

4th Meeting of the UN Committee of Experts on Environmental Economic Accounting, New York, 24-26 June 2009

### **Resource Efficiency & Resource Productivity**

International Panel for Sustainable Resource Management and other UNEP assessment related activities and their statistical data needs



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# **UN Environment Programme Thematic priorities**

- Climate change
- Disasters and conflicts
- Ecosystem management
- Environmental governance
- Harmful substances and hazardous waste
- Resource Efficiency/ Sustainable Consumption and Production



### What are we talking about?

Consuming and producing **more efficiently** and differently ...





### ... and **sharing resources** between the rich and the poor.



# **Global UN context** of SCP and resource use

- JPoI Chapter II: Poverty Eradication
  → Resource use contributing to MDGs
- JPoI Chapter III: Sustainable Consumption and Production
   → 10 year framework on SCP/ Marrakech Process/ CSD 2010-2011







Efficiency at economic level

+

Environmental dimension

=

Resource Efficiency (RE) (materials, energy, water, land & emissions)

**Reducing the environmental impact** 

of consumption and production

of goods and services over their full life cycles

 $\rightarrow$  By producing more wellbeing with less material consumption, RE enhances the means to meet human needs while respecting the ecological carrying capacity of the Earth.

**Resource Productivity:** having more value creation per resource unit (similar to Labour Productivity) – innovation needs to directed in that direction

# and global value chains



Meeting the sustainability challenge can present businesses with tremendous opportunities. As we look at ways to address issues of sustainability, new business models will emerge that will help businesses achieve more success in a resource-constrained world with more stringent stakeholder expectations.



### Increasing evidence for burden shifting Global

Global systems of production and consumption lead to rising resource extraction in developing countries....



Data from Wuppertal Institute for European situation

# **International and national** initiatives on resource use

- **OECD** has developed a programme on Material Flows and Resource Productivity
- **G8 countries, spearheaded by Japan** are implementing the Kobe action plan of the '3R' initiative aimed at reducing, reusing and recycling resources.
- European Commission has launched its Thematic Strategy on the Sustainable Use of Natural Resources.
- In addition, there are numerous national strategies aimed at closing the loop, including China's circular economy approach.







## **Global scientific activities** in relation to resource use

#### • IPCC – Climate Change due to fossil fuels

→ Impacts due to use of other resources than fossil fuels?

#### • Millennium Ecosystem Assessment

→ Linkages from observed impacts on ecosystems to unsustainable resource use?







# Resource Panel: Objectives



International Panel for Sustainable Resource Management

- Provide independent, coherent and authoritative scientific assessments of policy relevance on the sustainable use of natural resources and in particular their environmental impacts over the full life cycle
- Contribute to a better understanding of how to decouple economic growth from environmental degradation





# **Resource Panel:** Steering Committee



International Panel for Sustainable Resource Management

 Governments and other stakeholders who have expressed their interest in the partnership include:

Canada, Chile, China, Egypt, European Commission, Finland, Germany, Hungary, Italy, Japan, Mexico, the Netherlands, Norway, Russia, South Africa, Tanzania, the World Business Council for Sustainable Development (WBCSD), the International Council for Science (ICSU) and World Conservation Union (IUCN).

• Observers include: Switzerland, UK, US & OECD







# impact ...





Source: Adapted from N&M



# Achievements



International Panel for Sustainable Resource Managemen

- Mainstreaming of the Resource Panel:
  - Identified substantive issues through scientific consultation
  - Governmental and Civil Society support secured
  - 26 eminent multidisciplinary scientific experts on board
  - Working procedures (ToRs, peer review, member selection)
  - Work plan of the Panel (Reviewed at biannual meetings)
  - Four Assessment Reports underway.
- International cooperation
  - OECD-UNEP Conference on Resource Efficiency
  - Recognised by the **G8 Environment Ministers** in Kobe Action Plan.
  - World Resource Form (lead up to World Economic Forum 2010)
- UNEP
  - Governing Council Side Event (Marrakech Process, Green Economy)
  - Initiated Interdivisional Task Team in UNEP
- Information dissemination at various Global fora
  - Green Week (EC), ISIE 2009, Asia Regional Seminar on SRM

# **Understanding decoupling**





COICOP

Study

# Environmental Prioritization of

### **Products** I



International Panel for Sustainable Resource Management

Food, Mobility and Housing dominate (70 % of impacts at 50% expenditure)

Dall et al.

Source:

Journal Indust. Ecology 10:3 (2006)Labouze et<br/>aLNemry et<br/>aLNijdam and<br/>WiltingCEDA<br/>EU25CWDCWDCWDCWD

				aL	aL	Wilting	EU25
	Indicator	Energy	Energy	GWP	GWP	GWP	GWP
	Main approach	Bottom-up	Hybrid	Bottom-up	Bottom-up	10	10
CP01-02	Food	26,2%	13,0%	7,0% NA	3,6% NA	22,1%	31,0%
CP03	Clothing	1,3%	2,2%	3,3%	1,3%	6,5%	2,4%
CP04.05	Housing	40,8%	54,3%	58,8%	53,5%	33,4%	23.6%
CP06	Health		1,85		0,3%	0,3%	1,5%
CP07	Transport	19,5%	18,3%	29,6%	32,9%	17,3%	18,5%
CP08	Communication			0,0%	2,9%	0,0%	2,15
CP09	Recreation	7,2%	8,1%	0,0%		15,1%	6,0%
CP10	Education		1,85			0,7%	0,5%
CP11	Restaurants					2,8%	9,1%
CP12	Miscellaneous	5,1%	0,4%	1,3%	5,4%	1,8%	5,2%
	TOTAL	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Kok et al.





Impact = Impact / € per product x total expenditure Surface is a measure for priority Figure indicates if shift in expenditure makes environmental. sense and if 'rebounds' are possible



### **Global Metal Flows Group** - Objective and outputs -



International Panel for Sustainable Resource Management

#### **Objective:**

**Provide scientific and authoritative assessment studies on the global flows of metals** 

This might contribute to the promotion of reuse and recycling activities of metals and the establishment of closed loops.

#### **Envisaged outputs:**

Report 1 – Anthropogenic Metal Stocks (1<sup>st</sup> report ready for review) – data on in-use stocks

Report 2 – **The Recycling of Metals** (2<sup>nd</sup> report under preparation) – data on recycling rates

Report 3 – Environmental Impacts of Metal Flows

Report 4 – Geological Metal Stocks

Report 5 – Future Demand Scenarios for Metals

Report 6 – Critical Metals and Metal Policy Options



## **Recycling as one way forward**

**International Panel** 

**Resource Management** 

for Sustainable

- To tackle the waste challenge
- To increase resource efficiency
- To reduce GHG emissions







#### **UNEP/ SETAC Life Cycle Initiative**





# Activities on Life Cycle Assessment (LCA) data and methodologies



Secretariat hosted by Division of Technology, Industry and Economics and coordinated by Sustainable Consumption and Production Branch



# Data for LCA



#### Three sources:

- Industry data (provided by companies and industry associations)
- Unit process data (modeling of resource requirements based on information on technologies used)
- Data derived from Input-Output tables

#### **UNEP/ SETAC Database registry:**

- Aiming at being a focal point for information about international, sectoral, national, commercial and non commercial databases worldwide
- User survey (autumn 2008) showed that the database registry concept meets the needs of many users.
- Addressing different data sources in general, among those the ELCD/ ILCD system, Japanese LCA database, and many others, including I/O data.



## Impact Assessment indicators and methods



	Resource Efficiency	Other Env. Priorities	
Energy	Energy	Climate	Carbon
Demand (IEA)		Change	Footprint (WRI/ WBCSD, ISO)
Water Footprint (WWF/ WFN)	Water	Hazardous Substances	USEtox (SETAC)
Material Intensity (WI)	Materials	Ecosystems Biodiversity	Biodiversity Damage (IUCN)



# REEO: Resource Efficiency and Economics Outlooks I

- Project ongoing for following regions:
  - Asia Pacific
  - Latin America and the Carribean: Mercosur and Mexico
- Objective of reports:
  - Give convincing evidence to decision makers that "Resource Efficiency" policies and measures are really needed to support sustainable economic development. To do this, each report should explain first the concept of resource efficiency, the related policy decision making and then give an overview of the resource efficiency challenges in the region.



# **REEO:** Resource Efficiency and Economics Outlooks II

### • Outline:

- Resource Efficiency and Economics—What is It? Why is It Important? And how to assess it? (at the macro-, meso- and micro-level)
- Assessment and Trends of Resource Efficiency and Economics in the Region (materials, energy, water, land, emissions)
- Fostering Resource Efficiency and Economics in the Region (investments)
- Policy relevant conclusions for the implementation of Resource Efficiency at the national level in the Region (targets, monitoring, policy instruments)
- The Role of Regional and International Initiatives
- Perspectives (win-win solutions)



### UNEP Resource Efficiency and Productivity Data Scoping Workshop

- Support the science base of UNEP's work on resource efficiency by
  - establishing access to relevant databases,
  - contributing to the inclusion of relevant data in the GEO Data Portal
  - building capacity in developing countries on the collection of relevant data
  - Influencing processes such as UNCEEA so that adequate 'raw' data for Resource Efficiency and Productivity are collected

## **Towards an International virtual** data centre on Resource Intensity

- The establishment of an international virtual data centre on the resource intensity of products and services is urgently needed,
  - to monitor the success of strategies and measures to increase resource productivity, on the macroeconomic level and the level of companies and product-service-systems including the customers and consumers activities.
  - to satisfy increasing demand by policy-makers, businesses and consumers on consistent and validated data
  - to enable directionally-safe decision-making towards a more sustainable development
- Compatibility and integration with other key indicators for life-cycle wide assessments, such as those mentioned above.



### **Perspectives for the future:** Consumption, products and resources



- Consumption, products and resources just different perspectives of looking at same economic system
- With the right integrated accounting framework, one dataset could be able to serve all perspectives
- Accounting framework economic Input-Output Tables with Environmental Extensions (EE) used in probably the most far-reaching and ambitious effort today: the EU FP6 project EXIOPOL



# What could be possible in the future?

- Problem analysis:
- –What are priority consumption activities, products, production processes and resource uses?
- -What is the relation between consumption, production, and resource use? What drives what?

–What are differences in labour, capital, resource and 'emission' productivity between countries?

• Monitoring : What factors caused decoupling of impacts and economic activity in the past?

needs time series

 Foresight and scenario analysis: How will the future look like?

needs dynamic models linked to database



### For more information:

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