



ENVIRONMENTAL PERFORMANCE OF AGRICULTURE IN OECD COUNTRIES SINCE 1990:

KOREA Website Information

This Website Information is related to the OECD publication (2008) *Environmental Performance of Agriculture in OECD countries since 1990* which is available at:
<http://www.oecd.org/tad/env/indicators>

KOREA

WEBSITE INFORMATION

1. National Agri-environmental Indicators Development

Institutional Arrangements

- The development of environmental indicators to help guide and evaluate agricultural policy was recommended in a major policy review of Korean agriculture in the late 1990s (Ministry of Agriculture and Forestry, 2002). In response, the National Project of Rural Development Administration (RDA) began in 1999 to develop a set of agri-environmental indicators and analytical systems for this purpose. Today this work is continuing under the National Institute of Agricultural Science and Technology (NIAST) and Korea Rural Economic Institute (KREI). The work involves a joint effort of the related institutes' scientists, economists and policy analysts. The purpose of National Project of RDA is to strengthen the capacity to develop and continuously enhance agri-environmental indicators and tools to integrate these indicators into policy development using both integrated modelling and economic valuation.

Indicator Coverage and Conceptual Framework

- The Korean set of agri-environmental indicators is currently composed of twelve indicators developed within eight categories: farm management, nutrients balance, soil quality, water use and quality, air quality and climate change, pesticide risk and use, agri-ecosystem biodiversity, and agricultural energy. A Driving Force–Outcome–Response Framework was used to help identify appropriate AEIs and to characterize relationships and linkages between agricultural production and environmental, economic, and social factors. Analysis of the linkages between these components is a key to a good understanding of the causes and effects of agriculture's impacts on the environment.

Data Sources, Calculation Methods, Spatial and Temporal Coverage

- The indicators developed by NIAST typically focus on state (monitoring of the presence and degree of an impact) by which they can isolate the potential contribution from agriculture on the environment. As well, detailed field monitoring data are generally not available on a national scale for most environmental issues.
- AEIs are based on integrating data on nutrients, soil, climate, and farm management from NIAST and KREI, with data from provincial agencies using existing or modified mathematical models or formulas. Calculations can be repeated over time to estimate changes and trends in the indicators.
- Wherever possible, indicators were calculated and portrayed on an ecological basis using the national ecological classification system for Korea. Indicators are calculated from results by the nation-wide survey on agri-environmental elements and using the Universal Soil Loss Equation Model and soil inventory at the Agricultural Soil Survey Information, which covers the smallest land unit within the system that also includes provincial, county, village, and fields. This enabled subsequent Geographic Information System (GIS) software roll-ups of information in either map or table format for any level in the hierarchy. Indicator results are also presented at the provincial level.

The use of AEIs in Policy Analysis

- To provide a capacity for policy analysis and environmental forecasting, an integrated modelling approach is being used by KREI, linking an economic model with the bio-physical AEI models. Because the AEIs are sensitive to changing farm practices and reflect the intensity of agricultural production in some areas, this approach provides the ability to model the impact of agricultural production and adoption of Best Management Practices (BMPs) on the environment.
- The nutrient balance model used in the analysis is the Korea Regional Nutrients Accounting System (KRNAS), which is a basic model for Region-based Maximum Nutrients Loading System (RMNLS) in Korean agriculture. In order to solve the excessive nutrients problems in cultivated land, Korean government announced its plan to introduce the RMNLS from 2007. The report by Chang-Gil Kim, et al. (2005) described detailed implementation plan for the RMNLS.

Future Work

- Through NIAST and KREI the AEIs and modelling capacity are continually improved, refined and updated so they can be integrated and applied to policy development, performance measurement, program evaluation and public reporting. Improvements focus on four main areas: *first*, enhance the methodology and data of existing indicators where necessary, and to develop new indicators to address key gaps; *second*, improve economic models and their linkages with environmental indicator models; *third*, develop the capacity to understand and quantify the economic costs and benefits of environmental changes caused by agriculture; and *fourth*, develop the persuasive indicators (i.e., habitat matrix approach) for agricultural multifunctionality and the indexes for covering composite indicators. A major report released in 2004 provides an update of the indicators initially reported in 2002 and introduces eight indicators continuously developing, while a more comprehensive report is planned for 2008/09.

2. Databases

- Agricultural Statistic Databases, Ministry for Food, Agriculture, Forestry and Fisheries, *Agricultural and Forestry Statistical Yearbook*, Republic of Korea, see <http://www.mifaff.go.kr/index.jsp>
- Agricultural Soil Information System, ASIS Agricultural Soil Information System <http://asis.rda.go.kr/>
- Certification and Statistics of Environmental-Friendly Agricultural Products, National Agricultural Products Quality Management Service, see <http://www.naqs.go.kr/english/index.jsp>
- Comprehensive Information for Livestock Manure in the National Institute of Animal Science provide composting and liquid manure information on livestock manure treatments, designing the facilities for manure treatment, and nutrient management issues, see <http://envi.nias.go.kr/>
- Environmental Geographic Information System in the Ministry of Environment provides data, maps, publications and other information on the qualities of air, water, and environmental harmfulness, see <http://egis.me.go.kr/egis>
- Korea Environment Databases, Ministry of Environment, <http://eng.me.go.kr/docs/index.html> covering biodiversity, pollution, water and air qualities.
- Rural Geographic Information System, Korea Rural Community & Agriculture Corporation, see <http://www.ekr.or.kr/ekr/eng/index.jsp>

3. Websites

- Ministry for Food, Agriculture, Forestry and Fisheries <http://english.mifaff.go.kr>
- Ministry of Environment <http://eng.me.go.kr/docs/index.html>
- Korea National Statistical Office <http://www.nso.go.kr/eng2006/emain/index.html>
- Korea Rural Economic Institute <http://www.krei.re.kr/eng/>
- National Institute of Environmental Research <http://www.kei.re.kr/eng/index.asp>
- Korea Federation for Environment Movement <http://www.kfem.or.kr/engkfem/>
- The Korean National Council for Conservation of Nature http://www.knccn.org/english/index_1.html
- Rural Development Administration <http://www.rda.go.kr/>
- National Institute of Agricultural Science and Technology, <http://www.niast.go.kr/english/main.asp>
- ASIS Agricultural Soil Information System <http://asis.rda.go.kr/>
- National Institute of Animal Science <http://www.nias.go.kr/english/>
- National Institute of Crop Science <http://www.nics.go.kr/english/>
- National Agricultural Products Quality Management Service <http://www.naqs.go.kr/english/index.jsp>
- Korea Rural Community & Agriculture Corporation, see <http://www.ekr.or.kr/ekr/eng/index.jsp>
- UN Department of Economic and Social Affairs, Division for Sustainable Development, National Information data base, <http://www.un.org/esa/sustdev/natinfo/natinfo.htm> look under Republic of Korea for national profiles and assessment reports relevant to Agenda 21