A Case Study on Implementation of the Asian Wetland Inventory

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Introduction

Hokkaido is the northern island of Japan, located between longitudes139°20' East and 148°53' minutes East; and between latitudes 41°21' North and 45°33' minutes North. Hokkaido covers an area of approximately 83,000 km^2. Although this represents 22% of the land area of Japan, Hokkaido contains only 4.5% of the total population of Japan. It is the second largest island in Japan.

Hokkaido is surrounded by the Pacific Ocean to the south and east, the Sea of Japan to the south-west and the Sea of Okhotsk to the north. In the center of the island, there are volcanic mountain chains. Because of the harsh climate, especially in winter and the relative remoteness from the populated center of Japan, Hokkaido has remained comparitively undeveloped.

Hokkaido holds a wide variety of wetlands, including five Ramsar sites, namely the Akkeshiko Bekanbeushi Marshes, the Kiritappu Marshes, the Kushiro Marshes, Lake Utonai and Lake Kutcharo. In 1993, CoP 5 of the Ramsar Convention was held at Kushiro. Because of the high level of local interest in wetlands, a wide variety of high quality information on the wetlands are available in Hokkaido through municipal governments, institutional organizations and local NGOs.

The Hokkaido Institute for Environmental Sciences (HIES) in particular maintains good information resources on wetlands in the island. HIES is a governmental institute of the Hokkaido Prefecture and has conducted and collected a number of environmental surveys on water and air pollutions, acid rain, global warming, water quality of lakes and rivers, monitoring of wildlife and vegetation and conservation of endangered species. The institute holds, for example, information of:

- Grid units of 100 x 100 meters mesh for land use;
- Grid units of 250 x 250 meters mesh for elevation; and
- Grid units of 1 x 1 kilometer mesh for distribution of flora and fauna, vegetation type, land tenure, geology, quantity of undulation, direction of inclinations, soil type, temperature, rainfall, snowfall and population as mesh data,
- 1: 50,000 – 1: 200,000 scale maps of coastal line, administrative boundary, roads, rivers, lakes, marshes, vegetation, national/nature parks, wildlife reserves and agricultural and forestry zones as vector data and
- LANDSAT, NOAA, aerial photos and topographical maps as raster data.

These information are all available in GIS format.

On April 2001, Wetlands International-Japan, which has been receiving annual financial support from the Ministry of Environment Japan, decided to implement a pilot study of the AWI. Major objectives of this project are:

- To demonstrate the usefulness of the AWI information sheet and manual on Level 1-2, which have been revised after the 1st training workshop, using existing wetland information in Hokkaido;

- Review the revised information sheet and manual through the process of the data completion; and
- Producing a sample CD-ROM for visualizing the AWI database system.

A wide variety of geographic information – such as topographic and floral data - is publicly accessible through web sites. However, the scale and detail contained within this information in many cases is limited making it necessary to source information directly from specific agencies such as HIES. Since HIES permitted the use of their wetland data, Wetlands International-Japan has started translation of the Hokkaido data to the AWI format as a pilot project, using the AWI information sheet and manual.

For producing maps, ESRI's © ArcView 8.1 was used while IBM © Homepage Builder 2001 was used for filling up the information sheet with html files.

Level 1

The World Resource Institute's geographic region map identifies Hokkaido as one independent geographic region and assigns it a code of Hk.

In Level 1, there is a requirement for four basic categories of information to be recorded. These are

1. Geology
2. Climate
3. Ecoregion
4. Vegetation

1. Geological information in Hokkaido was obtained through the Centre for Global Environmental Research of the National Institute for Environmental Studies and web site of Hokkaido Geology Guide.
2. Climatic information is available on the web site of FAO's Global Climate Maps. The text information is quoted from, for example, the web site of Hokkaido Government.
3. Original source of the ecoregion boundaries is from WWF. There are four types of ecoregions in Hokkaido.
4. Vegetation is available from several sources. Although the map is originally copied from WWF, HIES's information is also used to fill up the text.

Level 2

In level 2, Hokkaido is delineated with four sub-basins and 6 costal regions. Zone 1 Kushiro's ISO code is Ks. In Level 2, there is a requirement to record five categories of information. These are:

1. Geographic Location;
2. Climatic Characteristics;
3. Physical Features;
4. Biological Features; and
5. Jurisdiction.

Geographic locations are may be obtained from an atlas – or a GIS. Using ArcView 8.1 to view datasets enables latitude and longitude may be easily identified and calculated. Using programming scripts supplied with ArcView, it is possible to calculate and identify the centroid of the the region.

The Climate Zone is again found from the Koeppen Climate Classification Map on FAO's web site.
Original records of annual precipitation in Hokkaido was obtained from the Geological Survey Institute Japan (GSI). HIES processed Hokkaido's GIS data from GSI's information with additional information. Calculation of the precipitation's range is easily done with ArcView. Similar works were done for temperature.

Altitudinal range including maximum and minimum elevation is calculated by ArcView with HIES's information. Area, length and width measurements may be easily calculated using the measuring and area calculation capabilities of the ArcView software package.

Geological information and land tenure were supplied by HIES.

Unfortunately, hydrological information is not available at the moment. This information will be recorded later.

Information from HIES was used to produce a vegetation map.

To complete the jurisdictional section, various information sources are used through web sites.

At moment, only information for Zone 1 (Kushiro) is filled up. Information for the rest of the zones will be completed within a month and the Level 1-2 information will be presented as a sample AWI data in the CD-ROM together with revised manual text and data sheets. The CD-ROM will be distributed among related countries and used to introduce the AWI system.

Next Step

Following recent discussions with the Ministry of Environment, Wetlands International-Japan has decided to continue the pilot project with HIES this year, focusing on Levels 3 and 4. The output will be produced as a CD-ROM and distributed at the CoP 8 of the Ramsar Convention.