The 21st Workshop on GHG Inventories in Asia (WGIA21) 9th–12th July 2024 Venue: Dorsett Putrajaya (Malaysia)

Preparation of the third National Communication for Lao PDR

Mr. Bounthee SAYTHONGVANH Deputy Director of Division, GHG Mitigation Division

Department of Climate Change, MONRE, Laos

1. Institutional Arrangement for TNC



2. TNC Development Process

Organisational arrangement

 The TNC project team including steering committee, TWG and sub-TWGs were established and trained

Data collection and desk review

 Information and data from the national and sectoral statistical reports and other sources were collected and reviewed. TWGs and stakeholder interview and focus group meetings were also held to support the process

Select tools and methodologies for assessment

•Following data collection and literature review, methods including tools and software, considering available data, capacity and time, practicality, were selected for analysis

Calculation, analysis and reporting

 By using 2006 IPCC guidelines, software for GHG inventory, LEAP and GACMO for mitigation, SWAT and AquaCrop Model for adaptation, etc.

•Reporting followed the NC Reporting Guidelines, including taking into account transparency and uncertainty

Review and validation

 As a QA-QC, the review and validation performed by the TWGs, relevant organisations and stakeholders, validation workshop and consultation meetings.

Finalization and approval

Finalization of the TNC

Revisit, approval, publication and submit to the UNFCCC by DCC, MoNRE

3. The Key contents for Lao TNC

Chapter 1	Introduction	
Chapter 2	National circumstances	LAO PEOPLE'S DEMOCRATIC REPUBLIC PEACE INDEPENDENCE DEMOCRACY UNITY AND PROSPERITY
Chapter 3	National greenhouse gas inventory	THE THIRD NATIONAL COMMUNICATION ON CLIMATE CHANGE
Chapter 4	Programmes constraining measures to facilitate adequate adaptation	
Chapter 5	Programmes containing measures to mitigate climate change	
Chapter 6	Other information relevant to the achievement of the objectives of the convention	
Chapter 7	Constraints and gaps, financial and capacity needs	Ministry of Natural Resources and Environment

4. GHG inventory and reporting process for TNC

Organisational arrangement

• The GHG inventory team including TWG and sub-TWGs were established and were trained on the use of 2006 IPCC software and guidelines and data compilation

Data collection and analysis

- Key activity data were derived from the national and sectoral statistical reports (2010). Some data were collected from desk reviewed and expert judgment, especially uncertainty of the data.
 - Emission factors including its uncertainty were mainly or completely default values

GHG calculation and analysis

- Using 2006 IPCC software and guidelines and GPGs for calculation, key category and uncertainty analysis
 - Applying QA/QC procedures

Reporting

 Reporting followed the GHG inventory reporting guidelines, including taking into account TACCC and the use of key notations.

Review and validation

• Internal review and validation including review and validation by the project team, TWGs, DCC and MONRE

Stakeholder review, feedback and consultation meetings

Finalization, incorporation GHG inventory in the TNC and approval

• Finalization of the TNC, including GHG inventory

Revisit, approval, publication and submit to the UNFCCC by MoNRE

4.1 The Result for GHG inventory in 2010 in Lao PDR



Total Emissions in 2010 in Lao PDR

- The total emissions of 10,678.96 GgCO2eq in 2010;
- The AFOLU sector had the total removals -36,169.89 GgCO2eq and total emissions of 6,570.47 GgCO2eq, leading to net sink of -25,490.93 GgCO2eq.
- The AFOLU was the largest sources of emissions, accounting for about 62% of the total emissions;
- Second largest source of emissions was Energy sector, which shared 27%. The rest were IPPU and Waste Sector which contributed 8% and 3% of the total emissions.

4.1 The Result for GHG inventory in 2010 in Lao PDR



Total Emissions by Gas (GgCO2eq) in 2010

- There were totally 45 sources of emissions and a source of removal in 2010. Of which, there 12 key emission sources which accounted for about 95% of the total emissions and removals.
- Uncertainty analysis, based on uncertainty analysis tool/formula in 2006 software including default EFs uncertainty and activity data uncertainty derived by expert judgement.

4.2 Greenhouse Gas Emissions by Sectors



Energy



In 2010, total emissions from energy sector were 3,729.42 Gg, accounting for about 27 % of the national total GHG emissions **D**Emissions from fuel combustion accounted for about 99.94%, fuel combustion in transportation is about 66%, manufacturing and construction 34% and other shared less than 0.1%

Emissions from Energy Sector

Industrial process and Product use

	(Gg)			CO2 Equivalents(Gg)			(Gg)					
Categories	CO2	CH4	N2O	HFCs	PFCs	SF6	Other halogenat ed gases with CO2 equivalent conversion factors (1)	Other halogenat ed gases without CO2 equivalent conversion factors (2)	NO x	СО	NM VO Cs	SO2
2 - Industrial Processes and Product Use	905.20	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2.A - Mineral Industry	842.15	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2.A.1 - Cement production	839.8	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
2.A.2 - Lime production	2.35	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
2.A.3 - Glass Production	NO	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
2.A.4 - Other Process Uses of Carbonates	NO	NO	NO	NO	NO	NO	NO	NO	NE	NE	NE	NE
2.A.4.a - Ceramics	NO	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
2.A.4.b - Other	NO	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE

Laos has 2 relevant industries: Mineral (Cement, lime) and Metal (Iron rod production) □Totally emitted 905.20 Gg CO2, 2010. Cement industry emitted 839.8 Gg CO2, which accounted for 94.93% and lime and iron production, which were about 2.36 Gg CO2 (0.26%) and 63.05 Gg CO2 (5.25%)

2

Agriculture, Forestry, and Other Land Use

10000 5000 0 -5000 -10000 -15000 -20000 -25000 -30000 -35000 -40000 3.A Livestock 3.A Livestock 3.B Land 3.D Other (Harvester Wood Products sources on land					 In 2010, total emissions from AFOLU sector was 6,570.47 GgCO2eq AFOLU sector had a negative or removal of 36,169.89 Gg of CO2, but released about 261.14 Gg CH4 and 3.50 Gg NO2, resulting net sink of 25,490.93 GgCO2eq in 2010 The removals were mainly from land remaining forest land, other lands converted to forest land
	3.D Other (Harvested Wood Products)	 and cropland remaining cropland. Emissions from livestock including enteric fermentation and livestock manure management were 168.55Gg CH4 and 0.68 GgN2O or 3,750. GgCO2eq. Emissions from aggregate sources including open burning of biomass 2.819.64 Gg. 			
Emissions (+)/Removals (-)	3,750.8	-36,164	2,819.64	-7.28	

3

Waste



□ Solid waste production in Laos has been increased overtime.

 In 2010, Waste sector released 7.79 Gg of CO2, 8.59 Gg CH4 and 0.31 Gg NO2 or about 283.22 GgCO2eq.

The emissions were from wastewater treatment and discharge (176.48 GgCO2eq), which contributed to almost 62% of the total emissions
 The emissions from biological treatment and solid waste incineration and open burning, which generated 75.70 GgCO2eq (26.72%) and 7.79 GgCO2eq (2.75%), respectively

 Solid waste disposal, based on First Order Decay method, could generate 23.25 GgCO2eq is about 8% in the inventory year.

Emissions from Waste Sector

5. Challenges

The main Challenges are:

➢Inadequate and or inaccurate information and activity data for GHG inventory, especially (1) energy or fuels consumption by sector including in different type of transport (road, water and air and type of vehicles); (2) specific industry information including process, type and amount of materials use, solid waste and wastewater discharge; (3) annual or the inventory year land use change matrix, biomass stock, soil carbon, forest fire area and biomass burning including pre-and post-biomass burning, and agriculture residue burning;

>Lack of country specific emissions factors in all sectors and almost all activities;

➢Inadequate human resources and capacities of relevant agencies, especially staff including knowledge and skill to develop or handle with data gaps, use of tools, estimation of GHGs in different sectors, key categories and uncertainty analysis, reporting and QA/QC

≻Limited GHG networking, exchange platform and forum.

Limited financial support

Thank you for your attention