



Eco-innovation and its role for resource efficiency

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A Cerro Tololo Sky (Chile)
Credit: Roger Smith, AURA, NOAO, NSF

The Eco-Innovation Observatory

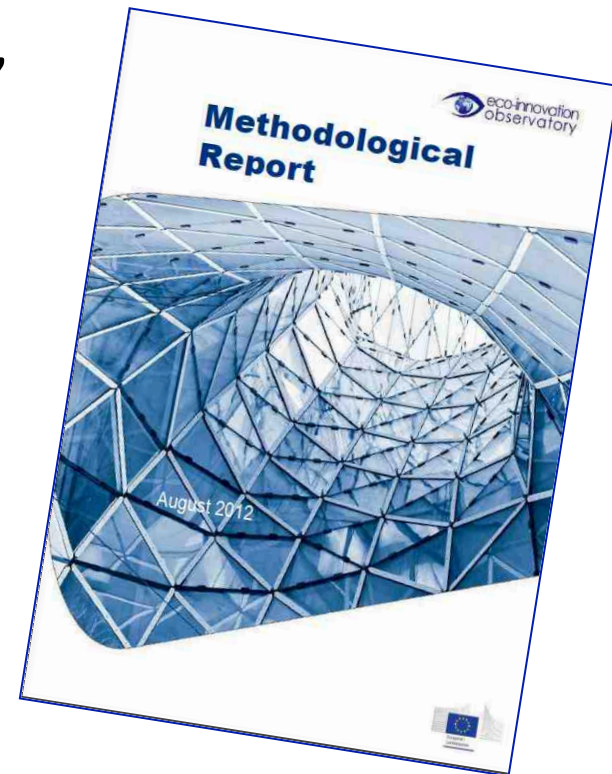
- Integrated information platform on eco-innovation for business, policy makers and researchers
- Supports the EU's Eco-Innovation Action Plan (Eco-AP)
- Financed by the European Commission (DG Environment)
- Duration: EIO 2009-12; EIO+ September 2013 - June 2014
- Partners: Technopolis Group (leader), Wuppertal Institute (DE), SERI (AT), University of Turku (FI) and C-Tech Innovation (UK)



Setting the scene: What is eco-innovation?

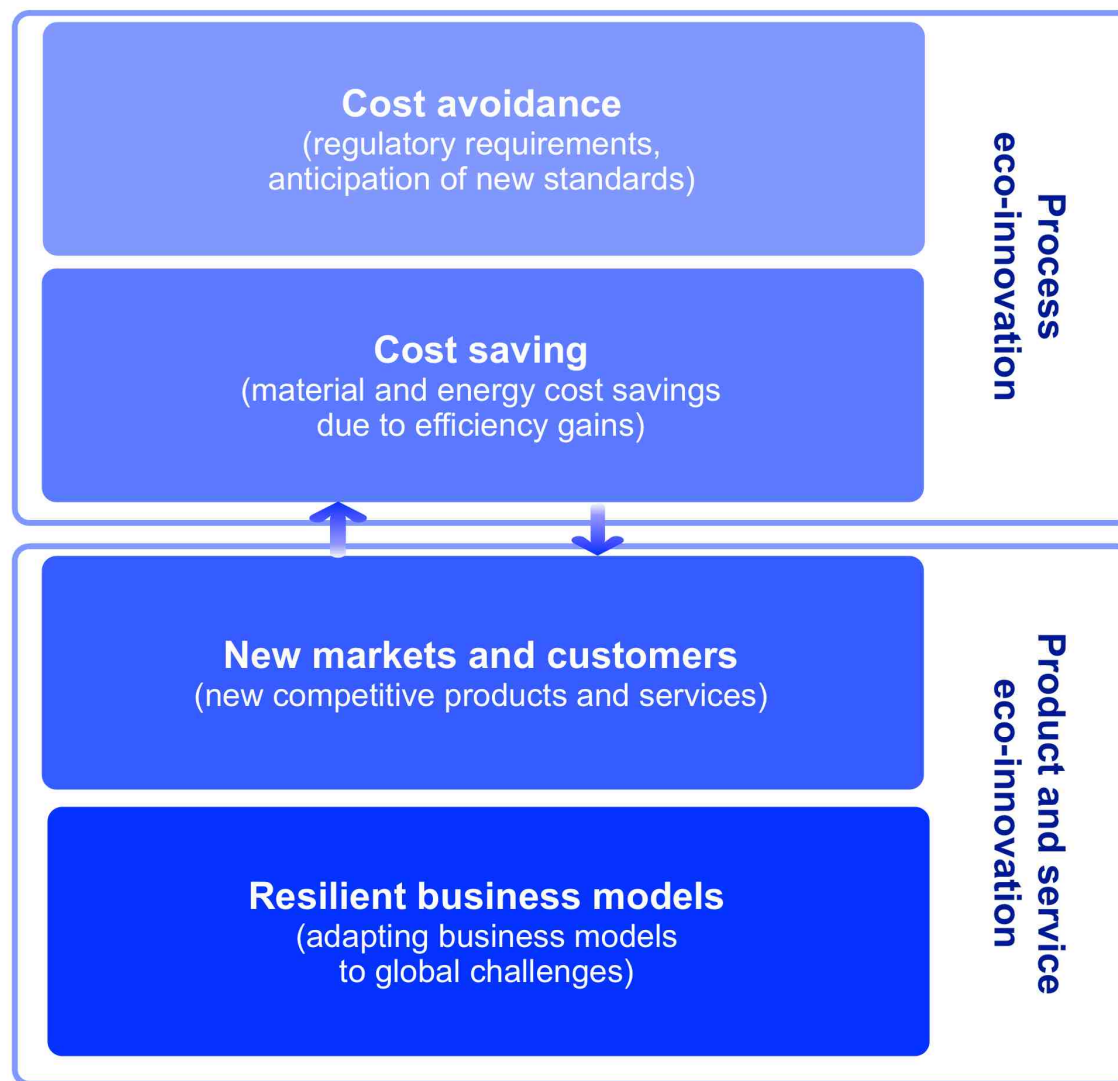
Eco-innovation is any innovation that reduces the use of natural resources (including materials, energy, water, biomass and land) and decreases the release of harmful substances across the whole life-cycle.

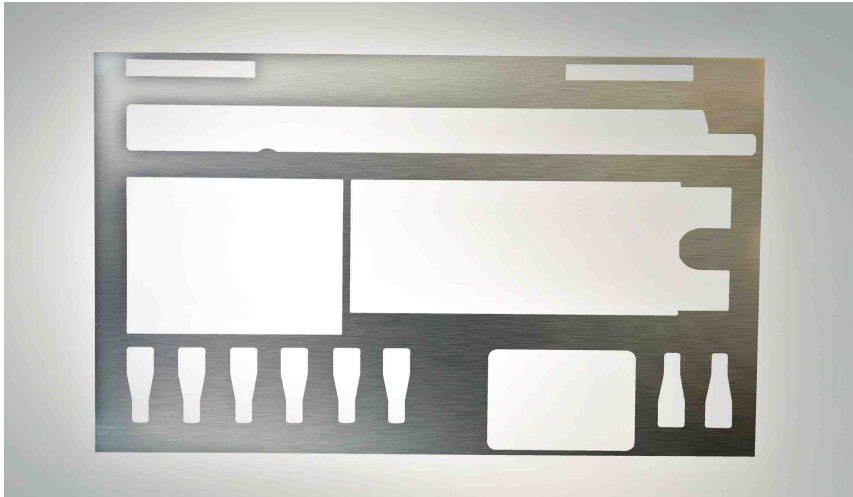
Source: EIO, November 2010





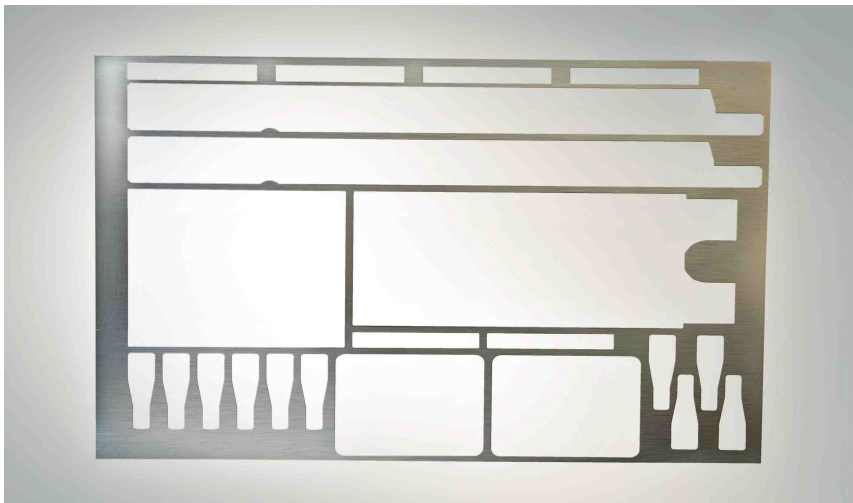
Seizing the potential of eco-innovation: The story of quick and slow wins





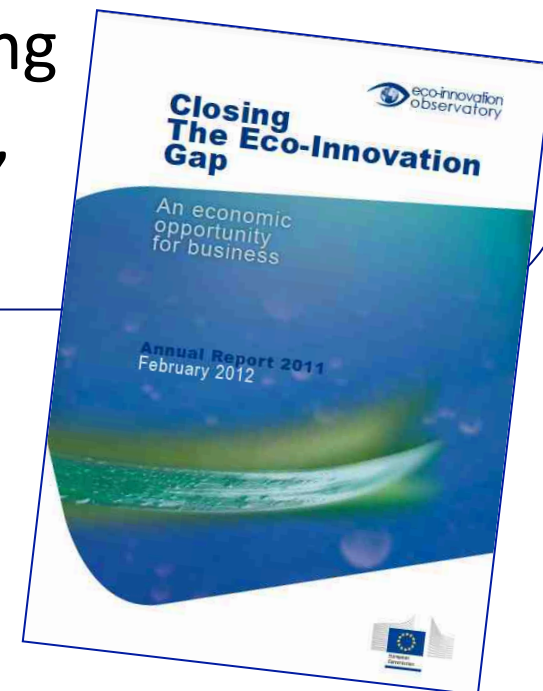
Deutsche Mechatronics GmbH (DE):
Intelligent shuffling for blanking sheet metal

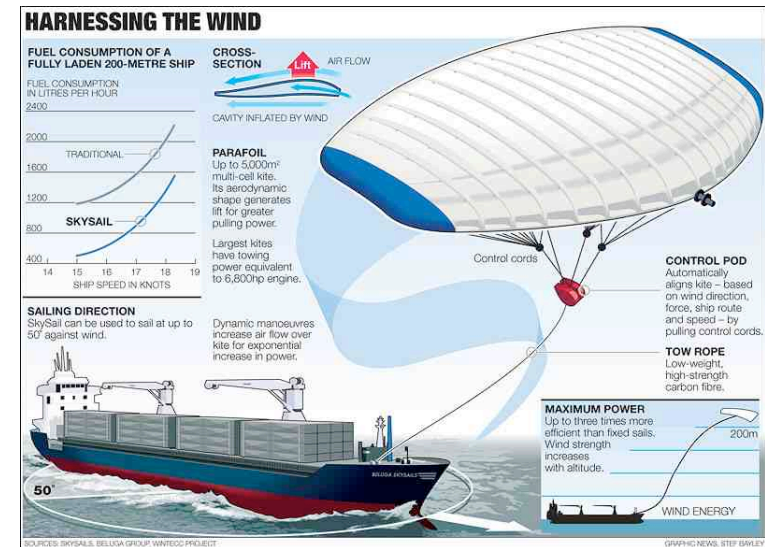
Deutsche Mechatronics processes up to 40 tonnes of sheet metal daily. The company implemented an intelligent shuffling of the ordered parts in order to avoid inefficient cuts. A consulting support from demeas led to a 12% reduction of the material use. Deutsche Mechatronics GmbH won the German Material Efficiency Prize (EIO 2012).



Blanked metal sheets before (top photo) and after (bottom photo) intelligent shuffling

On average, companies supported by demea (DE) saved **€196,000 annually** (or **2.3% of their annual turnover**) as a result of material efficiency improvements. The innovation investment paid off within **13 months** following the start of the process (EIO 2012, based on demea).





SkySails GmbH: thinking out of the box

The system can reduce a ship's average annual fuel costs by 10 to 35%. Under optimal wind conditions, fuel consumption can temporarily be cut by up to 50%. The worldwide use of SkySails technology would make it possible to save 150 million tons of CO₂ a year, an amount equivalent to about 15% of Germany's CO₂ emissions.



Villo (Brussels): bike sharing

GO2: Dioxyde de Gambettes (Brussels)



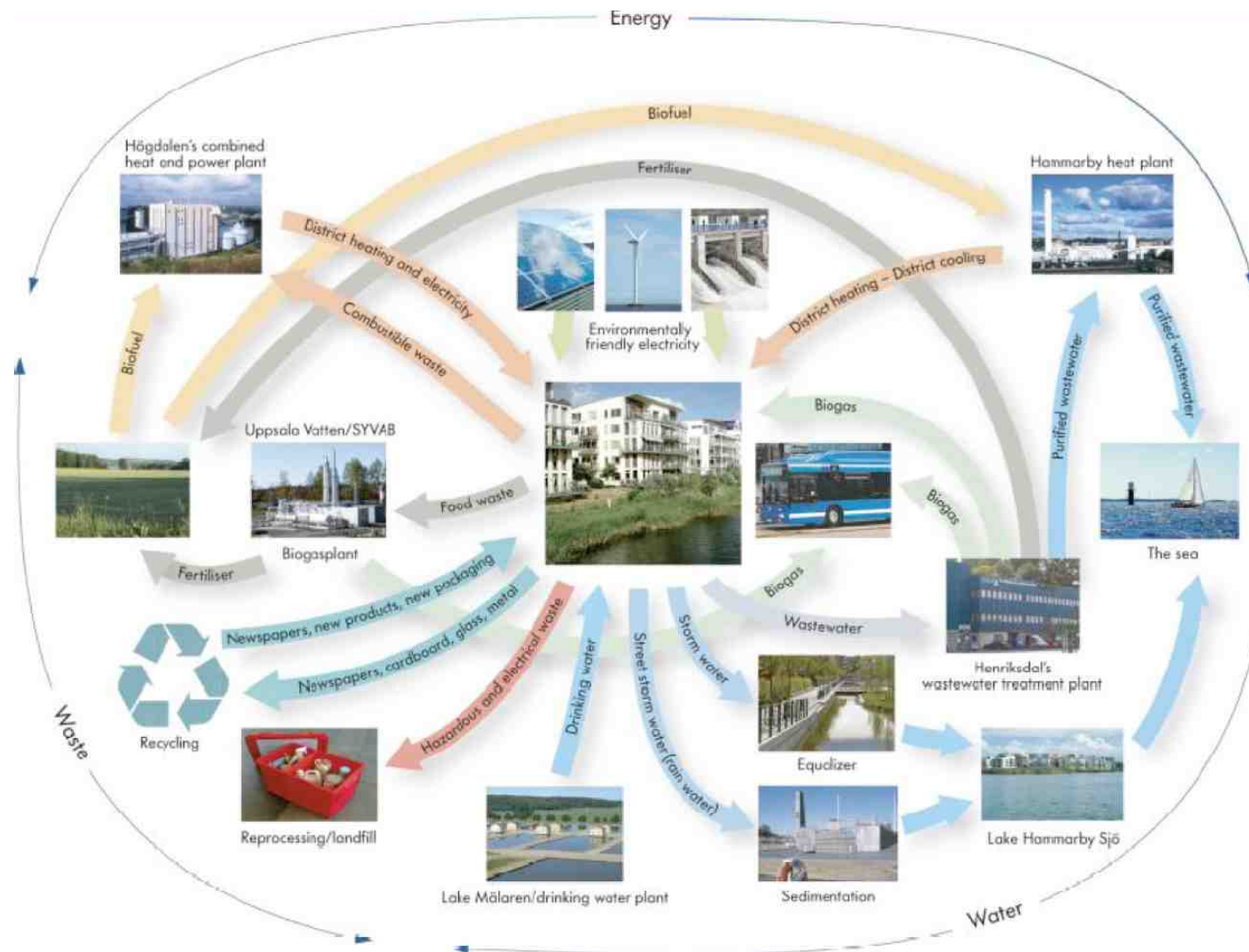


LorryRail (Luxembourg/France)



City of Curitiba (Brasil)

Urban ecology: the Hammarby Model, Sweden



Source: GlashusEtt (2012)
Hammarby Sjostad –
PowerPoint presentation

Quick wins

- low-risk eco-innovation with well demonstrated benefits for business (e.g. energy and material efficiency)
- material efficiency improvements, if pursued without an overall vision and targets, unlikely to result in wider societal and environmental benefits

Slow wins

- long-term medium- to high-risk innovation strategy requiring strategic partnerships and commitments
- system eco-innovation has a higher potential to achieve wider societal and environmental benefits

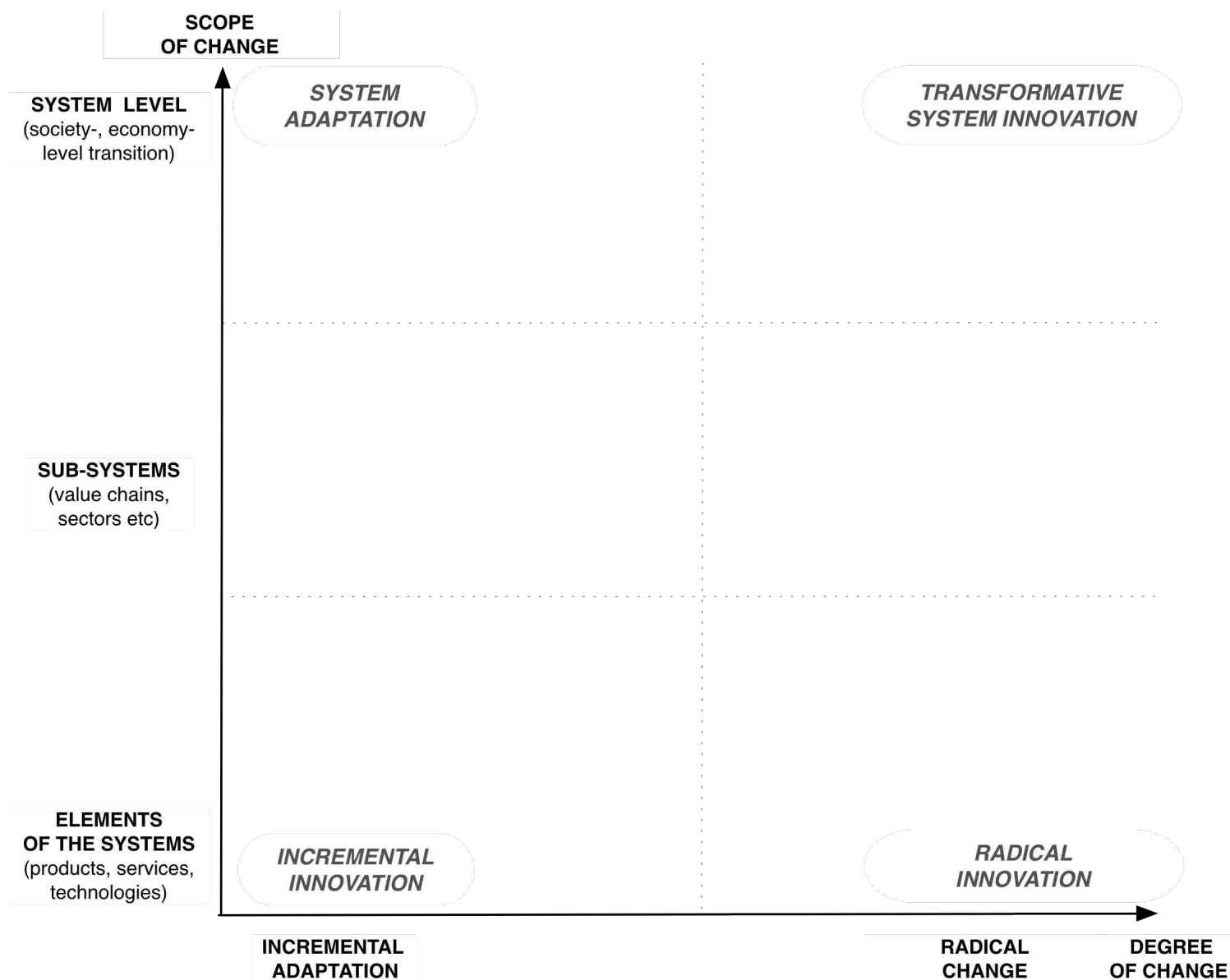


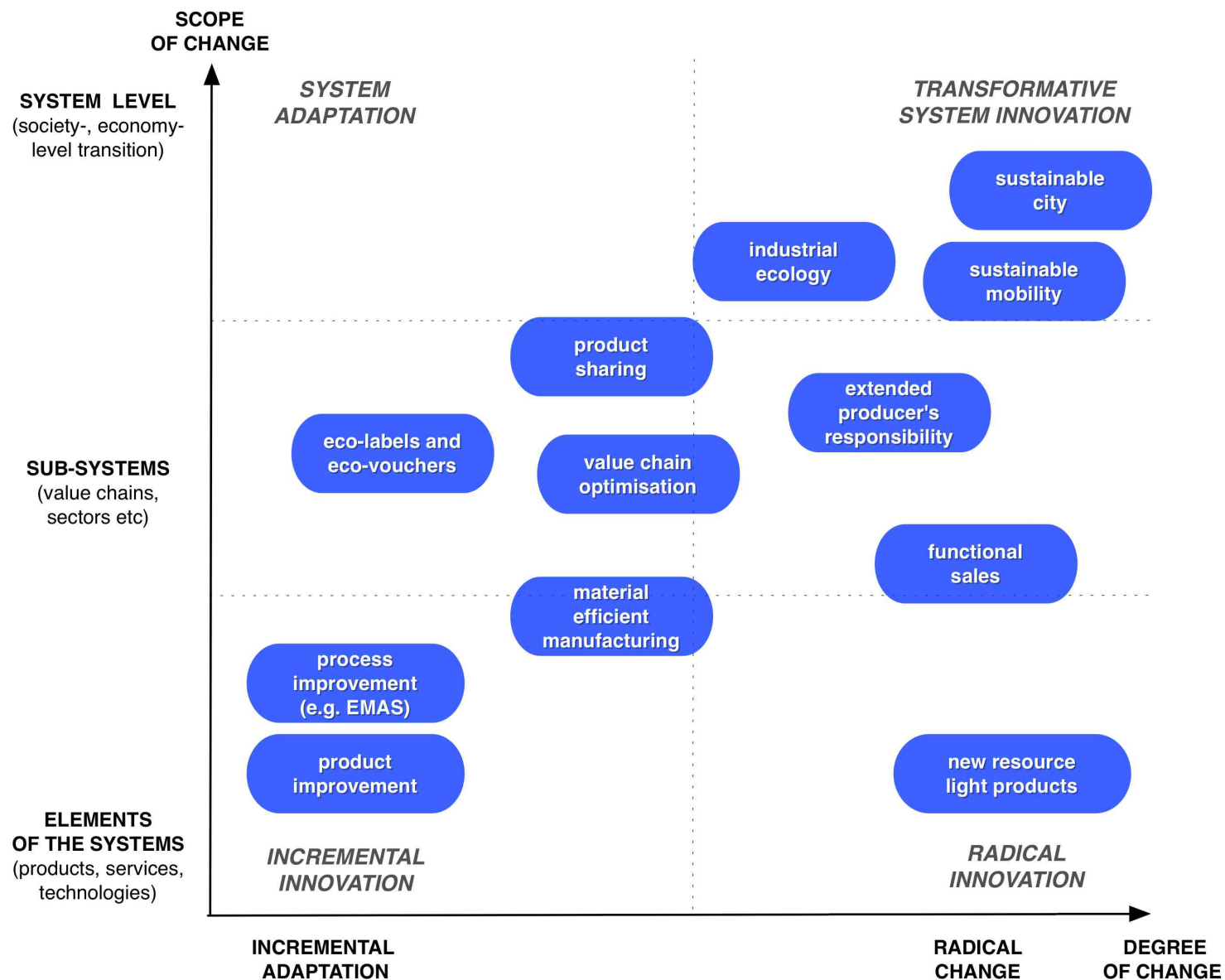
System eco-innovation for systemic change

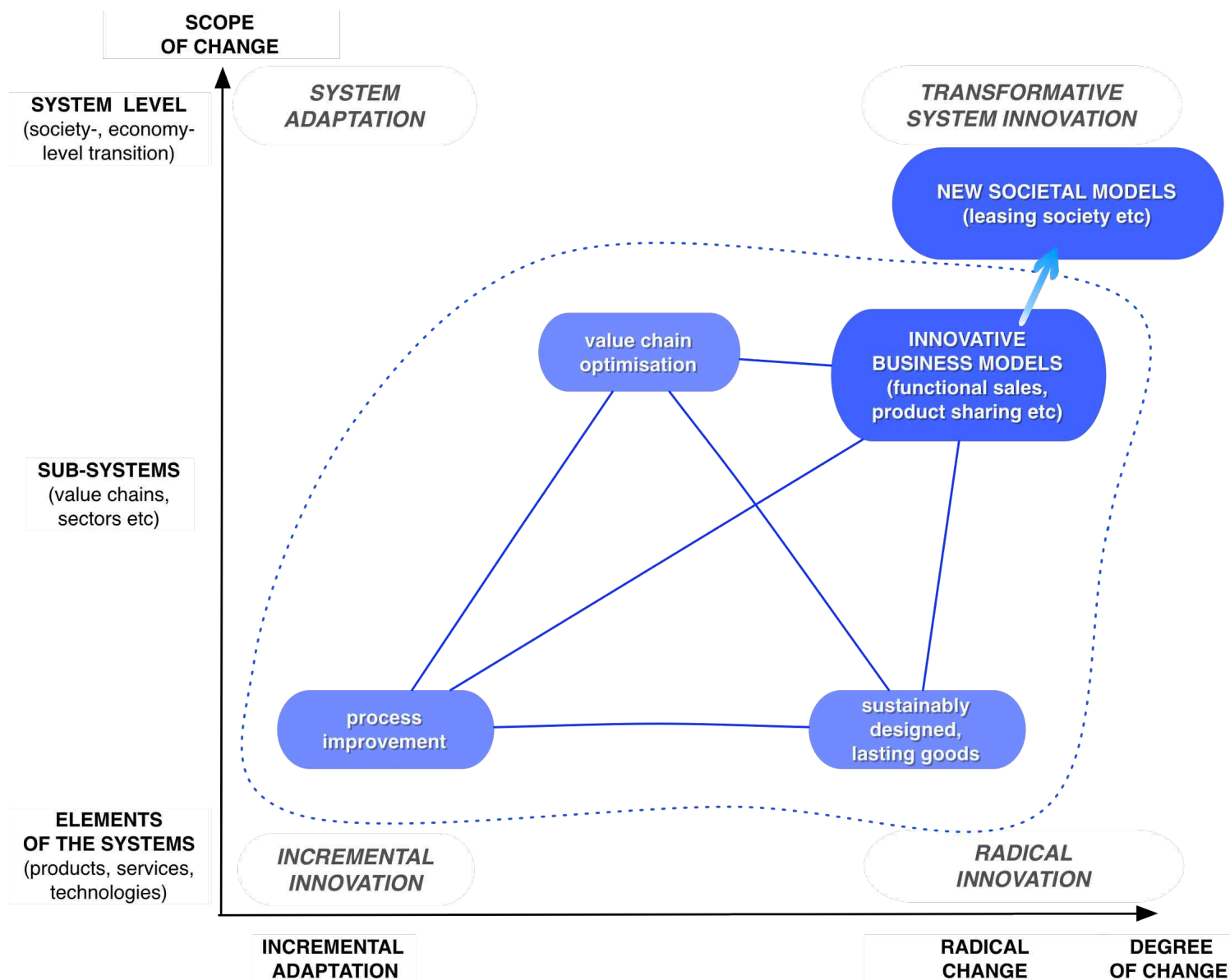
System eco-innovation is a series of connected changes modifying or creating novel functional systems that result in the reduced use of natural resources and the decreased release of harmful substances across the whole life-cycle (EIO 2012).

Examples:

- sustainable mobility
- industrial and urban ecology
- product-service systems (e.g. product sharing)



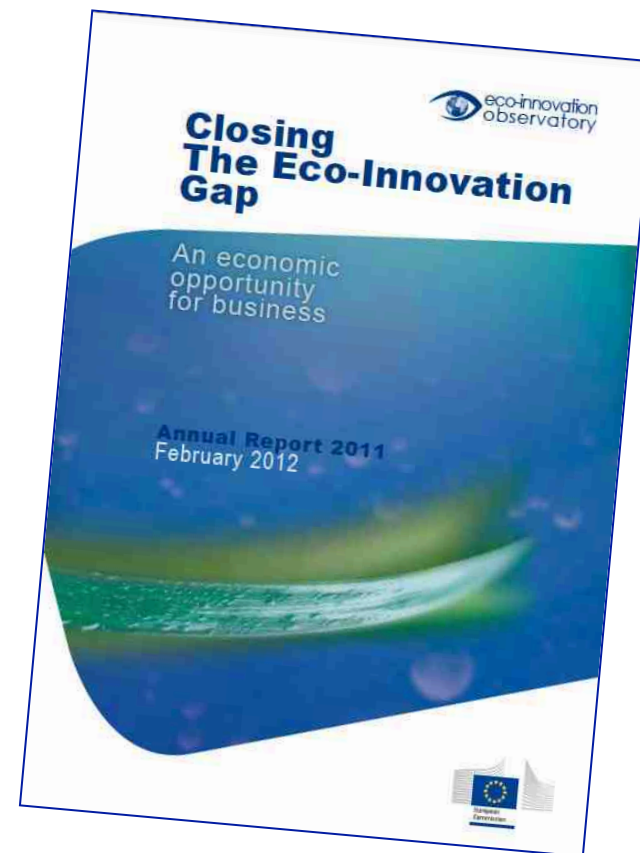






Towards a systemic eco-innovation policy?

Eco-innovation policy aims to support development, implementation and diffusion of innovations resulting in a long-term sustainability.



General findings from EU27 policy mapping

- All EU MS offer public support for eco-innovation, but the ambition and scope of policy measures substantially differ between countries
- Support provided most often to eco-industries and environmental technologies; growing interest in material efficiency and rare focus on system innovation
- Nordic and Western EU MS have more ambitious and diversified eco-innovation policy portfolios
- Evidence of wider impact of eco-innovation support is very limited and fragmented

Three orientations

Policy orientations	Main objectives	Type of eco-innovation supported
Environmental technologies	• ENV: protect the natural environment by reducing pollution and waste streams from production • ECON: increase competitiveness and create jobs in eco-industries through production and diffusion of environmental technologies	Mainly incremental technological and process eco-innovations.
Eco-efficiency	• ENV: protect the natural environment by reducing the use of energy and resources in production and consumption (life cycle approach) • ECON: increase competitiveness and economic growth by decreasing material and energy costs of companies in all relevant sectors	Technological and non-technological eco-innovations. Support for new disruptive technologies, but without realisation of systemic impacts.
System eco-innovation	• ENV: improve the relationship between human activity and eco-systems by reconfiguring production and consumption patterns (eco-system services perspective) • ECON: increase sustainable competitiveness and economic development by developing radical eco-innovations and creating new markets	Systemic (transformative and radical) eco-innovations focussed on e.g. value chain management, re-designing cities, industrial ecology, new business models providing alternative solutions (e.g. product service systems)

Two pillars

- **Framework conditions:** to establish a framework for eco-innovation activity (level playing field) and to set an overall direction of change (including binding environmental targets)
- **Direct support:** to support resource productivity improvements in business and society as well as to promote development and implementation of more radical and systemic eco-innovation

Typical eco-innovation measures in the EU

- Supply-side measures

- Most common: R&D funding, business advisory services for SMEs
- Less common: VC funds, public guarantee funds
- Very rare: tax incentives for dedicated eco-innovation R&D activities and support for R&D personnel training and recruitment

Typical eco-innovation measures in the EU (2)

- Network and system linkages
 - Most common: support for eco-industry or environmental technology clusters, competence centres, science and technology parks, technology platforms;
 - Less common: market intelligence gathering

SUPPLY SIDE MEASURES

Group of policy measures	Type of policy measure	Austria	Belgium	Bulgaria	Cyprus	Czech Rep	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	UK
Equity/business support	Venture capital funds	X		X			X	X	X	X	X			X		X				X	X			X	X		X	X
	Public guarantee funds			X	X			X	X	X	X	X				X		X	X	X	X	X				X	X	
Support for R&D in public sector and industry	R&D funding	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X				X	X	X
	Collaborative grants	X	X	X	X				X	X	X	X		X		X	X	X	X							X	X	X
	R&D infrastructure	X	X	X	X		X	X	X	X	X	X			X										X	X		
Fiscal measures	Tax incentives for R&D and start-ups			X														X		X								
	Tax incentives for R&D personnel																	X										
Education, training and mobility	Tailored training courses for companies, entrepreneurs	X	X	X	X		X			X	X		X	X			X	X								X	X	X
	Advise/consulting for start ups, companies, entrepreneurs		X	X			X	X	X	X	X	X	X	X	X			X					X			X	X	X
	Placement schemes for students	X							X				X					X									X	X
	Support for R&D workers recruitments				X			X					X	X				X									X	
Promoting networks and partnerships	Competence centres, clusters, science-technology parks	X	X		X	X	X	X	X	X	X	X	X	X	X			X		X	X	X	X		X	X	X	X
	Technology platforms and innovation networks	X	X	X		X	X		X	X	X	X	X	X	X			X			X	X	X			X	X	X
	Foresight and common vision building	X	X		X		X	X	X		X	X		X			X	X	X	X	X	X	X			X	X	
	Market intelligence and other forms of information sharing	X	X	X		X	X	X		X	X	X		X	X							X					X	X

Typical eco-innovation measures in the EU (3)

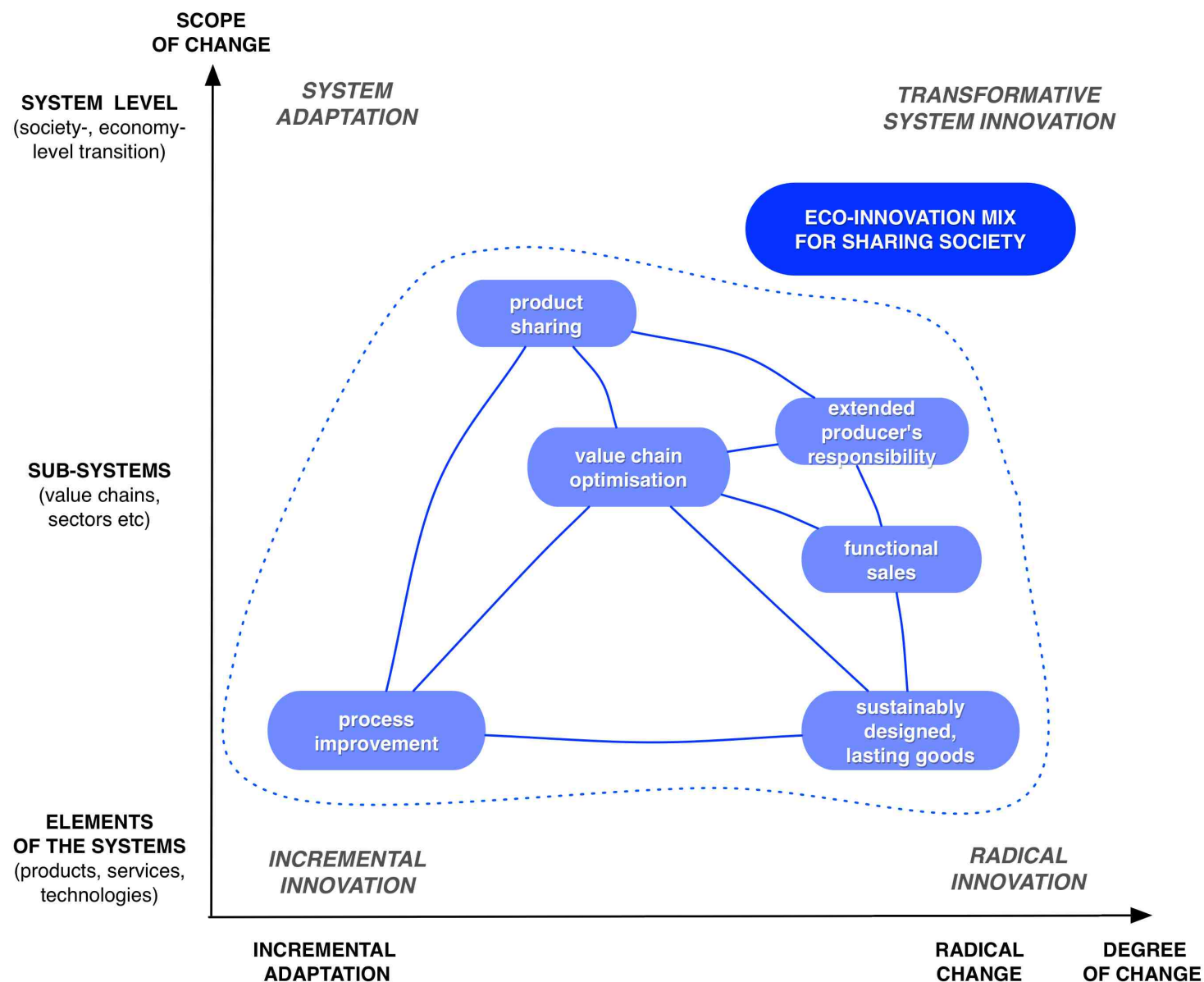
- Demand-side measures:

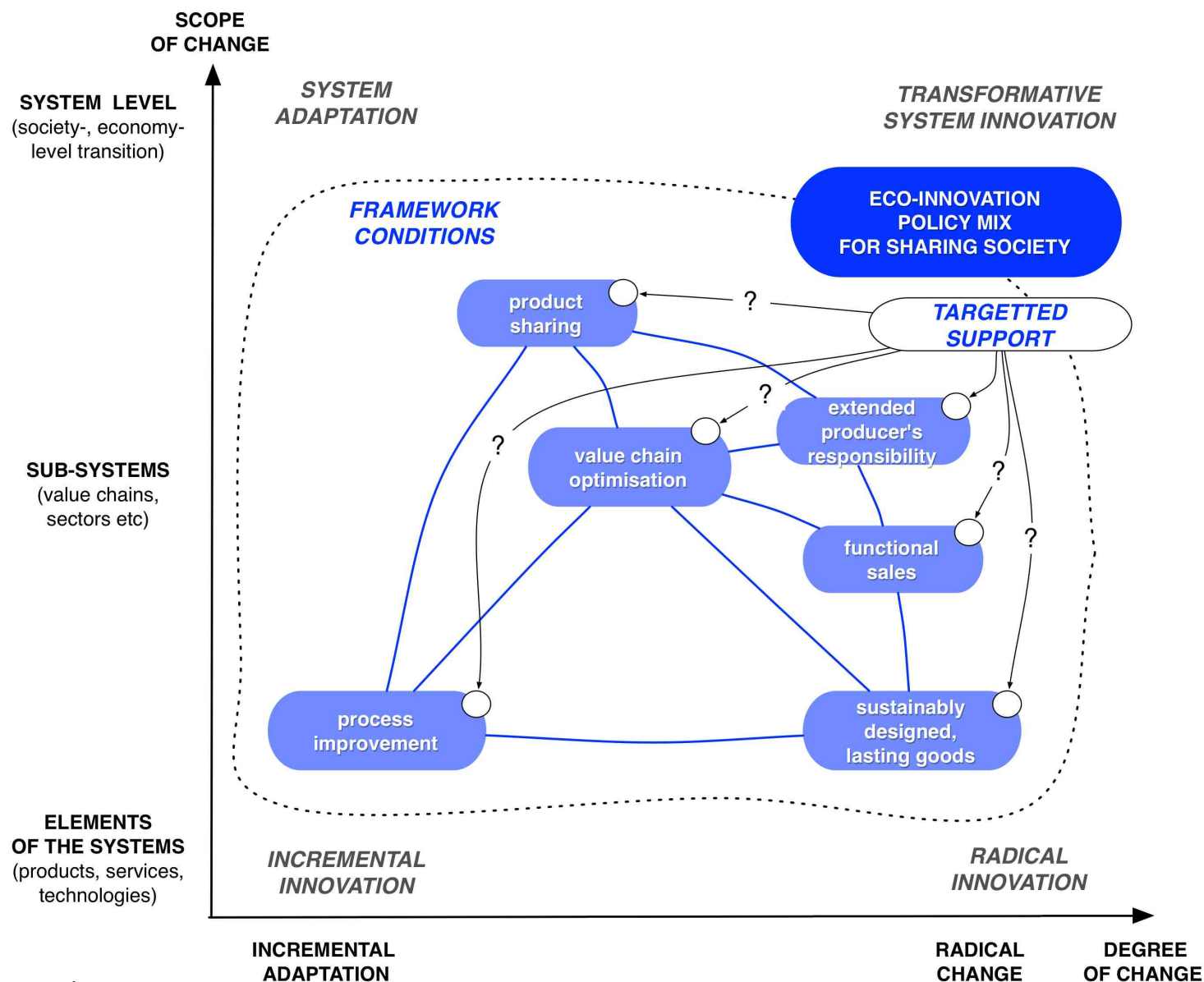
- Most common: environmental regulations, Green Public Procurement, standards and certification, awareness raising campaigns, financial & fiscal support for environmental technology adopters
- Less common: tax incentives for “green” goods and services (VAT, PIT); demand subsidies (e.g. eco-vouchers)
- Very rare: R&D and innovation procurement

	Group of policy measures	Type of policy measure	Austria	Belgium	Bulgaria	Cyprus	Czech Rep	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	UK	
DEMAND-SIDE MEASURES	Regulations and standards	Regulations, targets, cap & trade schemes	X	X	X		X	X	X	X		X		X	X	X		X	X		X		X	X		X	X	X		
		Performance standards, labelling, certification	X	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X	X	X	X		X	X	X	
	Public procurement	"Green" public procurement of goods and services	X	X	X	X	X	X	X	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	
		R&D procurement							X	X						X					X									
		Pre-commercial procurement	X																											
	Technology Transfer	Advisory support for technology adopters	X	X				X	X	X	X	X	X		X				X					X		X			X	
		Financial or fiscal support for technology adopters (e.g. grants for purchasing new technology)	X	X			X	X	X	X		X	X	X	X	X	X	X		X		X		X	X		X	X	X	
	Support of private demand	Tax incentives for consumers (e.g. for purchasing environmentally efficient products)	X	X			X	X				X				X	X				X	X		X				X	X	X
		Tax reductions for products and services (e.g. VAT reductions)						X									X	X			X		X					X	X	
		Demand subsidies (e.g. eco-vouchers, consumer subsidies)	X	X							X		X				X			X			X			X	X			
		Awareness raising and information provision	X	X	X	X	X	X	X	X	X			X	X		X	X	X	X	X	X		X	X		X	X	X	X

Source: EIO (2012)

Note: based on the EIO country briefs. See www.eco-innovation.eu/countries for full version of country reports.





Towards a systemic eco-innovation policy

- Need to assure **a level playing field** for eco-innovators based on fair pricing of natural resources and the removal of public subsidies for unsustainable activities
- Policy to support both “quick and slow wins” provided it includes **long-term targets offering a general direction for the short-term actions**
- Need to **dynamically adapt the policy mix** providing support for functionally connected incremental and radical eco-innovations

The EIO website

- Reports, briefs and interactive presentations
- EU27 country profiles
- Database with on-line charts and maps
- 200+ eco-innovation practices from across Europe
- Glossary and more



www.eco-innovation.eu



Thank you!

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