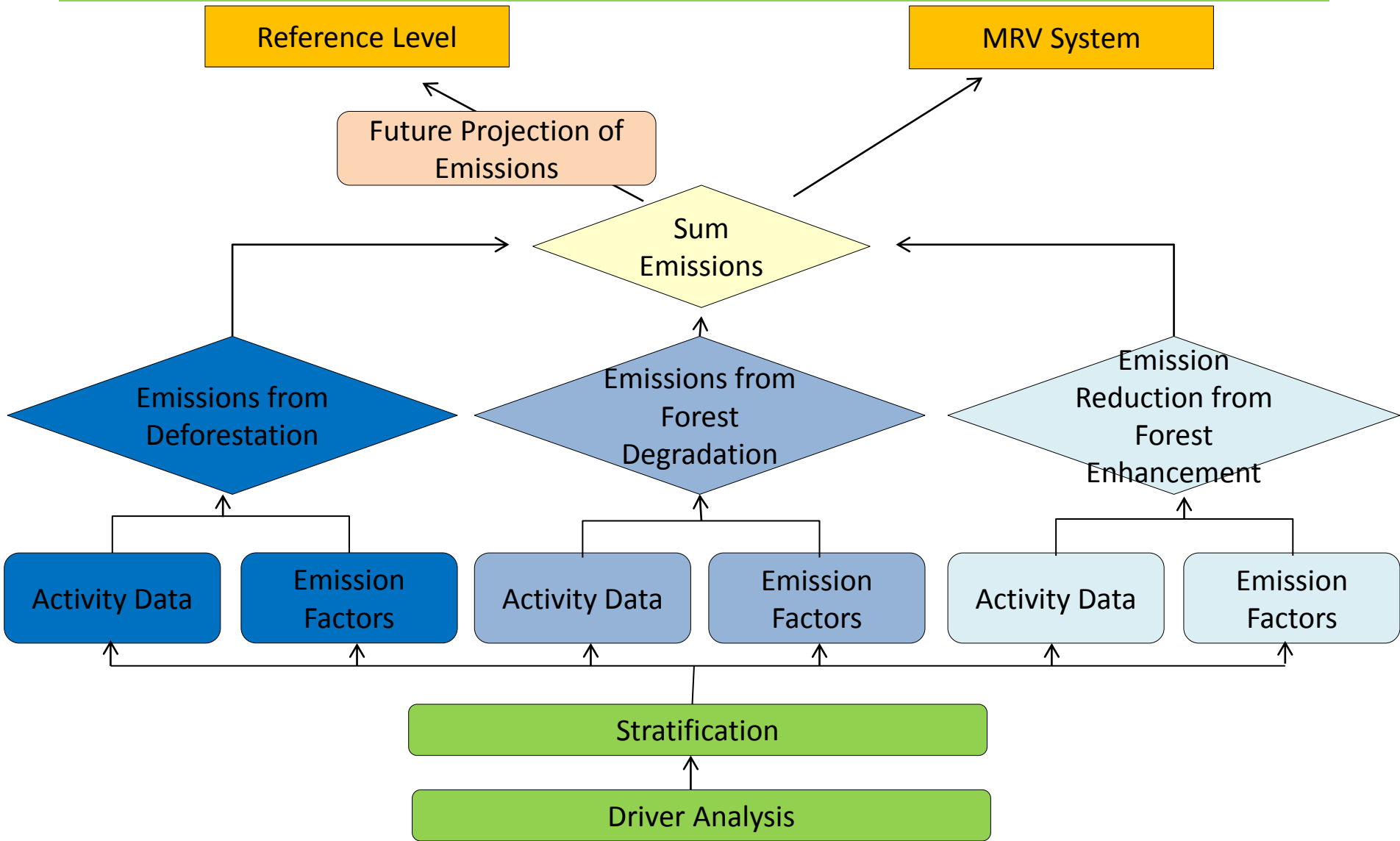
Accounting for Carbon in Forestry and Land Use Sector:
*LEAF's Guidance and Tools on:
Reference Level Development*



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2. LEAF's Reference Level Framework

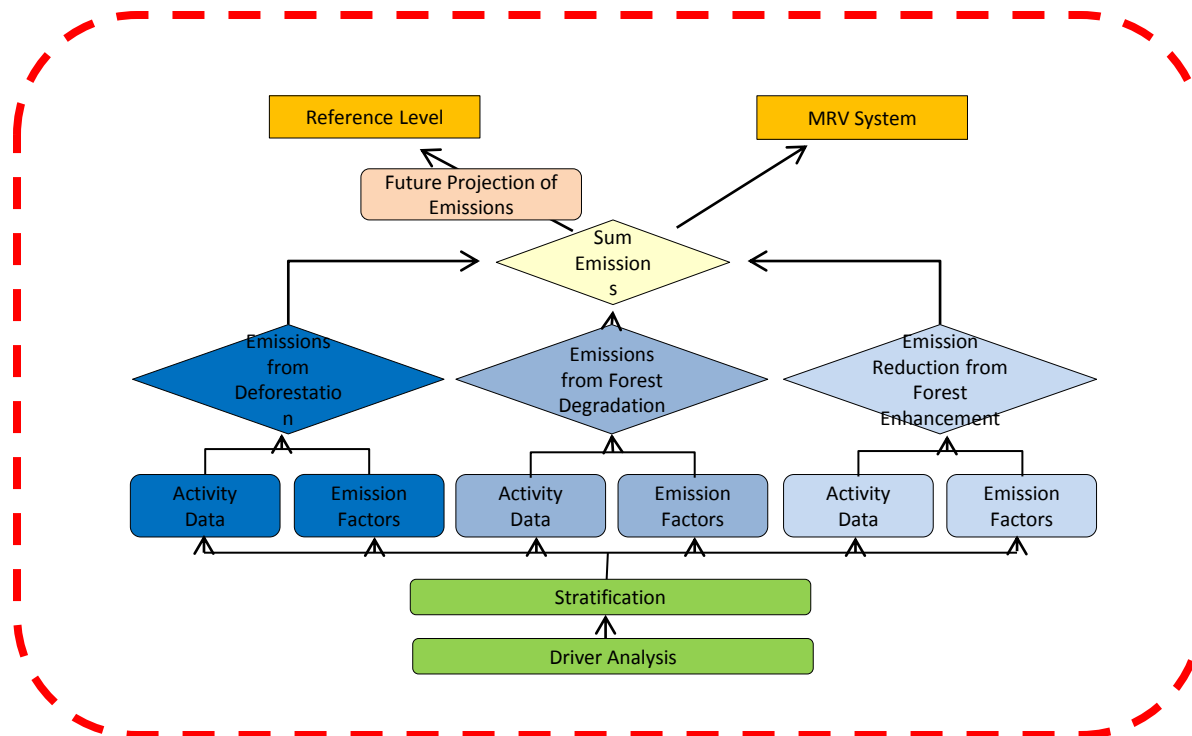


2. LEAF's Reference Level Framework

Development of a REDD+ Reference Level

Guidance Series:

- **'Technical Guidance on Development of a REDD+ Reference Level'**
- PUBLISHED - <http://leafasia.org/tools/technical-guidance-development-redd-reference-level>

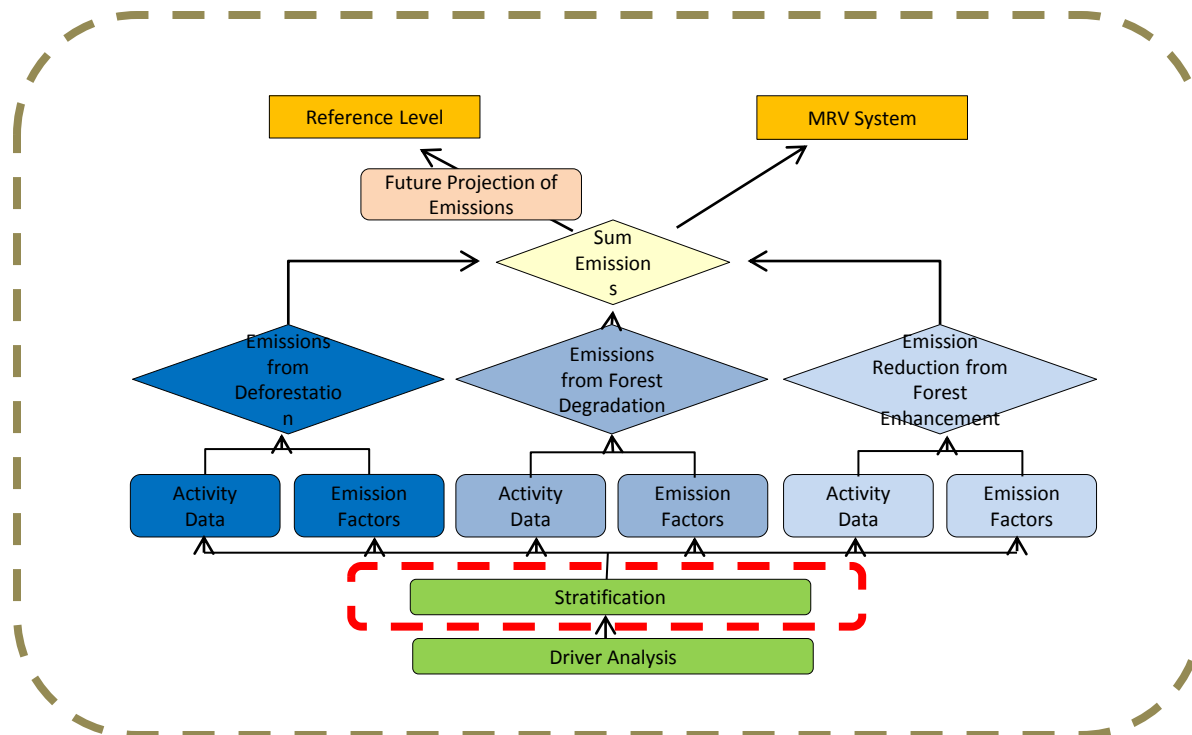


2. LEAF's Reference Level Framework Stratification of the Forest Estate

Guidance Series:

- **'Stratification for REDD+: Using a National Forest Inventory'**

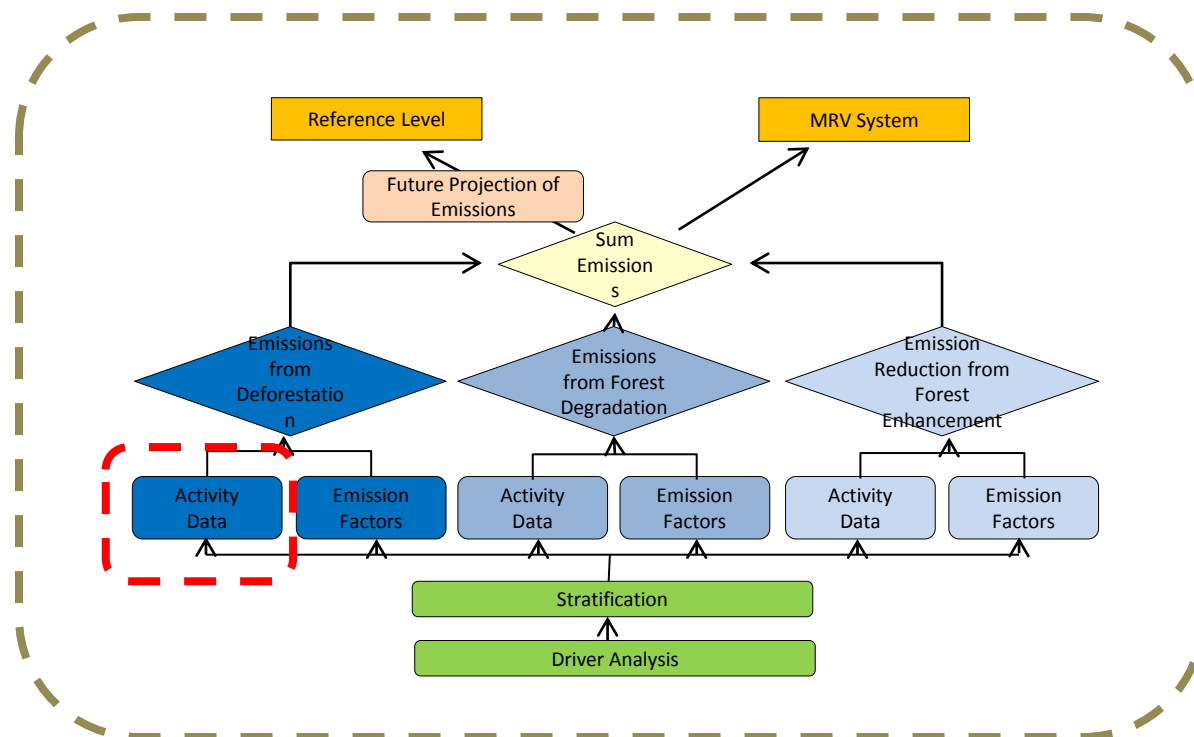
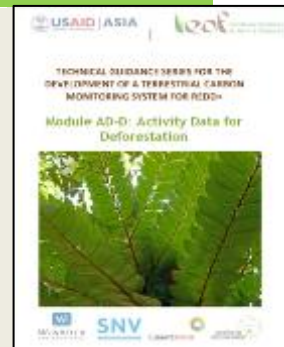
FINAL DRAFT - <http://www.leafasia.org/library/guidelines-stratification-redd-using-national-inventory>



2. LEAF's Reference Level Framework Changes in Land Use (Activity Data)

Guidance Series:

- **'Activity Data for Deforestation'**
- FINAL DRAFT - http://www.leafasia.org/resources_tools

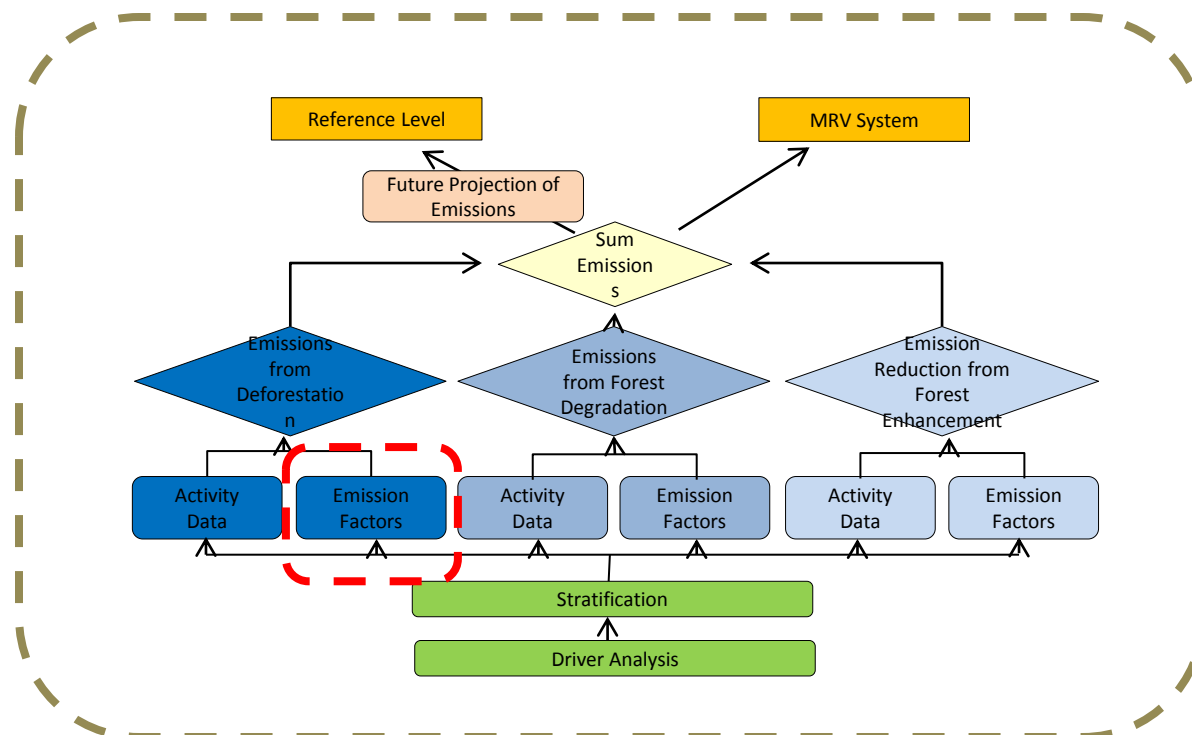


2. LEAF's Reference Level Framework

Carbon Stocks and Emission Factors

Guidance Series:

- **'Emission Factors for Deforestation'**
- FINAL DRAFT - http://www.leafasia.org/resources_tools

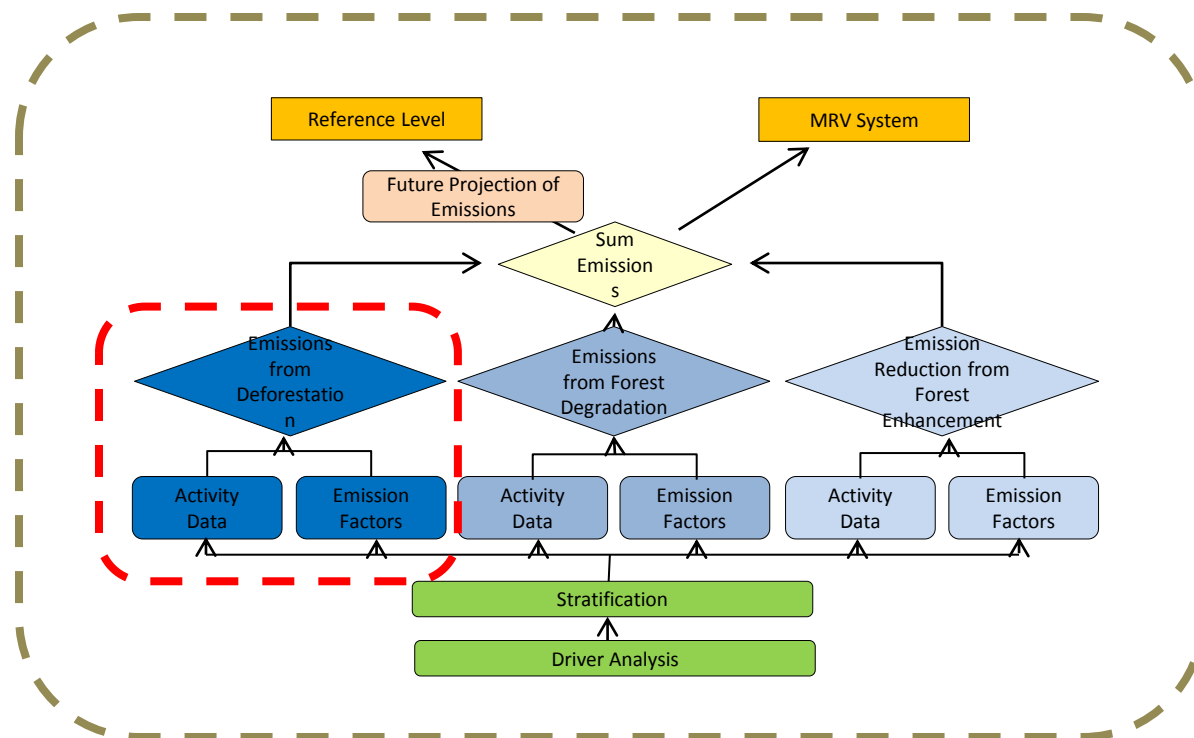
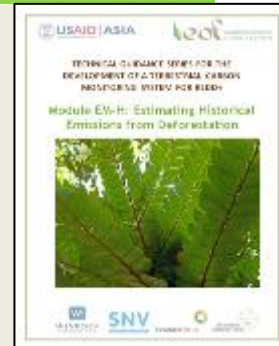


2. LEAF's Reference Level Framework

Historical Emissions

Guidance Series:

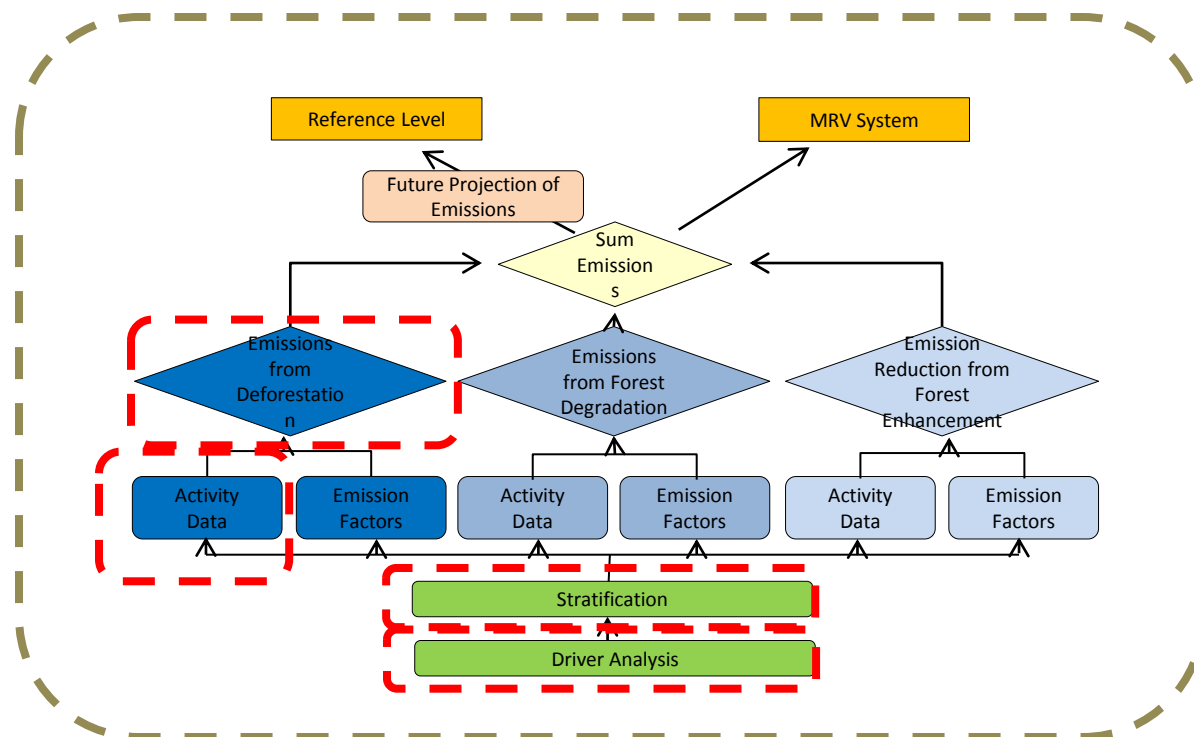
- **‘Estimating Historical Emissions from Deforestation (Combining Activity Data and Emission Factors)’**
- FINAL DRAFT - http://www.leafasia.org/resources_tools



2. LEAF's Reference Level Framework Training Videos

Guidance Series:

- **Reference Level Training Videos (focus on use of Remote Sensing and GIS to calculate Activity Data)**
- PUBLISHED - <http://www.leafasia.org/leaf-news-notes/reference-level-rl-training-videos-now-available-online>

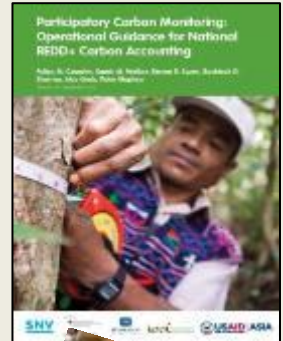


2. LEAF's Reference Level Framework

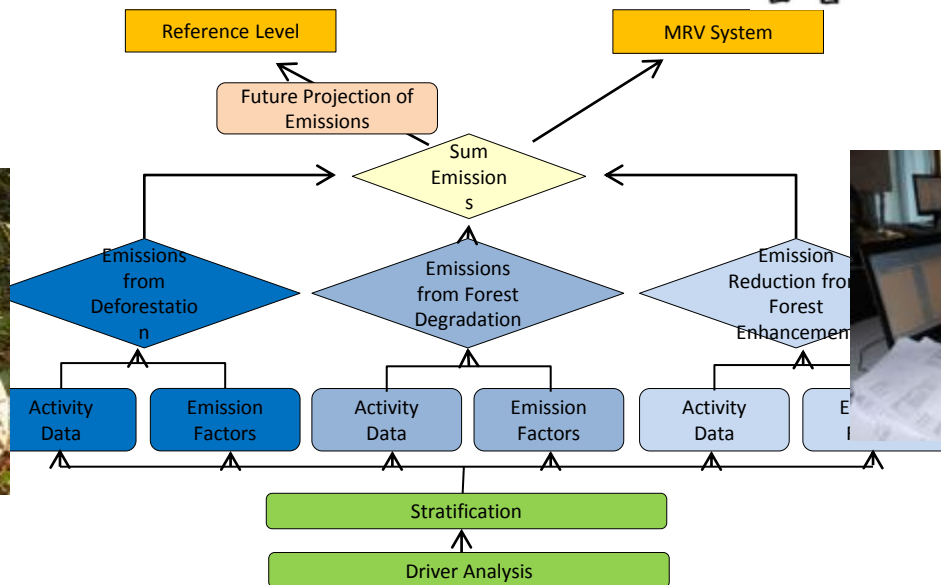
Participatory Carbon Monitoring

Guidance Series:

- **Participatory Carbon Monitoring: Operational Guidance for National REDD+ Carbon Accounting**
- PUBLISHED - <http://leafasia.org/tools/terrestrial-carbon-measurement-sop-english>

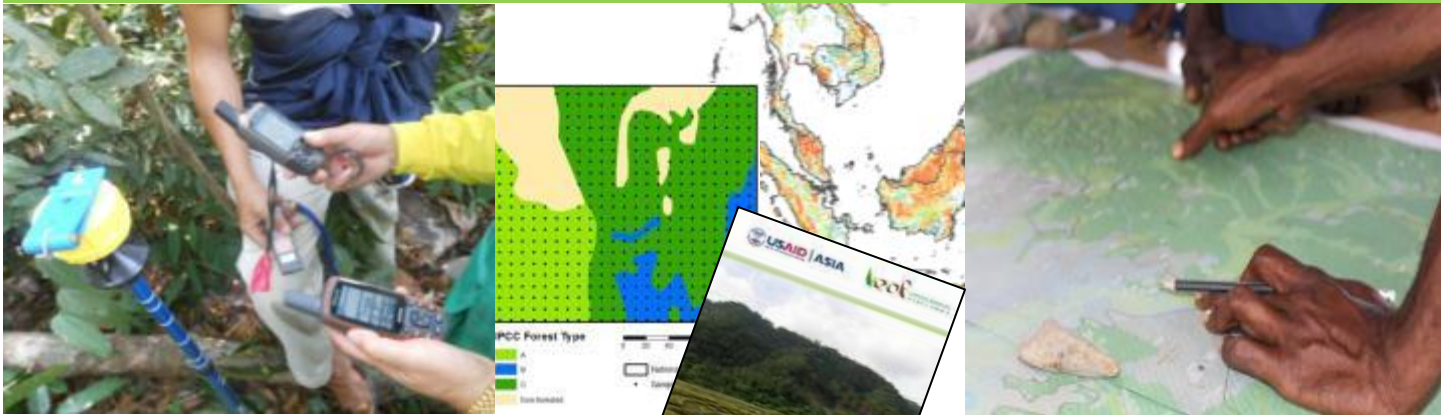


The Role of Stakeholders in collecting data





Accounting for Carbon in Forestry and Land Use Sector:
*LEAF's Guidance and Tools on:
Carbon Measurements*



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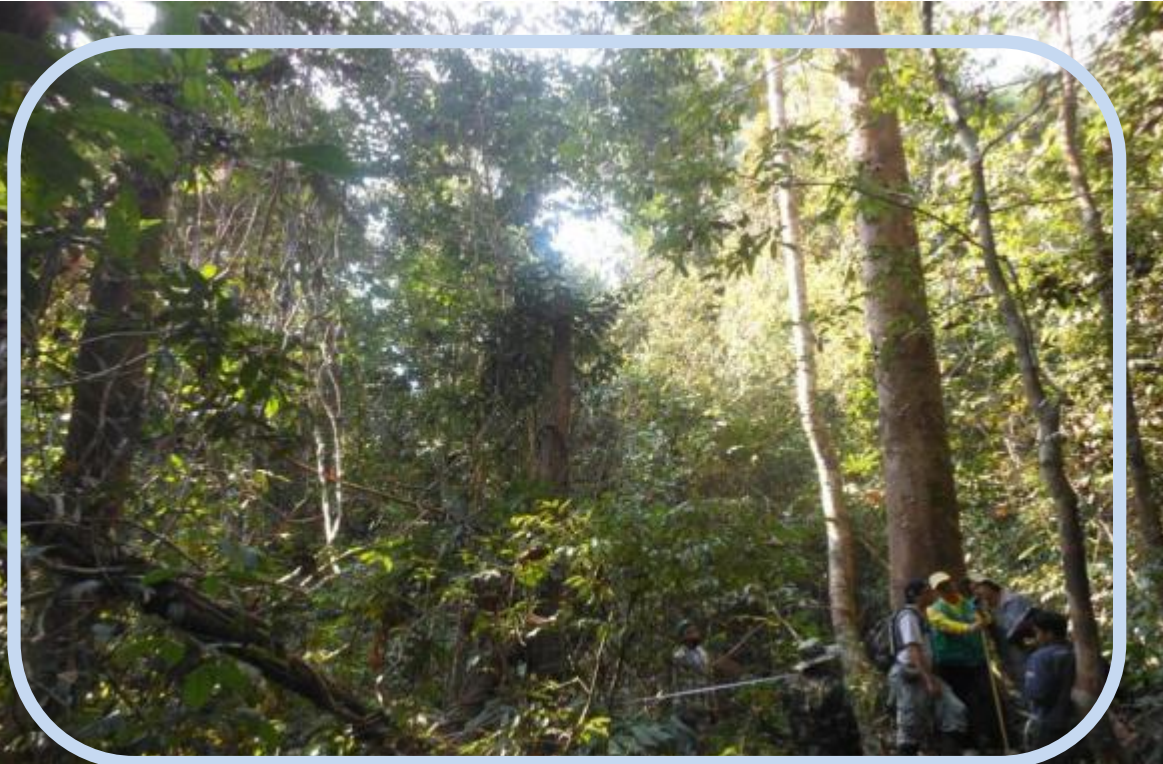


3. Carbon Measurements

Field Measurements

Guidance Series:

- **Terrestrial Carbon Standard Operating Procedures**
- PUBLISHED - <http://leafasia.org/tools/terrestrial-carbon-measurement-sop-english>



Standard Procedures to measure Carbon stocks in each pool:

1. Above Ground Biomass
2. Below Ground Biomass
3. Dead Organic Matter (Deadwood)
4. Dead Organic Matter (Litter)
5. Soils

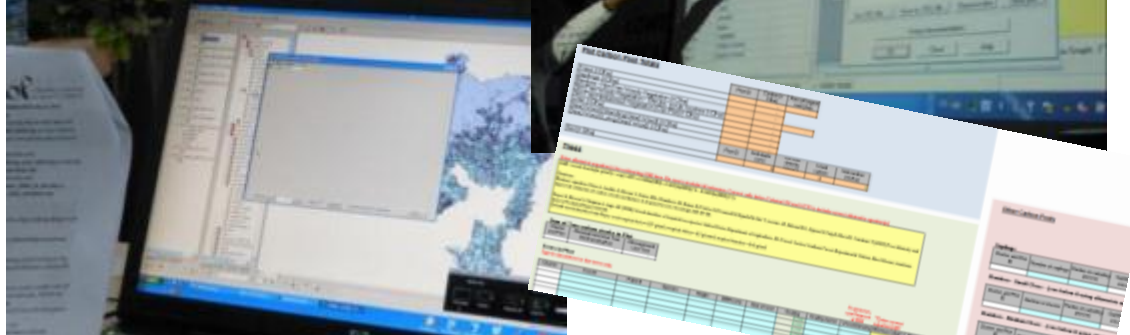
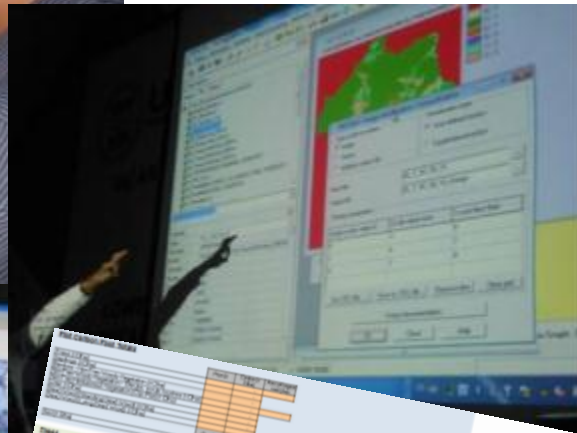
Plus destructive sampling and sampling design

3. Carbon Measurements

Field Calculation Tools

Guidance Series:

- **Carbon Stock Calculation Tools**
- PUBLISHED - http://www.leafasia.org/resources_tools



Calculation Tools for:

1. Carbon Stock Calculation
2. Carbon Emissions Factors for Selective Logging
3. Destructive Harvest Data Entry Tool
4. Sample Plot Quantity Calculation.

LEAF's NFMS Capacity Building Activities

Continue to partner with global and regional partners:

UN-REDD
PROGRAMME



SilvaCarbon



And:

- Asia LEDS Partnership
- ASEAN Regional Knowledge Network on Forest and Climate Change (ARKN-FCC)
- Lower Mekong Initiative
- Mangroves for the Future (MFF)



LEAF's NFMS Capacity Building Activities

Curricula Development Support

- Basic climate change science
- **Carbon monitoring and measuring**
- Social and environmental soundness
- Land use planning and climate change

Upcoming Events

- Triple Bottom Line Natural Resource Valuation (Regional - Support to LEAD)
- Gender Integrated Planning for REDD+ (Vietnam)
- Carbon Stratification and Reference Level training (Vietnam)
- REDD+ Integrated Carbon Accounting (Malaysia)
- Asia-Pacific Leadership Training on Gender (Regional)
- Community PLUP + Carbon (Madang, PNG)
- Forest Biomass and Carbon Stock Assessment Training (Lao PDR)