5th Workshop on Greenhouse Gas Inventories in Asia

Lessons Learned from GHG Inventory Preparation
-From the Point of View of External Consultants-

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Outline

- Introduction of MURC

- Lessons Learned from Inventory preparation in the Republic of Palau *-estimating missing activity data*

- Lessons Learned from Inventory preparation in Japan *-methods of finding data*

Introduction of MURC (1)

➢ Mitsubishi UFJ Research & Consulting (MURC)

◆ Comprehensive think tank of the Mitsubishi UFJ Financial Group (MUFG)

◆ MURC provides clients with the following services:

- Corporate Strategy Consulting;
- International Business Consulting;
- Economic Research;
- Membership Services;
- Training & Advisory Services, and
- Policy Research and Consulting

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Introduction of MURC (2)

➢ Takashi MORIMOTO, Takeshi ENOKI

- ◆ Analyst, Environmental Policy Consulting Department, Policy Research and Consulting Division

- ◆ Cooperative Researcher, Greenhouse Gas Inventory Office of Japan (GIO/NIES)

- ◆ UNFCCC GHG Inventory Reviewer

✓ Our firm has been contracted by the Ministry of the Environment (MOE) to compile the Japanese GHG Inventory since 2003.

✓ We have also worked on a project to support the preparation of the Second National Communication of the Republic of Palau.

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Lessons Learned from Inventory Preparation of the Republic of Palau

-estimating missing activity data

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Background

➢ Palau submitted its First National Communication (NC) in 2002, and the government of Palau has received funding from UNEP/GEF to undertake preparation of its Second NC.

➢ MURC was awarded the contract for assisting Palau to prepare the Second NC.

➢ MURC held a workshop on preparing a GHG inventory for the Second NC in Palau in December 2006.

➢ The team of Palauan experts developed the GHG inventory and national inventory report with the assistance of the MURC.

Background

➢ The MURC assisted the expert team of Palau by…

◆ Presenting information on climate change and UNFCCC obligations

◆ Explaining the contents of National Communication

◆ Lecturing the methodologies of estimating GHG emissions using the *Revised 1996 IPCC guidelines* and *IPCC GPG*.

◆ Making suggestions on the choice of methodologies

◆ Sharing ideas on ways to gather activity data

◆ Assisting the drafting of the national inventory report

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Problems identified during inventory preparation

- ➢ Statistical system of Palau is not systematically maintained.

- ➢ The number of official statistics is limited and many statistics are not covered for the entire time series because the survey for statistics are not conducted every year.

- ➢ Some useful data and/or literature might exist, but nobody knows where they are.

- ➢ Inconsistent/conflicting datasets exist for a particular data category.

Examples of missing data

➢ During the GHG inventory preparation of Palau, some data that were missing had to be estimated. For example,

◆ Imported fuel by type （1.A.）

◆ Number of livestock （4.A. 4.B. 4.D.）

◆ Soda ash consumption （2.A.4.）

◆ Annual amount of MSW disposed to SWDS （6.A.）

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Method for estimating missing data (1)

➢ Imported Fuel by type （1.A.）

◆ PROBLEM: Only data for 1999 and after were available

◆ SOLUTION: *Extrapolation using drivers*

• Data from 1994 to 1998 were estimated by assuming that they changed directly proportional to GDP growth.

➢ Number of livestock （4.A. 4.B. 4.D.）

◆ PROBLEM: Only data from 1995 to 1998, and 2001 were available

◆ SOLUTION: *Interpolation*

• 1994 data assumed to be same as 1995, data for 1999 and 2000 were interpolated, data after 2002 the same as 2001.

Method for estimating missing data (2)

➢ Soda ash consumption（2.A.4.）

◆ PROBLEM: No statistics on soda ash consumption.

◆ SOLUTION: *Interview relevant organizations,*

Estimate using consumption unit

- Interviews revealed that soda ash was consumed only in the water treatment plant.

- However annual consumption data were not available.

- We asked the water treatment plant the weight of soda ash per bag and the number of bags used per day, and estimated the annual consumption based on consumption unit.

$$\text{annual consumption of soda ash (kg)} = \text{weight of 1 bag of soda ash (kg)} \times \text{number of bags used a day (number)} \times \text{number of days in operation a year (number)}$$

Method for estimating missing data (3)

➢ Annual amount of MSW disposed to SWDS（6.A.）

◆ PROBLEM: Using population statistics in estimating the amount of MSW is not accurate because many visitors go to Palau.

◆ SOLUTION: *Estimation using information from expert judgment or other sources*

- We estimated "revised population of Palau" including visitors in a year by adding total population of Palau to the total number of tourist for a year by multiplying the number of visitors in a year and average stay days of visitors.

revised population of Palau (persons)	=	Population of Palau (persons)	–	number tourists (number)	×	average stay of tourists (days/tourist)	×	conversion factor (year/365 days)

Lessons Learned

➢ Important data such as energy statistics may be missing in countries, but do not give up!

➢ Methods for estimating activity data are…

- ◆ Interpolation
- ◆ Trend extrapolation
- ◆ Extrapolation using drivers
- ◆ Interviewing relevant organizations
- ◆ Estimate using consumption unit
- ◆ Estimation using information from expert judgment or other sources

➢ These methods may provide "best estimations" based on the information present.

➢ However, steps should be taken in the future to reconsider the activity data.

Experience of Inventory Preparation of Japan
-methods for finding data

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Activity data of Japanese GHG inventory

➢ Almost all of the activity data used in the Japanese GHG inventory are values taken from public statistics.

➢ However, some data can not be found.

➢ If statistics do not exist, MOE conducts research to find activity data in other places.

➢ If data is found, MOE considers if emissions should be estimated using the new data or whether the emissions should be reported as "NE".

Ways to conduct Activity data research

- ➢ **Review literature**
  - ◆ General newspapers
  - ◆ Trade papers
  - ◆ Magazines
  - ◆ Internet
  - ◆ Academic papers, etc.
- ➢ **Conduct interviews**
  - ◆ Scientists
  - ◆ Industry insiders, etc.

Important activities while conducting activity data research

- ➢ Verification of the data
  - ◆ Researcher should check the new data for its
    - Accuracy
    - Transparency
    - Consistency, etc.
- ➢ Ask for permission to use the data, if necessary
- ➢ Request data to be provided in future

Example of Activity data research (1)

➢ **Oil cokes consumption in silicon carbide production**

◆ Internet search revealed that one company in Japan produces silicon carbide.

◆ MOE asked the company to provide data, but was refused because of the nature of the data.

◆ MOE decided that the data would be dealt as confidential (C) in the GHG inventory, and asked the company through METI (Ministry of Economy, Trade and Industry) to provide the data.

◆ The company accepted the data provision.

Example of Activity data research (2)

➢ The number of Buffalo

◆ Literature review was conducted on whether there were any buffalo as livestock in Japan or not, but the conclusions were not clear.

◆ MOE asked a specialist of animal husbandry the actual condition of buffalo and received information on the area where buffalo was kept as livestock.

◆ MOE asked the local government in the area for information on buffalo, and they happened to have statistics on the number of buffalo.

◆ MOE requested the data to be provided and the local government accepted.

Lessons Learned

➢ Even if official statistics do not exist, do not give up!

➢ There are other sources that may collect data such as

◆ Experts/Researchers

◆ Businesses/Industry groups

◆ Local governments

➢ Recommended method for finding data

✓ Identify persons which may have useful information by literature review / conducting interviews.

✓ Interviews appropriate experts

✓ If data sources are reluctant to provide data, ensuring confidentiality may change their minds.

Thank you for your attention !!

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