Assessment Framework of Eco-Compatible Integrated Management of River Basin and Coastal Area

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In Japan, most of metropolises have developed along the enclosed coastal seas river basins with both intensive agricultural area and quite industrially-advanced area having large populations and big cities. These land area continuously have supplied the pollutant loads, and sometimes resulted to water pollution and degradation of marine ecosystem. Hence, the Japanese Government has been aggressively implementing environmental protection countermeasures directed at controlling and reducing the land-based pollution at source in the river basin, which is called as the Total Pollution Load Control System (TPLCS). The purpose of TPLCS is to reduce the pollutant loads entering into the enclosed seas, especially specified water bodies (Tokyo Bay, Ise Bay and Setouchi Islands Sea). Every five years, the Minister of the Environment formulates a Basic Policy for Total Pollutant Load Control System (BPTPLCS). The governor of each prefecture makes Total Pollutant Load Control Plan to achieve the pollutant load reduction target according to the BPTPLCS. Such plan generally consists of concrete measures to reduce pollutants from households, industries, and agricultural lands. The results of these measures have been positive. However, further improvement of healthy environment totally from forest area down to sea has been expected.

Actually in the objective areas, there are a lot of concerns with regard to human activities, terrestrial ecological services and aquatic ecological services that are interrelated closely with each other. For this reason, UNEP/NOWPAP recommends ICARM (Integrated Coastal and River Basin Management) as the comprehensive measure. In addition to the basis of several concepts of ICARM (e.g. ecosystem-based management), from the point of view that river basin and coastal

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area is a unit of a national land planning toward sustainability, an assessment framework of eco-compatible integrated management of river basin and coastal area have been developed since 2006 by Nagoya University and eight institutes under the supervision of three ministries: Ministry of Environment, Ministry of Foreign Affairs Ministry of Land, Infrastructure and Transport, and Ministry of Agriculture, Forestry and Fisheries. Such a structure is indispensable for building up the integrated management in spatially continuous field of river basin down to the coastal area. The structure is also needed for various management purposes, such as water environment, flood control, water resources management, sustainable agriculture and fishery, and conservation of a great variety of life.

The assessment framework for eco-compatible integrated management of river basin and coastal area consists of three tool boxes. Tool Box 1 can evaluate natural and man-made flux network (e.g. water, sediment, pollutant load etc). Tool Box 2 can evaluate ecosystem service for each categorized landscape which forms river basin, coastal area and bay. Tool Box 3 is prepared for integrated evaluation. We assume that the eco-compatibility should be evaluated among various scenarios (alternatives) composed of several programs. Tool Boxes 2 and 3 have been already tested partially. In this paper, on the basis of the proposed assessment framework, we discuss the influence of reducing pollutants in river basin and improving the wetland along the coast on water quality purification and fishery resources.