



ORGANISATION FOR ECONOMIC
CO-OPERATION AND DEVELOPMENT



Measuring Material Flows and Resource Productivity

OECD guidance documents and other outputs

OECD-UNEP Workshop
“Sustainable resource and materials
management – Linking national and
international initiatives”

Paris, 1 December 2009

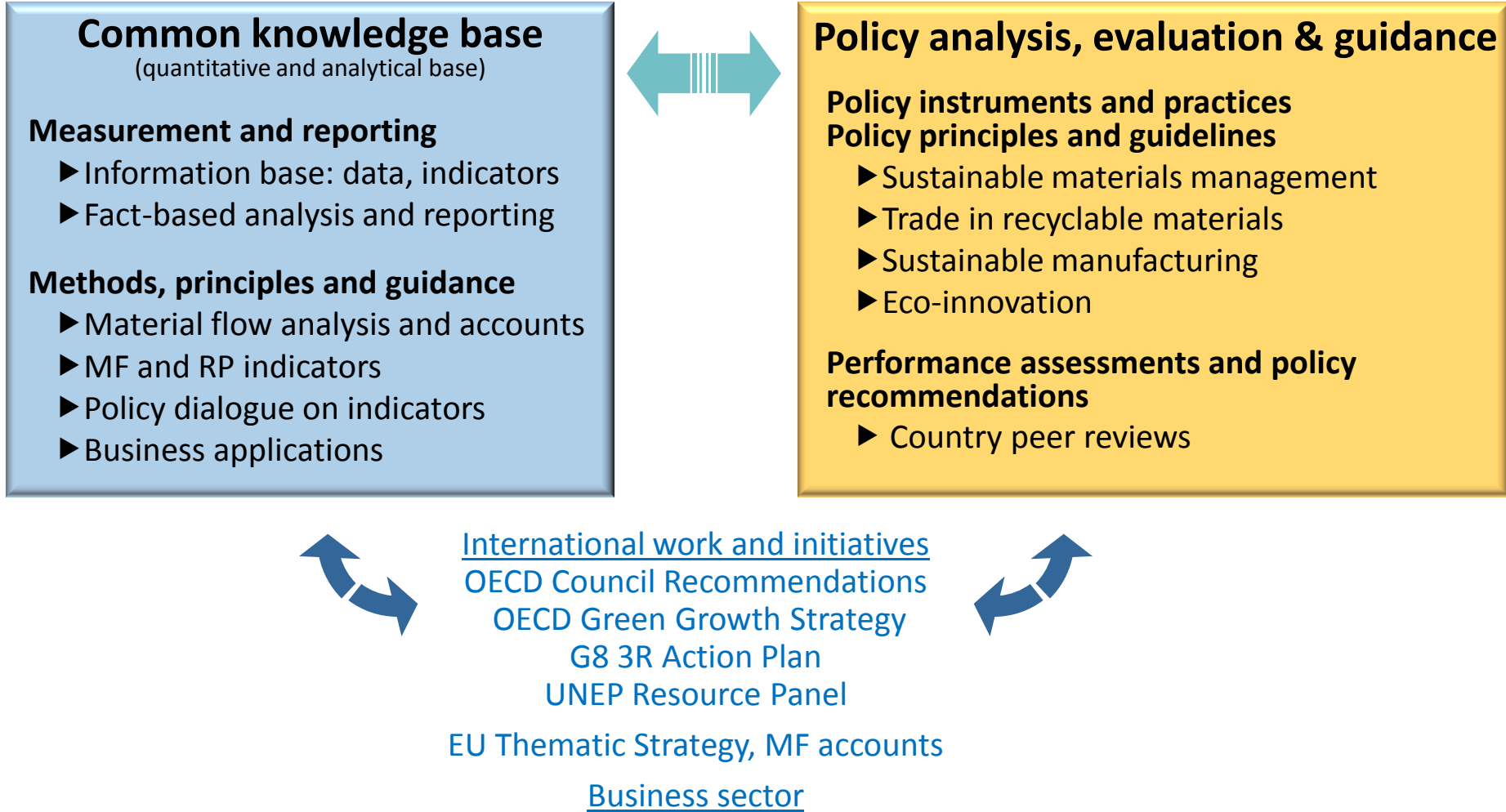
Material Flows and Resource Productivity

Objectives and mandate

- **OECD Council Recommendation (April 2004)**
 - Improve information and develop common measurement systems, including accounts and indicators
 - **OECD Council Recommendation (March 2008)**
 - Analysis of MF and environmental impacts
 - Policies for improving RP
 - **Requests by G8 Heads of State & Government**
 - **G8 3R Action Plan (Kobe, 2008)**
- ⇒ **Common knowledge base**
- ⇒ Support OECD policy analysis and evaluation
 - ⇒ Support the 3R initiative and Action Plan

Material Flows and Resource Productivity

Main streams of work and building blocks



Material Flows and Resource Productivity

A common knowledge base

Events

Outputs

- OECD Helsinki Workshop (June 2004)
- OECD Berlin Workshop (May 2005)
- OECD Rome Workshop (May 2006)

- OECD-Japan Tokyo Seminar (September 2007)
- OECD-UNEP Conference on Resource Efficiency

Quantitative knowledge base
Pilot data set

Guidance on
“Measuring material flows and
resource productivity”

Inventory of country activities

Synthesis report

From knowledge to policies

Material Flows and Resource Productivity

Series of Guidance Documents

- **Volume I: The OECD guide**
 - Accessible guide to the measurement of materials flows (MF) and resource productivity (RP)
 - **Volume II: The Accounting Framework**
 - Coherent accounting framework that links the concept of systems analysis and integrated environmental economic accounting (SEEA)
 - **Volume III: Inventory of country activities**
 - **Volume IV: Implementing national MF accounts**
 - Forthcoming, prepared jointly with Eurostat
- + Synthesis report**
- ⇒ Joint effort, contributions from MF experts, WGEIO, WGWPR, international partners, sequence of workshops

The OECD Guide

- **Contents**
 - 1. Natural resources, materials and the economy**
 - Policy context
 - Knowledge gaps and information needs
 - 2. Analysing MF: a tool for decision making**
 - Policy areas and issues to which MFA can best contribute
 - 3. Overall framework for MFA**
 - Characteristics, concepts, terminology
 - Architecture and levels of application
 - 4. Measuring progress: MF and RP indicators**
 - Desirable properties and selection criteria
 - Types of indicators and main uses
 - Guidance for use and interpretation
 - 5. Establishing the information base**

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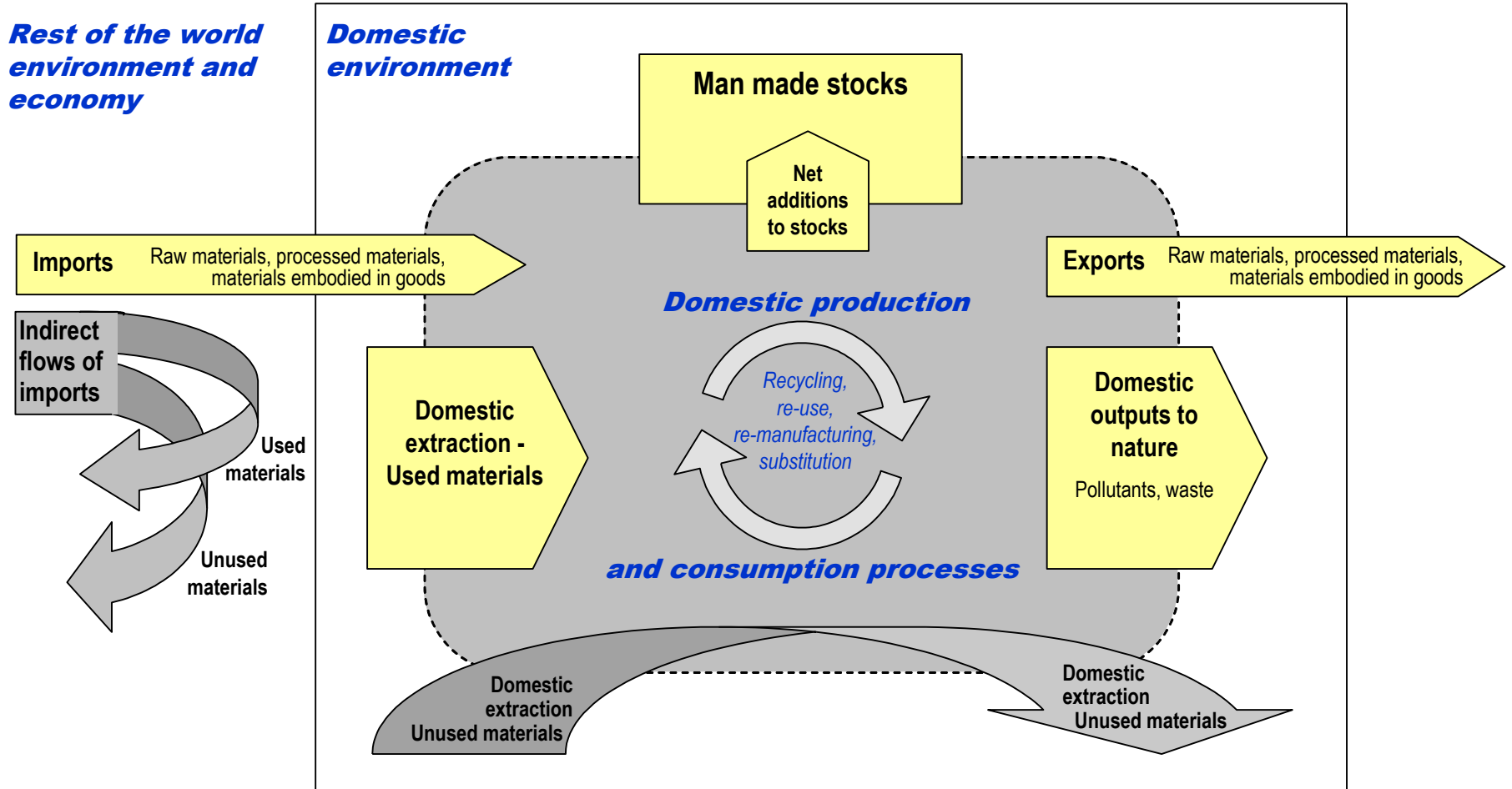
Analysing MF: a tool for decision making

- **Added value**
 - Integrated / holistic view of physical resource flows (material balance principle)
 - Capture “hidden flows” of environmental importance
 - Identify inefficient use of materials
 - Reveal shifts in material flows among and within countries
- **A family of tools**
 - Different levels of application, detail
 - Different instruments and analytical approaches
- **Policy areas to which MFA can best contribute**
 - Economic, trade, technology development policies
 - Natural resource management policies
 - Environmental policies: pollution control, waste and materials management, product policies
 - Examine trade-offs
 - Understand interrelationships

Material Flows and Resource Productivity

Overall framework for MFA

An economy-wide materials balance scheme



Overall framework for MFA

MF related analyses and issues of concern

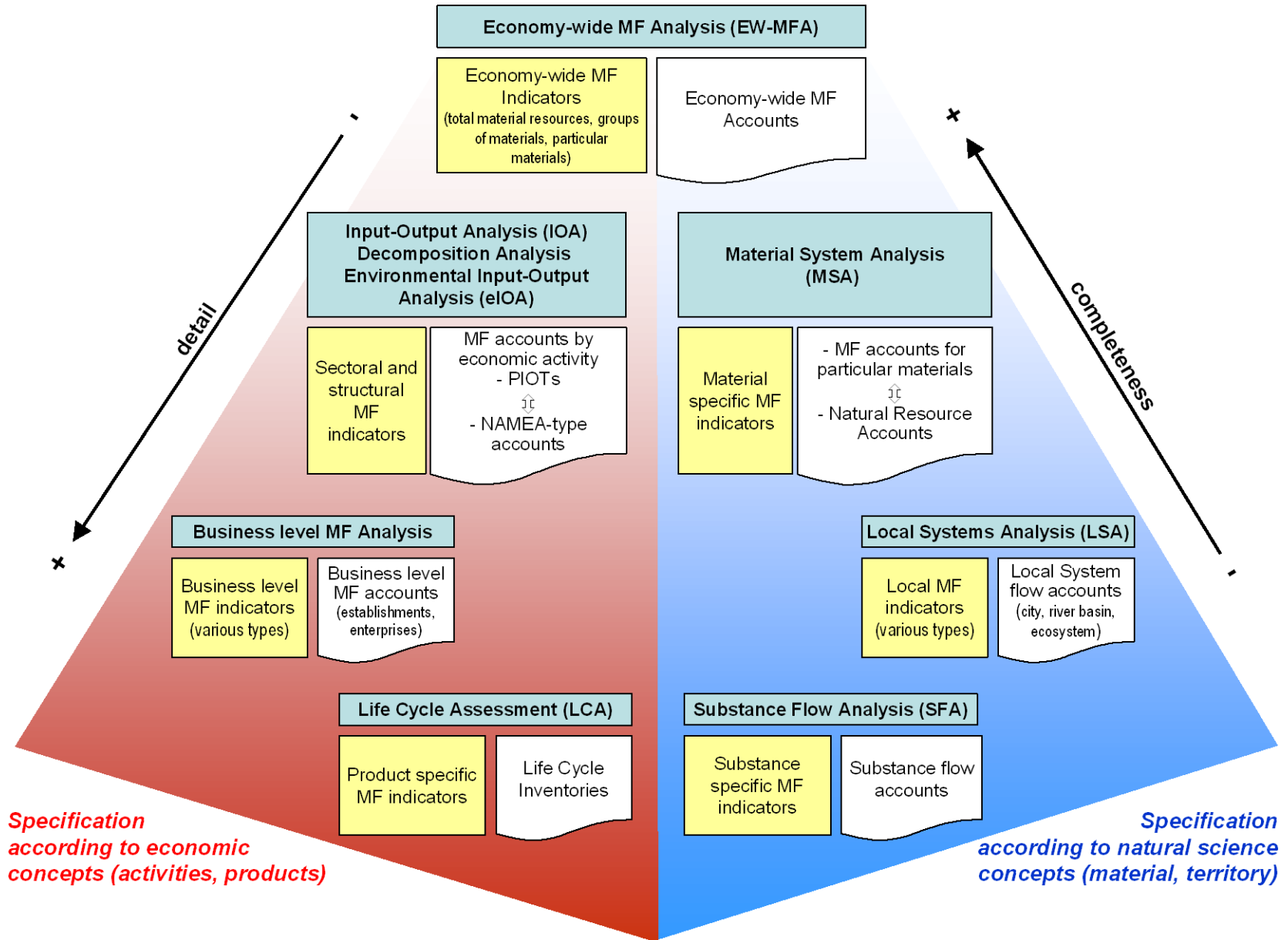
| | | | | | | |
|------------------------------------|--|---|---|--|--|--|
| Issues of concern | Specific concerns related to environmental impacts, supply security, technology development | | | General environmental and economic concerns related to the throughput | | |
| | within certain businesses, economic activities, countries, regions | | | of substances, materials, manufactured goods | | |
| | <i>associated with</i> | | | <i>at the level of</i> | | |
| Objects of primary interest | Substances | Materials | Manufactured goods | Businesses | Economic activities | Countries, regions, territories |
| | chemical elements or compounds | raw materials and semi-finished goods | e.g. batteries, cars, computers | establishments, enterprises, MNEs | e.g. chemical industry, iron and steel industry, construction, mining | aggregate mass of materials groups of materials, selected materials |
| Type of analysis | Ia Substance Flow Analysis | Ib Material System Analysis | Ic Life Cycle Analysis & Assessments | IIa Business level MF analysis | IIb Input-Output Analysis | IIc Economy-wide MF Analysis |
| Type of measurement tool | ↕ Substance Flow Accounts | ↕ Individual Material Flow Accounts ⚙ | ↕ Life Cycle Inventories (MF Inventories) | ↕ Business Material flow accounts | ↕ Physical Input-Output Tables ⚙ NAMEA-type approaches Ⓞ | ↕ Economy-wide Material Flow Accounts ⚙ |

⚙: MFA tools using the materials balance principle. Ⓞ: MFA tools using national accounting principles fully in line with the SEEA.

Source: OECD, based on Bringezu and Moriguchi 2002.

Overall framework for MFA

A multi-purpose family of tools



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Measuring progress: MF and RP indicators

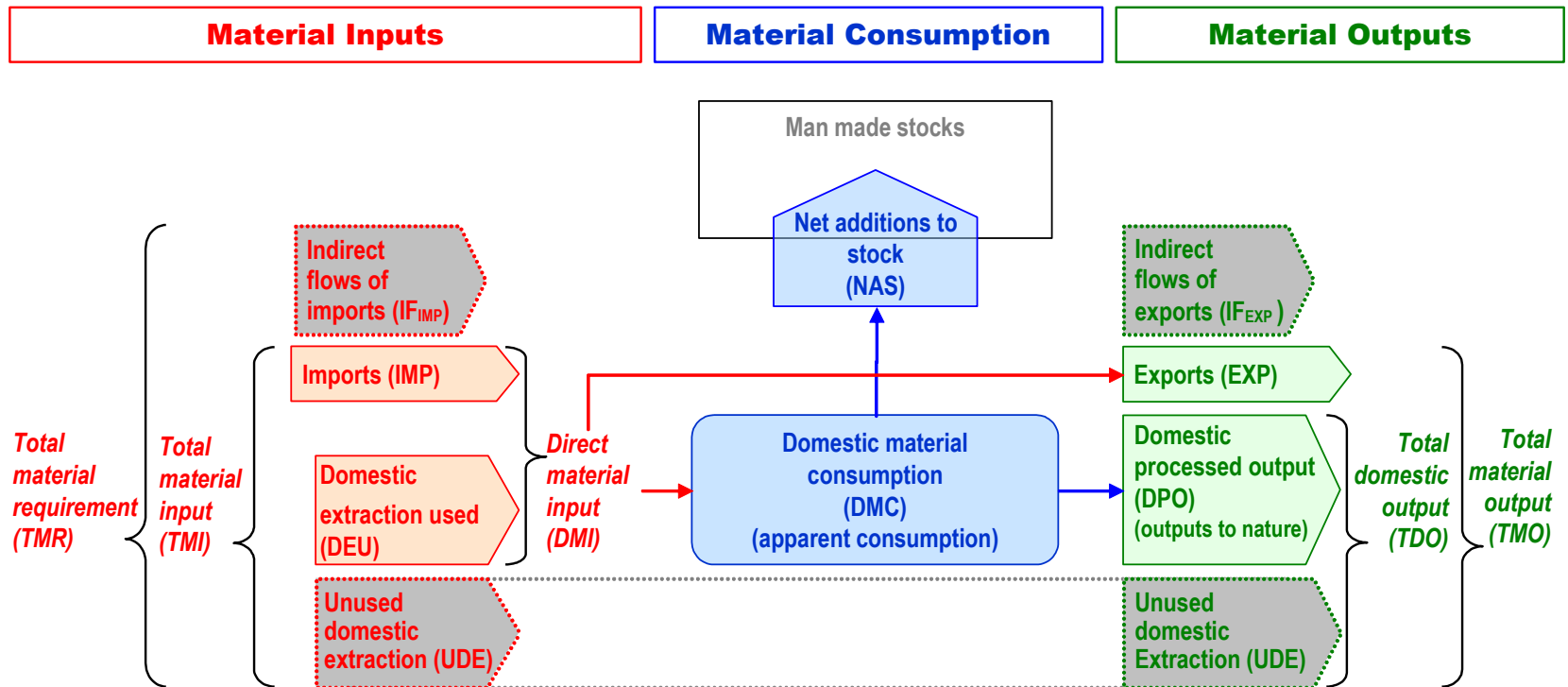
- **Functions**
 - Simplify communication of MFA results
 - Adapt results to users' needs
- **Purposes**
 - communication
 - Support decision making and performance evaluation
 - Promote policy integration and coherence
- **Selection and definition of MF indicators**
 - **Selection and validation criteria**
 - policy relevance and utility for users
 - analytical soundness
 - measurability

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Measuring progress: MF and RP indicators

- Main types of indicators

- Input indicators
- Consumption indicators
- Output indicators
- Balance indicators
- Efficiency indicators: intensities, productivity, decoupling



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Measuring progress: MF and RP indicators

- **Categories of use**
 - Monitor the material basis of economies and industries
 - Monitor the material productivity of economies and of industries
(parallel labour or capital productivity)
 - Monitor the implications of trade & globalisation for material flows
 - Monitor the management of selected resources and materials
 - Monitor the environmental impacts of material use

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Measuring progress: MF and RP indicators

- **Interpretation and use MF indicators**
 - **General principles**
 - Indicators are only one tool.
 - Indicators are not a substitute for analysis and evaluation.
 - Indicators need to be interpreted in context
 - **Enhancing the information value**
 - choosing the appropriate level of aggregation
 - using reference values
 - using synergies with other indicators
 - documenting the indicators: value, limits
 - **A balanced set of indicators that collectively give the insights needed**

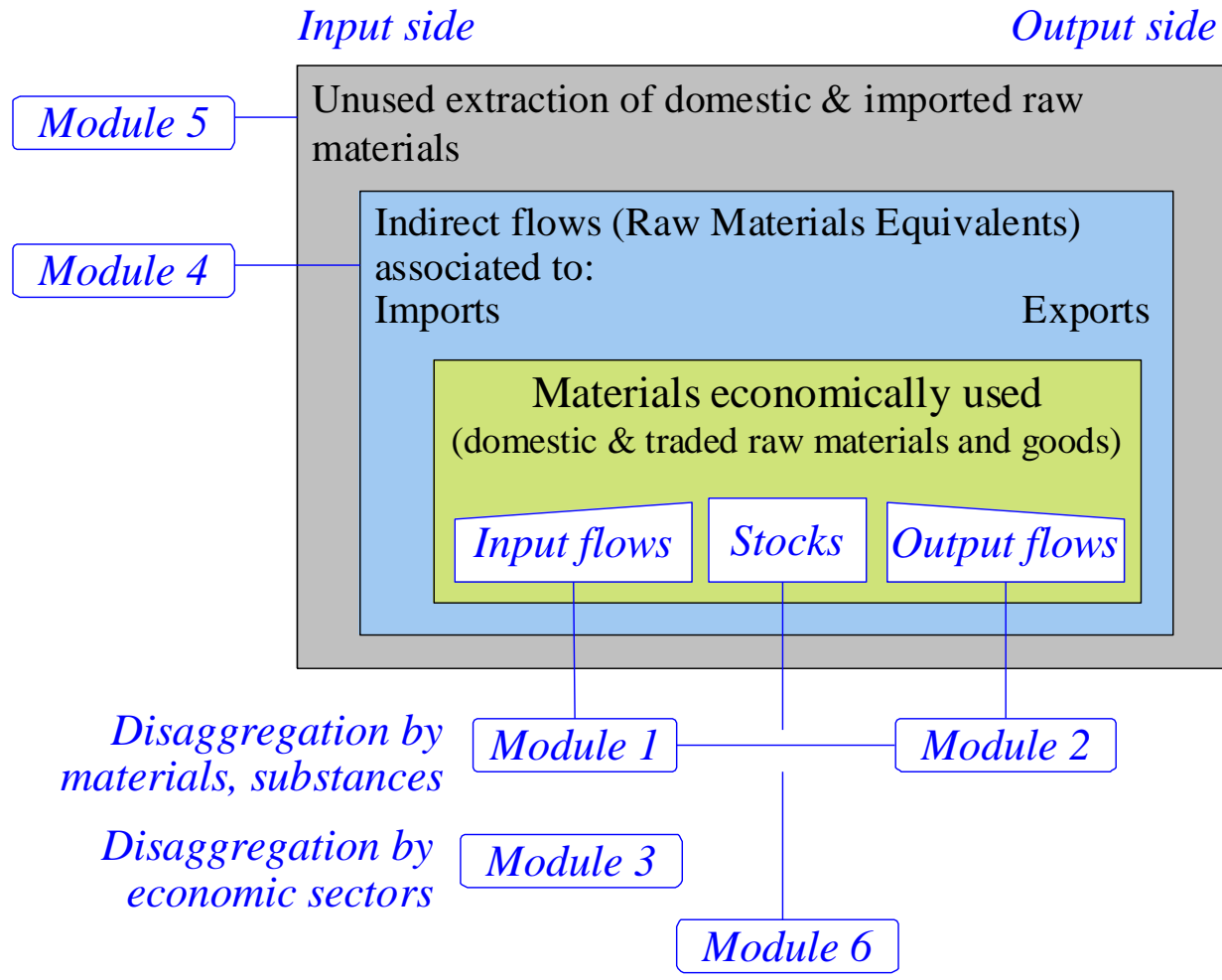
Material Flows and Resource Productivity

Establishing the information base: MF accounts

A stepwise approach

Emphasis first on the establishment of simple MF Acc to allow newcomers to join in and to demonstrate what can be achieved with modest resources.

Guidance developed jointly with Eurostat



Material Flows and Resource Productivity

Areas for progress

- **Foster the implementation of MFA and MF indicators (national, international level)**
- **Strengthen the analytical capacity**
- **Gain feedback from policy applications**
- **Further improve the knowledge base**
 - **Physical trade flows by origin and destination**
 - **Specific material flows of environmental and/or economic importance**
 - **Flows of waste, recycled materials, recyclable materials**
 - **Indirect and unused flows**
 - **Assessment of environmental impacts**
 - **Links with economic aspects and data**