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Measuring material flows and resource productivity OECD approach and work plan

Information note¹

¹ *Based on OECD documents ENV/EPOC/SE(2004)3FINAL and ENV/EPOC/SE(2005)2, derived from the results of the OECD Helsinki and Berlin workshops and discussions in the OECD Working Group on Environmental Information and Outlooks.*

I. Introduction and background

Natural resources are the foundation of economic activity and human welfare. They provide raw materials, energy and other inputs, as well as environmental and social services. Their management and efficient use are part of the many cross-sectoral issues with which governments of OECD and other countries are increasingly confronted and that are key to economic growth and sustainable development.

In the past two decades, trade has enlarged markets and has led to an overall increase in international flows in goods and materials. In recent years, concerns about resource consumption and the security of supply have become important issues, amid growing demands from OECD countries, as well as other countries, including China or India. This has added to long-standing concerns about the sustainability of resource use and the associated negative environmental consequences.

It has also raised interest in reliable information about material resource flows within national economies, as well as among countries and different parts of the world, as a pre-requisite for monitoring the economic efficiency and environmental effectiveness with which resources are used. Such information already exists, but remains insufficient to fully understand the role of natural resources in the economy and to give an integrated view of how different resources flow through the economy.

OECD countries' governments therefore decided to step up co-operation to improve their knowledge about material resource flows and resource productivity, notably by developing common measurement systems and indicators, and adopted an OECD Council Recommendation to this effect (April 2004). This followed upon earlier initiatives, and upon requests from Heads of State and Government of G8 countries².

II. Aim and purpose of OECD work

In 2005 and 2006, the OECD will work with its members and international partners to establish a common knowledge base on material resource flows and resource productivity and to inform related policy debates. The results of the work are expected to help addressing some of the current gaps and shortfalls in MF information, to contribute to achieve greater convergence of already existing initiatives in OECD countries and to facilitate wider dissemination and uptake of existing experience and guidance.

The work will:

- Provide guidance on how to best construct material flow accounts and indicators in a coherent framework that countries can easily implement and further adapt to their own needs.
- Provide practical indicators that measure the economic efficiency and environmental effectiveness with which material resources are used.
- Provide guidance on how to best interpret and use material flow and resource productivity indicators.
- Offer examples of good practices that countries may wish to draw upon.

It is carried out as part of the OECD environment programme and its work on environmental indicators and environmental peer reviews³. It is to be supported with work on sustainable resource use and

² *The Heads of State and Government of G8 countries addressed the issue, first in 2003 (Evian, G8 Action Plan on Science and Technology for Sustainable Development), and second in 2004, when they agreed to launch a follow-up initiative "Reduce, Reuse and Recycle" (3R), upon proposal by Japan.*

³ *steered by the Working Group on Environmental Information and Outlooks (WGEIO) and the Working Party on Environmental Performance (WPEP).*

resource productivity as part of the OECD's Horizontal Project on Sustainable Development⁴, and on waste prevention and recycling and sustainable materials management (SMM)⁵.

The work builds on national and international experience with material flow accounts and indicators and is carried out together with other international bodies. It is supported with a series of meetings organised or hosted by member countries and the OECD.

III. Approach taken

The work follows a modular approach distinguishing:

- core work within the OECD, i.e. work in areas where progress can best be obtained through joint efforts in the OECD; and by OECD countries as a group using a commonly agreed upon framework and terminology. Priority is given to carrying out work in areas where results can be obtained over the next two years, and to launching work in areas where progress requires longer term efforts, and that could proceed in parallel
- additional and/or more detailed work in areas where progress can best be achieved through specific national efforts done on a voluntary basis, through case studies carried out in collaboration by member countries sharing common interests or through co-operation with other international partners active in these areas.

IV. Main elements of work

Improving the quantitative knowledge base: development of common MF accounts and indicators

Core work focuses on supporting countries to prepare national material flow data under a common accounting framework as a basis for calculating a harmonised core set of practical MF and RP indicators. Such indicators are expected to complement indicators derived from natural resource accounts already in use (e.g. water, forest, energy), and to move work on decoupling indicators forward by filling gaps in the field of natural resource and material use. The agreement is to identify a set of indicators for international use, composed of a balanced combination of indicators at various levels of detail, rather than a few highly aggregated indicators.

This will be supported with (i) conceptual, methodological and analytical work to provide consolidated guidance to countries and achieve greater convergence of individual initiatives, and (ii) further exchange of experience on best practices concerning institutional arrangements and partnerships, and ways to enhance co-operation and communication between the various actors involved and to improve the cost-effectiveness of MF work.

The agreement is (i) to link guidance on methodological and measurement aspects to policy uses and users' needs, keeping in mind the relevance of MF information for both environmental and economic decision making; and (ii) to construct guidance in a modular and flexible way, covering different measures at different levels of aggregation that countries can adapt and develop to suit their own circumstances and needs. This will be done by:

- offering a menu of options and recommendations, based on a “decision tree”, including a didactic part aimed at beginners and newcomers setting up a MFA activity in their country. It is to be accompanied by examples of good practice, and by a glossary of MFA and RP terms;
- showing how different measures and indicators can be useful in different policy situations (strengths and limitations);

⁴ steered by the Annual Meeting of Sustainable Development Experts (AMSDE).

⁵ steered by the Working Group on Waste Prevention and Recycling (WGWPR).

- pointing out those areas in which standardisation of methods is recommended so that results are coherent and can be used to support core work within the OECD, keeping in mind that cross-country comparisons require careful interpretation.

The overall framework will build on a clear articulation of the purposes and uses of the different measurement tools of the MFA family, including accounts and indicators, and point at the complementarities and synergies with other environmental and economic information tools.

Work will build as much as possible on existing work and experience. It is carried out in close co-operation with Eurostat, whose guide serves as a starting point⁶, and is to be co-ordinated with the UNSD to ensure coherence with the System of integrated Environmental and Economic Accounting (SEEA).

Improving the analytical knowledge base: use and interpretation of MF indicators

Core work will focus on providing harmonised guidance on how to best use and interpret MF indicators. It will address the extent to which methodological issues, data quality and country-specific factors affect the interpretation, policy relevance and international comparability of different MF indicators. It will further identify the type of additional information and analysis that is needed to explain driving forces behind indicator changes and to relate MF indicators to environmental pressures and impacts and to resource management issues (use of renewable versus non-renewable resources; use of materials versus existing reserves and available resources; resource productivity; links to prices, to resource rents, etc.).

It will be accompanied with further analytical work to review the policy relevance for different purposes, and to identify those issues and policy areas to which MF analysis and MF indicators can best contribute. Extra efforts are required to improve the relationship between the demand for and supply of MF information, promote the use of MF approaches at national level and make the potential of MFA as a policy tool better known. The sharing of good practices and successful applications of MFA, and the development of a brochure on MFA, will support such efforts.

Guidance on the interpretation and use of MF and RP indicators is the main objective for the 2006 OECD workshop (Rome, May 2006). In order to support the discussions and to make the indicators work operational in the practical setting of public policies, it is suggested that countries volunteer in data work to illustrate the applicability of different indicators and underlying accounts in different contexts.

V. International co-ordination and co-operation

The work is carried out by the OECD Environment Directorate. It will benefit from co-ordination and co-operation with member countries and with international partners within and outside the OECD:

- ♦ OECD: Statistics Directorate, Directorate for Science and Technology, Horizontal Project on Sustainable Development (AMSDE)
- ♦ European Union: European Commission (Eurostat, DG Environment), European Environment Agency and its Topic Centre on Waste and Material flows
- ♦ United Nations: UNSD, UNEP
- ♦ London Group on Environmental Accounting, Inter-Secretariat Working Group on Environment Statistics
- ♦ Non governmental institutions: e.g. World Resources Institute, Wuppertal Institut, Institute for Interdisciplinary Studies of Austrian Universities.

⁶. *Economy-wide material flow accounts and derived indicators – A methodological guide*, Eurostat, 2000; *Integrated Environmental and Economic Accounting 2003- Handbook on national accounting*, United Nations, European Commission, IMF, OECD, World Bank, 2003

VI. Expected outputs and sequence of events

Expected outputs

① **Brochure on material flow analysis and related indicators**

- ➔ to serve communication purposes by giving a bold vision of MFA and explaining in simple and accessible terms the potential uses of MFA and the links to policy concerns, information needs, etc.
 - ➔ to be ambitious, short, and accessible to a broad audience
 - ➔ targeted at users of MF information including policy makers, business and the public
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Timing: 2006 Q1

② **Guidance document on methodological and measurement aspects**

- ➔ to assist countries in implementing common MF accounts and indicators in a coherent framework as requested in the Council Recommendation
 - ➔ to build on the Eurostat guide and on the SEEA
 - ➔ to be constructed in a modular way, with a menu of options based on a decision tree; core to focus on the construction of simple accounts and of indicators that can be derived from data available for a majority of OECD countries
 - ➔ to include empirical examples from OECD countries and best practices
 - ➔ to be adapted by countries to their own circumstances and policy needs
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Timing: 2006 Q1

③ **Guidance document on the use and interpretation of MF indicators**

- ➔ to assist countries in using common MF indicators as requested in the Council Recommendation
 - ➔ to build on analytical work to help improve the interpretability of MF indicators and to provide harmonised guidance on how to best use and interpret such indicators
 - ➔ to include: examples of good practices and successful applications; a review of policy relevance for different purposes; a review of major advantages/drawbacks of different indicators
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Timing: 2006 Q3/Q4

④ **Measured MF and RP indicators and improved information base on major MF variables for use in OECD work**

- ➔ to complement other natural resource indicators included in the OECD Core Set
 - ➔ to support OECD work on Sustainable Materials Management indicators.
 - ➔ to be selected and defined according to their policy relevance, analytical soundness and measurability
 - ➔ to be composed of a balanced combination of indicators at various levels of details
 - ➔ to be compiled from existing national and international data sources
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Timing: 2006 Q2-Q3 (practical steps to be further defined)

⑤ **Assessment of progress made by member countries**

- ➔ to report about progress made in implementing the Recommendation within three years of its adoption (as requested in the Council Recommendation)
 - ➔ to build on updated survey of country activities
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Timing: 2006 Q4 / 2007 Q1

Sequence of events

Date	Event	Purpose and topics	Outputs
2000			
October	OECD WGEIO seminar (Paris, France)	Material flow accounting	Proceedings
	OECD WGWR seminar (Paris, France)	Waste material flows and resource efficiency	Proceedings
2003			
November	International Expert Meeting (Tokyo, Ministry of the Environment of Japan)	Material Flow Accounts and Resource Productivity	Proceedings
2004			
April 20-21	OECD meeting of environment ministers (Paris, France)		➔ Recommendation of the OECD Council on material flows and resource productivity
June 17-18	OECD WGEIO workshop (Helsinki, Finland)	Definition of scope and orientations of joint work within the OECD on material flows and related indicators	➔ Chair's summary (June 2004) ENV/EPOC/SE(2004)1
July-Sept	Survey of MF activities (OECD with EEA)	Compile an inventory of MF related activities in OECD countries and beyond.	➔ Draft inventory (Q4 2005)
Sept/Oct	OECD AMSDE (Paris, France)	Sustainable resource use Report on Helsinki workshop	
October 13-15	35th OECD WGEIO meeting (Paris, France)	Discussion of draft scoping paper Exchange of experience on "demands for MFA"	➔ Final scoping paper (Q1 2005) ENV/EPOC/SE(2004)3Final ➔ Final inventory (Q1 2005) ENV/EPOC/SE(2004)3Final/Add
November 8-9	Eurostat TF-MFA (Luxembourg)	Review of Eurostat methodological guide and identification of next steps; development of simplified MF accounts	➔ Draft amended methodological guide (basis for OECD guide) (timing tbd)
2005			
February 9-10	7th OECD WGWR meeting	First discussion of OECD work on sustainable materials management	
May 23-24	OECD WGEIO workshop (Berlin, Germany) back to back with Eurostat training session (25 May)	Standard framework for MFA and bold vision; review of methodological and measurement issues; selection criteria and definition of MF indicators	➔ Chair's summary (June 2005) ENV/EPOC/SE(2005)2 ➔ Draft guide on methodological and measurement issues (Q4 2005) ➔ Draft brochure on MFA (Q4 2005)
October 3-5	OECD AMSDE (Paris, France)	Sustainable resource use Report on Berlin workshop	
November 28-30	OECD WGWR workshop (Seoul, Korea)	Sustainable materials management	
November 30 – December 1	36th OECD WGEIO meeting (Cancun, Mexico)	Review of draft guide; of draft brochure Discussion of MF and RP indicators for OECD use	➔ Final guide on methodological and measurement issues (Q1 2006) ➔ Final brochure (Q1 2006) ➔ Preliminary set of MF indicators for OECD use
2006			
May 16-17	OECD WGEIO workshop (Rome, Italy)	Interpretation and use of MF indicators; links with other accounting tools and indicators; best practices and successful applications Update of survey on MF activities in OECD countries (focus on indicators)	➔ Draft guidance on the interpretation and use of MF indicators (Q3 2006)
Sept/Oct	OECD AMSDE (Paris, France)	Sustainable resource use Report on Rome workshop	
4 th quarter	37th OECD WGEIO meeting (location to be defined)	Review of draft guidance on interpretation and use of MF and RP indicators; Review of draft report assessing progress with MFA and related indicators in OECD countries	➔ Final guidance on interpretation and use of MF & RP indicators ➔ Final progress report Q4 2006/ Q1 2007)

N.B. WGEIO = OECD Working Group on Environmental Information and Outlooks; WGWR – OECD Working Group on Waste Prevention and Recycling; AMSDE = Annual meeting of Sustainable Development Experts.

Annex. Recommendation of the OECD Council on material flows and resource productivity

Endorsed by Environment Ministers on 20 April 2004, Adopted by the Council on 21 April 2004

THE COUNCIL,

Having regard to Article 5 b) of the Convention on the Organisation for Economic Co-operation and Development of 14th December 1960;

Having regard to the Recommendation of the Council of 8th May 1979 on Reporting on the State of the Environment [C(79)114];

Having regard to the Recommendation of the Council of 31st January 1991 on Environmental Indicators and Information [C(90)165/FINAL];

Having regard to the Recommendation of the Council of 20th February 1996 on Implementing Pollutant Release and Transfer Registers [C(96)41/FINAL] amended on 28th May 2003 [C(2003)87];

Having regard to the Recommendation of the Council of 3rd April 1998 on Environmental Information [C(98)67/FINAL];

Having regard to the Communiqué of the OECD Council meeting at Ministerial level of 17th May 2001 which stated that “that OECD countries bear a special responsibility for leadership on sustainable development worldwide, historically and because of the weight they continue to have in the global economy and environment” and which asked the OECD to “continue to assist governments by: developing agreed indicators that measure progress across all three dimensions of sustainable development, including decoupling of economic growth from environmental degradation”;

Having regard to the OECD’s Environmental Strategy for the 1st Decade of the 21st Century endorsed by MCM in May 2001;

Having taken note of international work on Integrated Environmental and Economic Accounting (commonly referred to as SEEA);

Considering the need for better information designed to integrate more fully environmental and economic decision-making;

Convinced of the need for intensified efforts by OECD member countries to establish and use indicators of progress concerning the implementation of national and subnational policies on the environment, eco-efficiency and sustainable development; and to systematically compare achieved results with relevant objectives of environmental policies and, where appropriate, related international commitments;

Taking into account the close co-operation on environmental matters between OECD and other international organisations;

On the proposal of the Environment Policy Committee (EPOC):

I. Recommends that member countries:

1. Take steps to improve information on material flows, including its quality and relevance for environmental management, in particular:
 - a. develop methodologies to enhance knowledge of material flows within and among countries;
 - b. consolidate and improve data collection concerning material flows within and among countries;
 - c. develop tools to measure resource productivity and economy-wide material flows, including appropriate estimation methods, accounts and indicators;
2. Further develop and use indicators to better integrate environmental and economic decision-making, and to measure environmental performance with respect to the sustainability of material resource use;
3. Promote the development and use of material flow analysis and derived indicators at macro and micro levels;
4. Link environmental and economic related information through work on material flows, stocks and flows of natural resources, environmental expenditure, and macro-economic aspects of environmental policies;
5. Co-operate to develop common methodologies and measurement systems of material flows, with emphasis on areas in which comparable and practicable indicators can be defined, drawing on work already done at national and at international level.

II. Instructs the Environmental Policy Committee:

1. To support and facilitate member countries' efforts to improve information on material flows and related indicators, including through exchange of information on national and international innovative experiences;
2. To continue efforts to improve methods and indicators for the assessment of the efficiency of material resource use in important areas;
3. To develop a guidance document to assist member countries in implementing and using common material flow accounts;
4. To carry out these tasks in co-operation with other appropriate OECD bodies and other international organisations to prevent duplication and reduce costs;
5. To report to the Council on progress achieved by member countries in implementing this Recommendation, within three years of its adoption.