

ICTs and the environment: Perspectives and policies

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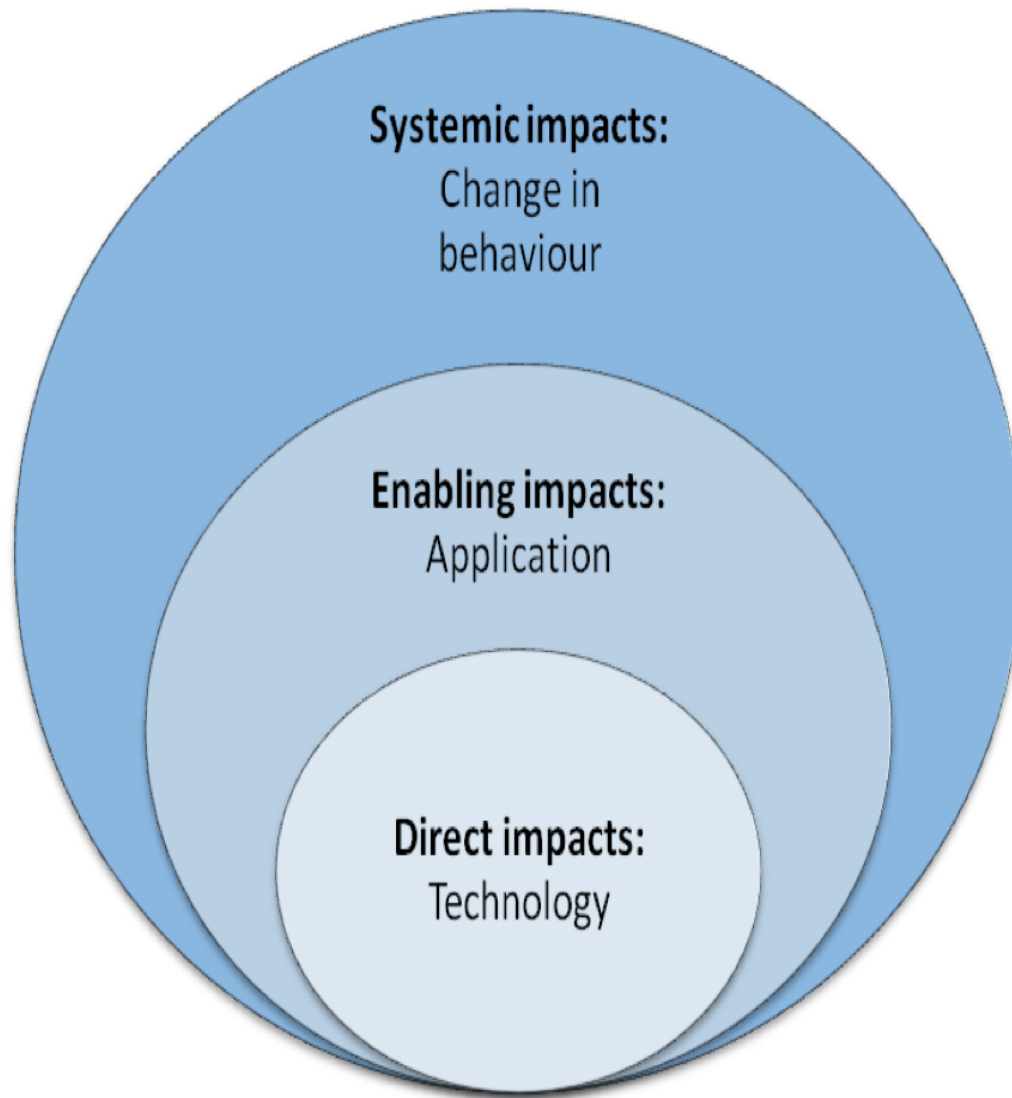
The framework: ICTs and the environment

- Smart information and communication technology applications can improve the environment and tackle climate change.
- Applications in manufacturing, energy, transport and buildings, sustainable consumption and greener lifestyles.
- But economies and populations continue to grow, with accelerating global rates of production and consumption. Innovative modes of production, consumption and living will play key roles in addressing environmental challenges.
- Governments have a major role in both improving the environmental performance of their ICT-related activities and in encouraging the wider application of ICTs

The framework: ICTs and the environment

- **Direct effects:** ICT R&D and innovation to improve environmental performance of ICTs. Reducing energy use and waste generation
- **Enabling effects:** “Smart” ICT applications to increase efficiency in buildings, urban systems, transport, logistics, electricity systems, production, distribution and consumption
Sensors and sensor networks to improve performance. Online ‘digital’ delivery
- **Systemic behavioural change: Substantially** change peoples’ behaviour over time and space

Framework for green ICT impacts



ICTs and the environment: some examples

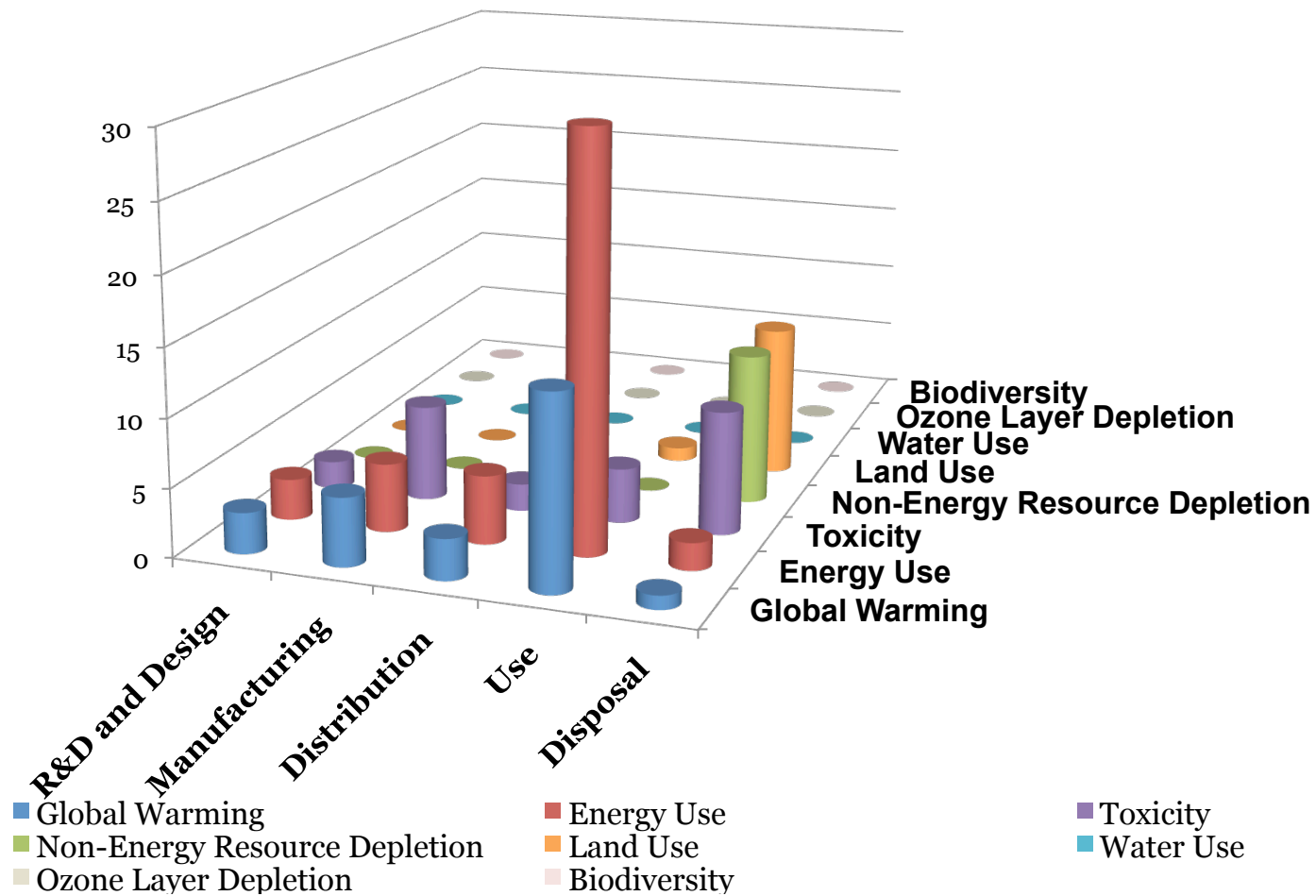
- **Direct effects:** ICT producers affect the natural environment during the production of ICT hardware, components and services and in their operations (*e.g.* operating infrastructures, offices, vehicle fleets). Consumers can choose energy-efficient and certified “green” ICT equipment and return equipment for re-use, recycling, etc.
- **Enabling effects:** *Optimisation:* ICTs can reduce another product’s environmental impact, *e.g.* embedded systems for fuel-efficient driving, “smart” electricity distribution networks, and intelligent heating and lighting systems.
- *Dematerialisation and substitution:* Digital replacement of products and processes.
- **But Induction:** ICT products increase demand for other products. And *Degradation:* *E.g.* “smart” tags in car tyres, bottles and cardboard require specific recycling.
- **Systemic behavioural change:** Positive environmental outcomes of green ICT applications largely depend on wide end-user acceptance and lifestyle adjustments.
- *Providing and disclosing information:* Access to and display of data inform decisions by households (*e.g.* “smart” meters), businesses (*e.g.* choice of suppliers, verifying “green” claims), and governments (*e.g.* emission allowances, territorial development).
- *Enabling dynamic pricing and fostering price sensitivity:* Electricity customers can turn on non-critical devices when cheap renewable energy is plentiful.
- *Fostering technology adoption:* Digital music, communications and teleconferencing.
- *Rebound effects:* Macro “rebound effects” can offset micro efficiency gains. *E.g.* a 30% more efficient technology does not necessarily yield 30% total energy savings.

Government and industry: Reviewing 92 government programmes and industry initiatives in 2009

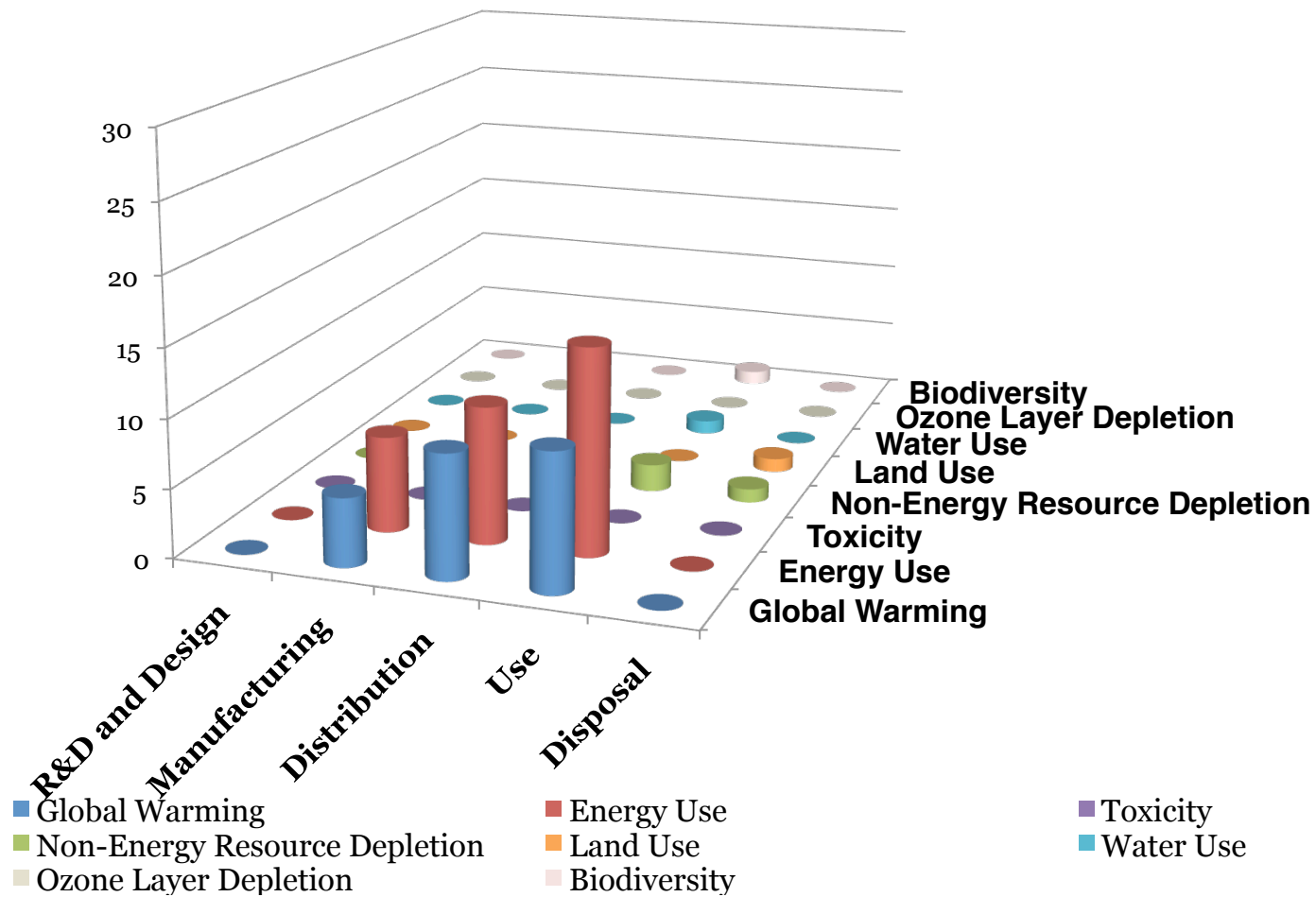
- Programmes and initiatives classified by:
 - **Type of effect:**
 - direct effects* of ICTs (first order effects)
 - enabling effects* through ICT applications (second order effects).
 - **Environmental impact areas:**
 - Global Warming, Energy Use, Toxicity, Resource Depletion, Land Use, Water Use, Ozone Layer Depletion, Biodiversity.*
 - **Life cycle phases:**
 - R&D and Design, Manufacturing, Distribution, Use, Disposal*

Source: OECD, *Towards Green ICT Strategies*, 2009.

Focus areas of government initiatives targeting **direct** effects



Focus areas of government initiatives targeting **enabling** effects



Measurement and evaluation

- Few initiatives have implemented measurable targets for the evaluation of their policies or programmes.
- Governments provide measurable indicators more frequently than industry associations.
- Efforts are being made to develop and promote instruments to measure the quality and impacts of policies and programmes.

Green ICTs: International context

- Policies to promote **enabling** environmental impacts
 - Major element of national economic crisis responses
 - Increasing international importance
 - OECD high-level conference, Denmark, 2009
 - OECD Green Growth strategy, ongoing
 - ITU, IGF, World Bank, EC activities
- Policies to limit **direct** environmental impacts
 - Life cycle approaches, government procurement, etc.
 - OECD Council Recommendation adopted April 2010

The OECD Recommendation – 10 points

- **Coordinating ICT, climate, environment and energy policies**
- **Adopting life cycle perspectives**
- **Supporting research and innovation in green technologies and services**
- **Developing green ICT skills**
- **Increasing public awareness of the role of ICTs in improving environmental performance**

OECD Recommendation – 10 points (cont.)

- **Encouraging best practices**
- **Governments leading by example**
- **Improving public procurement**
- **Encouraging measurement**
- **Setting policy targets and increasing evaluation**

OECD Recommendation – implementation

OECD countries invited to disseminate the Recommendation throughout public and private sectors, and encourage participants to take the necessary steps to better harness information and communication technologies to tackle environmental challenges and to improve their environmental performance

Non-OECD countries invited to adhere to the Recommendation and collaborate with OECD countries in implementation

More information

- **ICT, the environment and climate change:**
 - www.oecd.org/sti/ict/green-ict
- **OECD Information Technology Outlook at:**
 - www.oecd.org/sti/ito
- **ICT industry, ICTs, growth and jobs, digital content:**
 - www.oecd.org/sti/information-economy