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TNO innovation
for life

The contribution of product policy to resource efficiency

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Presentation Elements

- › Priorities
- › The relation between consumption of products and resource use
- › How product policy can contribute



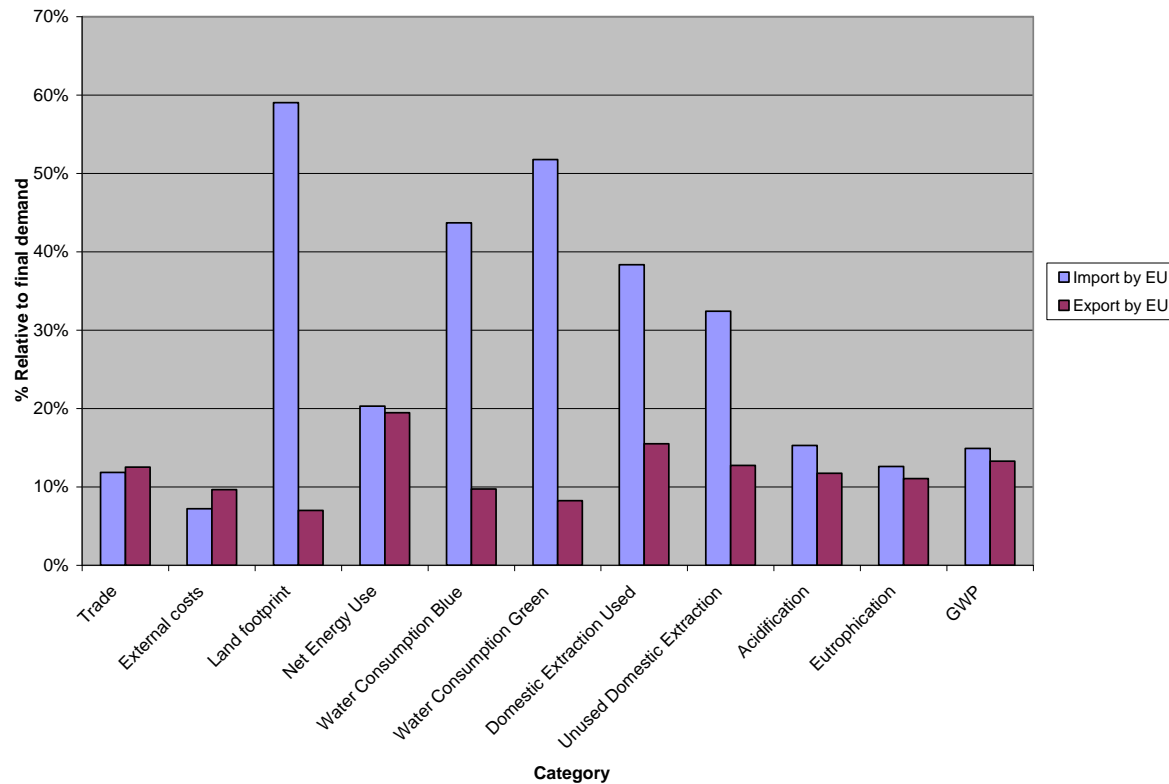
Impacts: pressures of final consumption per capita (EXIOPOL results)

Impact type	Unit	Final demand /cap	Import/ cap	Export/ cap
External costs	Euro	1191	86	115
Land footprint	km2	1,7	1,0	0,1
Net Energy Use	GJ	113	23	22
Water Consumption Blue	m3	767	335	75
Water Consumption Green	m3	4446	2301	367
Material Extraction Used	Ton	17,0	6,5	2,6
Unused Material Extraction	Ton	13,8	4,5	1,8
Acidification	kg SO2 eq.	64,2	9,8	7,5
Eutrophication	kg PO4 eq.	8,2	1,0	0,9
GWP	Ton CO2 eq.	12,5	1,9	1,7

N.B. GWP includes unlike the Eurostat data non CO2 GHG



Displacement: Europe displaces its burden abroad (EXIOPOL results)





The (usual) priorities: buildings, food, mobility

- For water, land, energy and material footprints
- EXIOPOL product groups giving 60-80% for each footprint

		Footprints					
		Land footprint	Net Energy Use	Water Consumption Blue	Water Consumption Green	Domestic Extraction Use	Unused Domestic Extraction
		ha	TJ	m3	m3	kt	kt
B	Construction (45)	8,3%	8,9%	4,1%	4,2%	21,4%	11,0%
B	Health and social work (85)	2,4%	4,5%	2,3%	2,4%	2,8%	3,3%
B	Production of electricity by coal	0,1%	3,2%	0,0%	0,0%	1,7%	12,0%
B	Public administration and defence; compulsory social security (75)	2,2%	3,9%	1,6%	1,8%	3,2%	3,4%
B	Manufacture of furniture; manufacturing n.e.c. (36)	4,1%	2,3%	0,9%	1,2%	2,6%	1,9%
B	Manufacture of machinery and equipment n.e.c. (29)	1,4%	3,1%	0,8%	1,0%	2,5%	3,7%
B	Real estate activities (70)	1,3%	2,7%	1,1%	1,1%	2,4%	2,9%
C	Manufacture of textiles (17)	1,8%	1,0%	2,9%	3,3%	0,9%	0,8%
C	Manufacture of wearing apparel; dressing and dyeing of fur (18)	1,9%	1,3%	2,2%	2,6%	1,0%	1,0%
F	Hotels and restaurants (55)	15,0%	3,9%	20,5%	19,7%	5,4%	3,6%
F	Cultivation of crops nec	4,2%	0,3%	16,8%	13,4%	2,6%	0,4%
F	Processing of Food products nec	5,8%	1,0%	5,2%	6,0%	1,9%	1,2%
F	Processing of dairy products	2,2%	1,1%	3,9%	3,5%	1,6%	1,4%
F	Processing of meat poultry	2,8%	1,0%	2,8%	2,8%	1,4%	1,2%
F	Cultivation of vegetables	2,8%	0,7%	1,7%	1,8%	2,3%	2,5%
F	Processing of meat cattle	1,5%	0,5%	2,9%	2,6%	0,9%	0,5%
F	Manufacture of tobacco products (16)	1,6%	0,2%	3,1%	3,0%	0,5%	0,2%
M	Manufacture of motor vehicles	2,1%	4,9%	1,3%	1,7%	3,4%	5,3%
M	Manufacture of motor spirit (gasoline)	0,4%	1,5%	0,3%	0,4%	3,1%	2,0%
O	Manufacture of chemicals and chemical products (24)	1,7%	5,8%	1,7%	1,7%	3,0%	2,6%
O	Retail trade	2,2%	3,3%	2,3%	2,3%	2,5%	2,7%
O	Wholesale trade and commission trade	1,6%	2,7%	1,7%	1,7%	2,0%	1,9%



All resource extraction is activated by consumption

	Products	Industries			
Products		Use	Final use	Exports	Use of products
Industries	Make / Supply				Output of industries
	Imports cif	Value added			
	Supply of products	Input of industries			
		Extensions: - Primary Natural Resource input - Emissions output - etc.			

- › The economic system ('Supply and use tables')
- › Final use = consumption
- › Usually of products made by industries
- › That use (intermediate) products..
- › ..and extract resources



How we can enhance societal resource efficiency

	Products	Industries			
Products		Use	Final use	Exports	Use of products
Industries	Make / Supply				Input of industries
	Imports cif	Value added			
	Supply of products	Input of industries			
		Extensions: - Primary Natural Resource input - Emissions output - etc.			

Apply new technology and end of pipe
= 20-50%, factor X

Develop green products & service systems
= 20-50%, factor X

Change consumption
= Intensifying use: Factor 2
= Expenditure on non-material cons: Factor 2
= Better QoL per Euro: Several factors

Invest green
= several factors (system innovation)



How we can enhance societal resource-efficiency

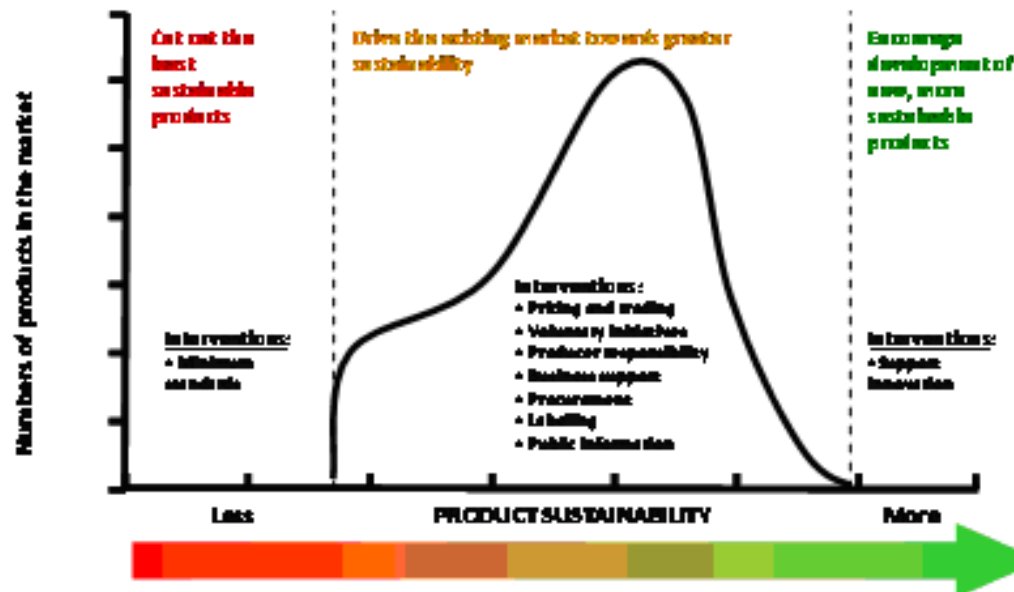
Production side <i>Eco-efficiency strategies</i>		Consumption side <i>Sufficiency strategies</i>		

Mining and Production	Products and services	Use of products and services	Expenditure mix	Quality of life realised
<i>New technology and end of pipe</i>	<i>Greening products and service systems</i>	<i>Intensifying use ('PSS')</i>	<i>Enhancing immaterial consumption</i>	<i>Improving QoL/Euro spent</i>
<i>20-50% Factor X</i>	<i>20-50% Factor x</i>	<i>Factor 2</i>	<i>Factor 2</i>	<i>Factor 2-4</i>
<div> <div>↑</div> <div>Invest green</div> <div>←</div> </div>				



What policy packages you can put in place

- › Within Europe – restricted to product quality and production practices in Europe



- › For products from outside Europe:
 - › only product quality ! (e.g. energy efficiency, the WTO problem)
 - › Some interesting 2nd best solutions, based on voluntary labelling and industry action (e.g. 40% certified coffee in NL)
- ›



What we see in terms of coverage of problems by EU policy

- › Energy use: good (EuP/Ecodesign directive, CO2 standards for the car fleet)
- › Hazardous content: good (RoHS, REACH, Limitation Directive)
- › End-of life aspects: good (ELV, WEEE, Packaging and other Directives)
- › Land, Abiotic Material use, Biotic Material Use, Water: ABSENT
- › And as indicated, Europe imports (embedded in products or direct)
 - › >60% of its land
 - › > 40% of its water
 - › > 35-40% of its materials
 - › > 50% of fish
- › And here we have the WTO limits.....



Policy messages

- › Decouple
 - › Consider 'Beyond GDP' growth
 - › Enhance immaterial consumption
 - › Intensify use of products ('PSS business models')
 - › Green products (EuP, labeling, etc.)
- › Maximize policies on products
 - › Minimum standards
 - › Incentives for 'top runners'
- › Develop ways of setting process quality standards related to imports!
 - › Either the 2nd best option of voluntary action, bilateral agreements etc.
 - › ...or, really changing WTO....