

IR-1 Studies on Integrated Environmental-Economic Analysis toward a Sustainable Global Society

Contact Person Tsuneyuki Morita

Director, Social and Environmental Systems Division
National Institute for Environmental Studies
16-2 Onogawa, Tsukuba, Ibaraki 305-8506, Japan
Phone +81-298-50-2541 Fax +81-298-50-2572
E-mail t-morita@nies.go.jp

Total Budget for 1998-2000 173,920,000 Yen (FY2000 56,160,000 Yen)

Key Words Sustainable development, Economic model, Environmental accounting, SEEA, Input-output tables, Material flow

The integration of environmental conservation and economic development is the common essential target of the world towards the sustainable development. Therefore, it is urgent and important to study how to set and how to achieve policy targets towards this ultimate goal, both internationally and nationally. Based on the outcomes from the research projects in the first and second phases on environmental-economic modeling and accounting, this project aims at the development of economic models, valuation methodologies, monetary and physical environmental accounting for the integrated analysis of the environment and the economy.

In the "Research on economic model for Asian application and economic evaluation of international public goods", (1) several economic models such as dynamic optimization models, computable general equilibrium models, and a bottom-up energy-technology model were revised and improved to analyze the relationships between Asian economic development and environmental issues including climate change, acid rain and air pollution, (2) the CVM methodology was tested and improved for estimating the economic value of global environment, and (3) case studies in the Asian region were conducted to apply economic models as well as other methodologies to clarify the direction of sustainable development.

In the "Research on the establishment of the integrated environmental and economic accounting", the Satellite System for Integrated Environmental and Economic Accounting (SEEA) developed as a practical tool for apprehension and analysis of the relationship between the environment and the economy, In order to analyze the relationship between specific environmental issues and the economy, a Waste Account focusing on waste disposal and recycling as well as the Environmental Protection Expenditure Account indicating economic activities for environmental protection developed.

In the "Development of environmental and resources flow accounts based on the input-output model", a framework of multi-dimensional physical input-output tables (MDPIOT) with environmental extension was proposed and preliminary accounts for fossil fuels, construction materials and iron & steel were compiled. The GAMEE, an extended, flexible and consistent framework containing both physical and monetary account, was also proposed. Collection of data and calculation of indicators for total material outflows from the economy to the nature were undertaken as a second phase of the collaborative study with Austria, Germany, the Netherlands and the United States. Case studies on CO₂ emission, local material flows and specific commodity flows were also undertaken.