Summary of Mutual Learning

6th August 2014, Bangkok, Thailand
12th Workshop on GHG Inventories in Asia

Greenhouse Gas Inventory Office of Japan (GIO)
National Institute for Environmental Studies (NIES)

Greenhouse gas Inventory Office of Japan

Outline

- Background of mutual learning (ML) programme
- Overview
- History
- Experienced countries
- Outcome of past MLs

- Implementation on WGIA12
- Overview
- Materials used
- Comment exchange
- Outcome of sessions
  - Energy sector
  - Agriculture sector
  - LULUCF sector
- Conclusion

Background of ML programme Overview

■ Objective

- To develop capacity of inventory compilation learning partner's inventory
  - To familiar methodology
  - To progress inventory compilation (data collection, quality control, and etc.)
  - To improve transparency of documentation

■ Approach

- Bilateral learning
- Exchange of the inventories
  - document for methodology
  - spreadsheet for calculation
- Reading carefully, clarifying questions
- Learning mutually good practices in partner's inventory
  - Not one sided lecture
  - Not peer review with criticism

History

	2008	2009	2010	2011	2012	2013	2014
outside WGIA	JPN-KOR (Waste)	JPN-KOR (Waste)	JPN-KOR (Whole inventory)	-	-	-	-
	WGIA6	WGIA7	WGIA8	WGIA9	WGIA10	WGIA11	WGIA12
WGIA activity	-	-	Introduction to ML (with hands on training)	IDN-MGL (Energy)	KHM-THA (Energy)	LAO-THA (Energy)	IDN-MMR (Energy)
				-	IDN-JPN (IP)	-	-
				-	IDN-VNM (Agriculture)	CHN-MMR(Agriculture)	CHN-MGL(Agriculture)
				JPN-LAO (LULUCF)	-	-	VNM (LULUCF)
				IDN-KHM-KOR (Waste)	CHN-KOR (Waste)	MYS-VNM (Waste)	-

- Trial implementation between Japan and Korea since 2008
- Introduction to ML activity on WGIA 8
- Official programme into WGIA since 2011

Experienced countries

	2011 (WGIA9)	2012 (WGIA10)	2013 (WGIA11)	2014 (WGIA12)
Cambodia	✓	✓		
China		✓	✓	✓
India				
Indonesia	✓	✓		✓
R.O.K	✓	✓		
Japan	✓	✓		
Lao PDR	✓		✓	
Malaysia			✓	
Mongolia	✓			✓
Myanmar			✓	✓
Philippines				
Singapore				
Thailand		✓	✓	
Viet Nam		✓	✓	✓

- In spite of many applicant every year, all of the parties have not experienced ML yet..

Outcome of past MLs

■ Issues discussed in the past mutual leanings

Estimation methodology

- Acquisition of activity data
- Adoption of emission factor
- Uncertainty analysis
- Transparency of documentation

National system

- Responsible system structuring
- Quality assurance & quality control

Etc.

■ Benefit to the parties

- Good opportunity to know other country's inventory
- Motivation for continuous inventory compilation
- Improvement of methodology, etc.
- Benefit to **Japan** and **ROK** (Example)

Japan:

- Improvement of transparency in documentation
- Research on CS methodologies in other country's inventory

Republic of Korea:

- Annual inventory compilation
- Adoption of high tier methodology

Implementation on WGIA12 Overview

Sector	Country	Number of Participants
Energy	Indonesia	4
	Myanmar	3
Agriculture	China	3
	Mongolia	2
LULUCF	Viet Nam	3
	experts	3

A scene of the waste sector session between Malaysia and Viet Nam

- Closed sessions for limited participants
  - –For very frank discussion
  - –Supported by several facilitators

Process of ML

- **Preliminary process**
  - **Announcement : December 2013**
  - **Application : December – January**
  - **Setting of partner : March 2014**
- **Main process**
  - **Submission of materials :Late April – Late May**
  - **Material Exchange :Early June**
    [Learning the materials :During June]
  - **Comment exchange :July**
  - **Answer to comments :July**
  - **Sessions :4th August**

Materials used

Sector	Country	Inventory	Document for methodology	Spreadsheets	Others
Energy	Indonesia	SNC 2011 and current Inventory data	-	Energy balance table IPCC work sheet	-
	Myanmar	INC in 2013 and back data	-	Excel spread sheet	-
Agriculture	China	SNC in 2012	Research papers for EFs	Excel spread sheet (Livestock)	Power point of livestock and cropland
	Mongolia	SNC in 2010 / Tentative new Inv.	Inventory Report	UNFCCC Software worksheets	Power point of tentative new inventory
LULUCF	Viet Nam	2010 inventory	-	Excel spread sheet	Power point of LULUCF sector

Comment exchange

1.Category: Solid Waste Disposal on Land

☐ Methodology	☐ Emission Factor	☑ Activity Data	☐ Other

Question or Comment:

Could you show the amount of landfills by waste type and by year in table form?

Answer:

See attached file; it is a confidential data. Please keep a secret.

☐ Methodology	☐ Emission Factor	☐ Activity Data	☑ Other

Question or Comment:

All landfills in Japan are considered 'Managed landfill' in accordance with Waste Disposal and Public Cleaning Law. Are the specific contents of this law available in relation to the design of landfills and can it be compared with the standard of 'Managed landfill' of 2006 IPCC G/L?

Answer:

Our 'Managed Landfill' meets the standard of 2006 Guidelines. Please refer for details to the 'Ministerial Ordinance on Technological Standards for Final Disposal Sites of Municipal and Industrial Waste.' (http://law.e-gov.go.jp/htmldata/S52/S52F03102004001.html).

☐ Methodology	☐ Emission Factor	☐ Activity Data	☑ Other

Question or Comment:

The country-specific value is used for "methane generation speed constant (k),". How is the uncertainty of country-specific methane generation rate value(k) estimated?

Answer:

We estimate XXXX XXXXXXXXXXXXXXXXXXXXXXXXX.

Items	Half life (y)	K value	Uncertainty of k value (%)
Kitchen garbage	***	***	***
Waste paper	***	***	***
Waste textile (natural fiber)	***	***	***
Waste wood	***	***	***
Sludge	***	***	***

■ Procedures

- Reading partner's materials carefully
- Filling up **questions and comments** on "comment exchange sheet"
- Comment exchange through the secretariat
- **Answering** to the comments
- Session on the comment exchange

Comment exchange sheet

Energy sector (1) (Indonesia and Myanmar)

■ Overview

Myanmar (MMR)

- Preliminary data for 1st BUR (2nd NC) and submitted INC are used for the material.
- Tier 2 is used for CH_4 and N_2O estimation method in some area of transport category, and tier 1 is used for the other categories.
- Acquired and requested basis data are mainly used and some official statistics are used as activity data (AD).
- 2006 IPCC Guidelines default values are used for emission factors (EF).

Indonesia (IDN)

- 2000-2010 data for 1st BUR preparation are used for the material.
- Tier 1 is used for estimation method.
- Energy balance tables are used as AD.
- 2006 IPCC Guidelines default values are used for EF.
- GHG inventory covers all potential sources and all gases.

Energy sector (1) (Indonesia and Myanmar)

- **Outstanding issues (Next challenges)**
  - Difficulty in applying tier 2 method due to a complexity of data collection (IDN).
  - Insufficient data & quality control (MMR).
- **Good practices**
  - Tier 2 method in some area of transport category (MMR).
  - Good institutional arrangement is established (IDN) or planned (MMR).
  - Comparison of reference approach (RA) with sectoral approach (SA) to compensate insufficient data (MMR).
  - Complete energy balance tables are established and have small discrepancy between RA and SA (IDN).
- **Suggestion for future ML**
  - Focus on how to develop and improve AD, EF and calorific values.
  - 1st BUR will be used for the next mutual learning materials.
- **Possible improvement activities**
  - Create energy balance tables (EBT) (MMR)
  - Cross-check the GHG estimates using tier 2 with those using EBT (Both).
  - Need to know how to develop and implement QA/QC system (Both).

Agriculture sector (1) (China and Mongolia)

■ **Overview**

Mongolia

- Emission Data are data of 2006 described in SNC Submitted in 2010 and new emission data .
- In addition, draft new inventory is also used for next submissions.
- Basically, estimation methods of 1996GLs were used.
- For AD, national statistics with some assumption by expert judgment were used.
- 1996GLs default EFs and CS-EFs were used.

China

- Emission data are data of 2005 described in SNC Submitted in 2012.
- For estimation methods in 4C & 4D, CS-models were used.
- For 4A & 4B, CS-EFs and Default EFs were used.
- For AD, main statistics were national yearbooks.
- CS-EFs constructed from research papers were used.

Agriculture sector (1) (China and Mongolia)

- **Issues and solutions / Outstanding issues / Good practice**
- For Mongolia, disaggregation in cattle category may improve estimation methods by reflection of country situation.
- For Mongolia's manure management, it may be better that "Goats" take out from "Other" and calculate as independent sub-category.
- Good Practice: China uses CS-data for manure management.
- Mongolia conducted recalculation with new developed EFs. It is Good Practice because of keeping consistency and continuous improvement.
- China's manure management data by province level in similar climate condition may be a good reference for Mongolia**.**
- **Follow-up activity**
- Mongolia will describe detail information for CS-EFs calculation data in reports for livestock.
- Mongolia and China experts will discuss about CS-EFs calculations.
- **Suggestion for future ML**
- Background information exchange for CS-EFs helps to make more fruitful discussion.
- It is good opportunity for each country to understand each situation.

LULUCF sector (1) (Viet Nam)

■ Overview

- 2010 GHG inventory data used for the materials
- In Draft NIR 2010, LULUCF is a net sink of -30.535 Mt CO_2 eq.
- Estimation methods of GPG-LULUCF were used
- Official statistics are used for activity data. Forest inventory and land use matrix are also used to obtain necessary information for estimation
- Some country- specific parameters and default EFs described in 2006GL, GPG-LULUCF were used
- The annual area conversion was calculated based on the land matrix of the period 2006-2010.

LULUCF sector (2) (Viet Nam)

■ Issues and solutions/ Outstanding issues

- There are some data representing forest land area in Vietnam. The statistics data was prioritized to estimate GHG emissions for official use. Use of the satellite data may be the point of future improvement.
- In order to implement the GHG inventory for LULUCF in accordance with GPG-LULUCF, the Vietnamese country specific land use categories were reorganized into six land use categories as defined by GPG-LULUCF.
- In final 2010 report, mineral soil calculation are being prepared; land use on organic soil calculation is to be considered; parameter of Gain-Loss method needs a little more consideration.

LULUCF sector (3) (Viet Nam)

Good practices

- Improvements from the 2005 inventory
  - Emissions from dead organic matter associated with deforestation are newly calculated.
  - Non-CO_2 gas emissions due to on-site burning of biomass associated with deforestation are newly calculated.
  - Tier2 method described in IPCC Guideline were used in forest land remaining forest land.

Follow-up activity

- Discuss IPCC Guidelines such as the 2013 Supplement to the 2006 IPCC Guidelines

Suggestion for future ML

- Vietnam will modify their inventories that focus on carbon stock change in soil and wants to participate in Mutual Learning Session in next WGIA.
- Efforts to improve consistency of data used by REDD and inventory will be considered.

Conclusion

- WGIA has introduced ML programme as one of an activity of capacity building since 2011.
- Many countries share the data which is prepared for BURs.
- ML programme can be supplements to a nationally organized QA activity.
- Regional communication is good way for improving inventories.