ITU-KCC Symposium on Progressing the Climate Agenda Through Green ICT Standards

Green IT Strategies and Practices for a Sustainable Europe

Roadmap: "ICTs and Environmental Sustainability"

September 19th 2011

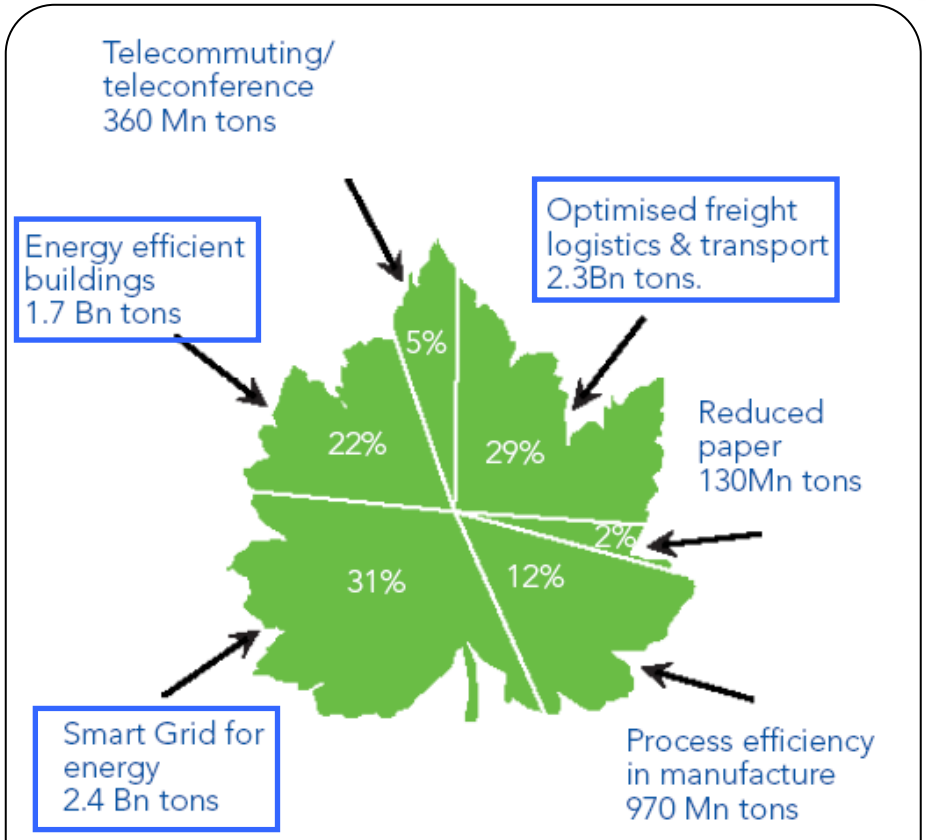
Pierre Chastanet

ICT for Sustainable Growth
European Commission
Information Society and Media Directorate-General

Energy Reductions enabled by ICT

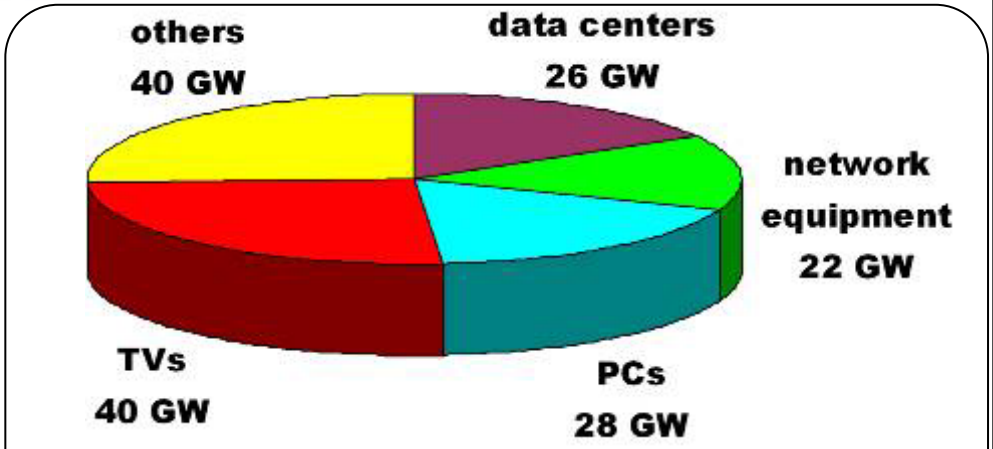
Energy Consumption of ICT solutions

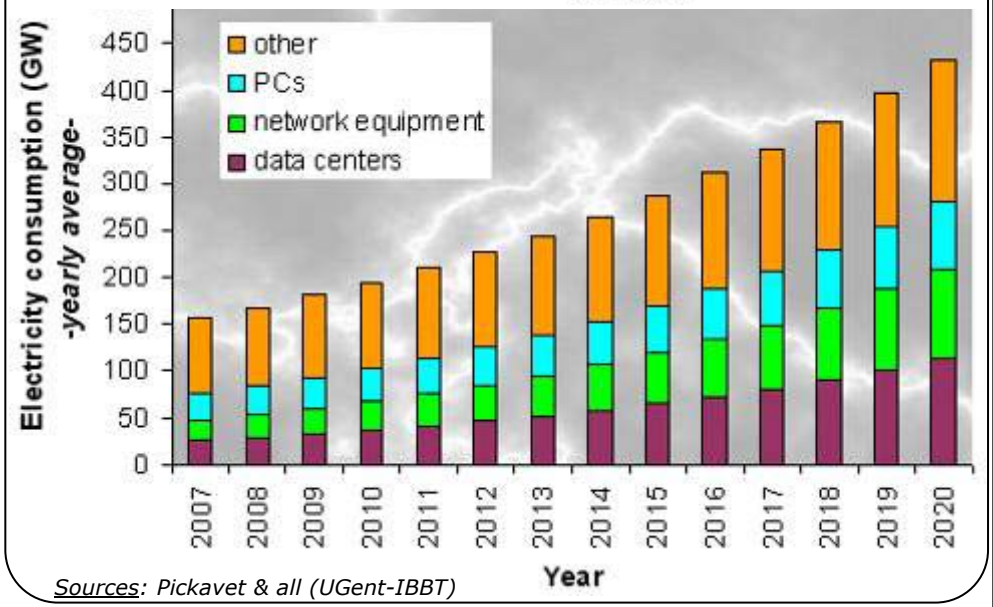
~8% of total electricity consumption
~15% by 2020



By 2020, GeSI forecasts 15% global reduction in emissions by applying ICTs, some 7.8 Bn tons

Source: An ICT policy agenda to 2015 for Europe (Swedish Presidency)





Sources: Pickavet & all (UGent-IBBT)

EC Roadmap for ICT and Energy Efficiency

Commission Communication May 2008
Points to ICT-based innovations as one of the potentially most cost-effective means to achieve the 2020 targets

Commission Communication March 2009
Sets out a policy to exploit the enabling capacity of ICT in contributing to energy efficiency

Commission Recommendation October 2009
Identifies specific actions for stakeholders to exploit ICT to effect change

Digital Agenda for Europe Key Action 12 2010
Assess by 2011 whether the ICT sector has complied with the timeline to adopt common measurement methodologies

Green ICT in EU Policy:
"*mobilising ICT to facilitate the transition to an energy-efficient, low-carbon economy"*

For itself :
Measurable, Verifiable, Reportable, Targets

Focuses on
Mobilising
the ICT Sector
To address our
Climate and Energy Challenges

In other key sectors of the economy
- **Buildings & Construction**
- **Energy Demand**
- **Transport Logistics**

Climate Action
Energy for a Changing World

EC Recommendation
adopted on October 9 2009

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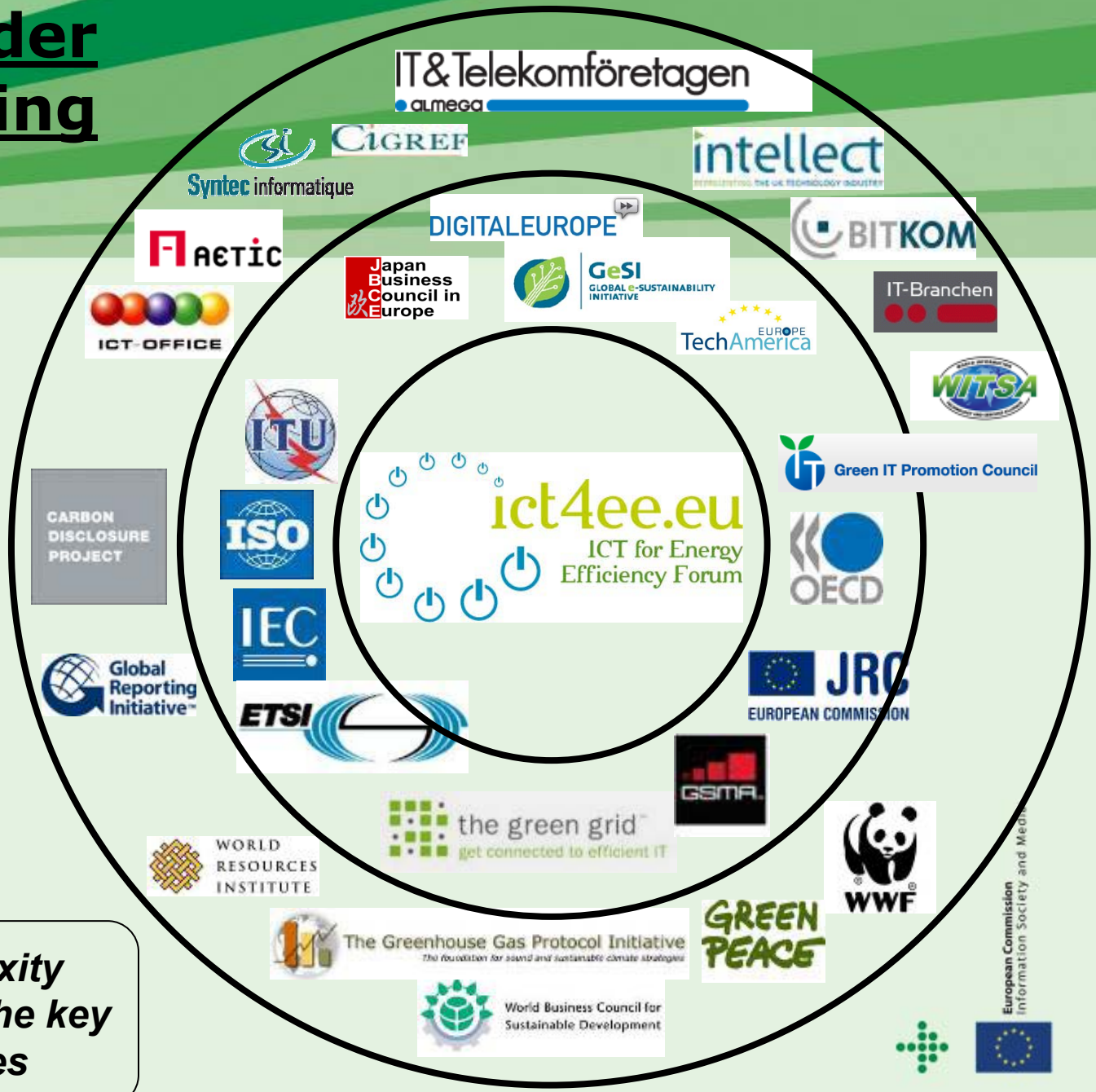
Companies	Target reduction %	Baseline *	Target date	Comment
Alcatel–Lucent	10	2007	2010	CO_2 emissions of facilities
Advanced Micro Devices Inc	33	2006	2012	GHG emissions per manufacturing index
Bell Canada	15	Not given	2012	GHG emissions
British Telecom	80	1996	2020	CO_2 emissions per unit of contribution to GDP
Cisco Systems	25		2012	GHG emissions
	nal			
	0			
	20			
	0			
	40			
	0			
	0			
				offices and sites
Nokia Siemens Networks	20 - 49	2007	2009-2010	Energy consumption of products
Sun Microsystems Inc.	20	2007	2015	GHG emissions
Telecom Italia	30 % increase	2007	2008	Eco-efficiency indicator
Vodafone Plc	50	2006/2007	2020	CO_2 emissions
European Union (all sectors)	**20** **20**	**1990** **Projed energy use in 2020**	**2020** **2020**	CO_2 emissions Energy savings/ efficiency

Stakeholder Mapping

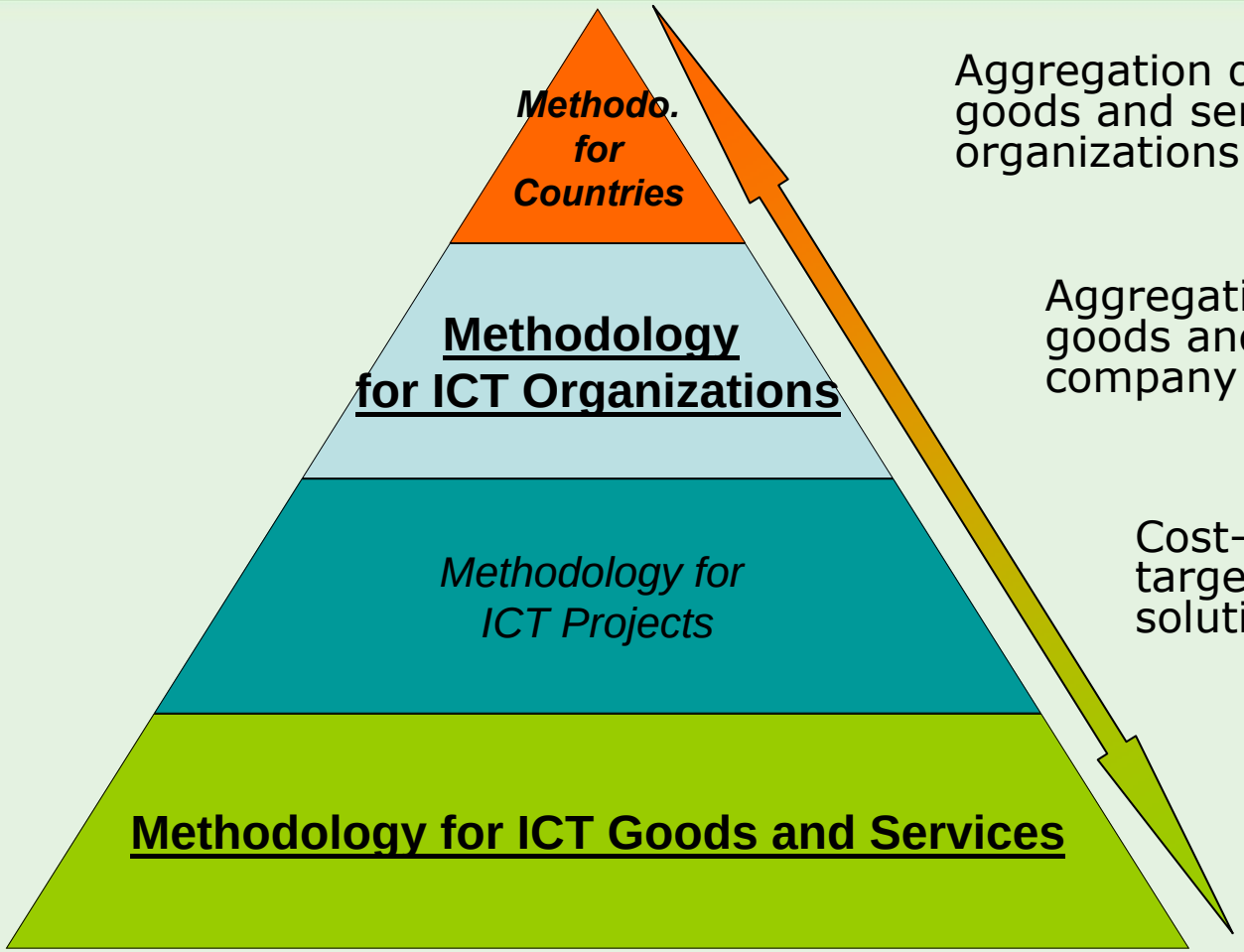
- European ICT Trade Associations
- International Standardisation Organizations
- Green IT industrial initiatives
- National ICT Trade Associations
- Other international organizations
- Environmental reporting schemes
- NGO's



►***Enormous Complexity***
►***Need to focus on the key contributing initiatives***

Hierarchy of Methodologies

These could be compared to <u>accounting standards</u>, but for environmental purposes.



Aggregation of impact of ICT goods and services or organizations at country level

Aggregation of impact of ICT goods and services at company level

Cost-benefit analysis of targeted deployment of ICT solutions in other sectors

Results of the LCA of individual products and services

Lifecycle Assessment

Raw Mat. Extraction → Manufac turing → Transport Sales → Operations Usage → Disposal Recycling










Tackling global supply chains of the ICT sector

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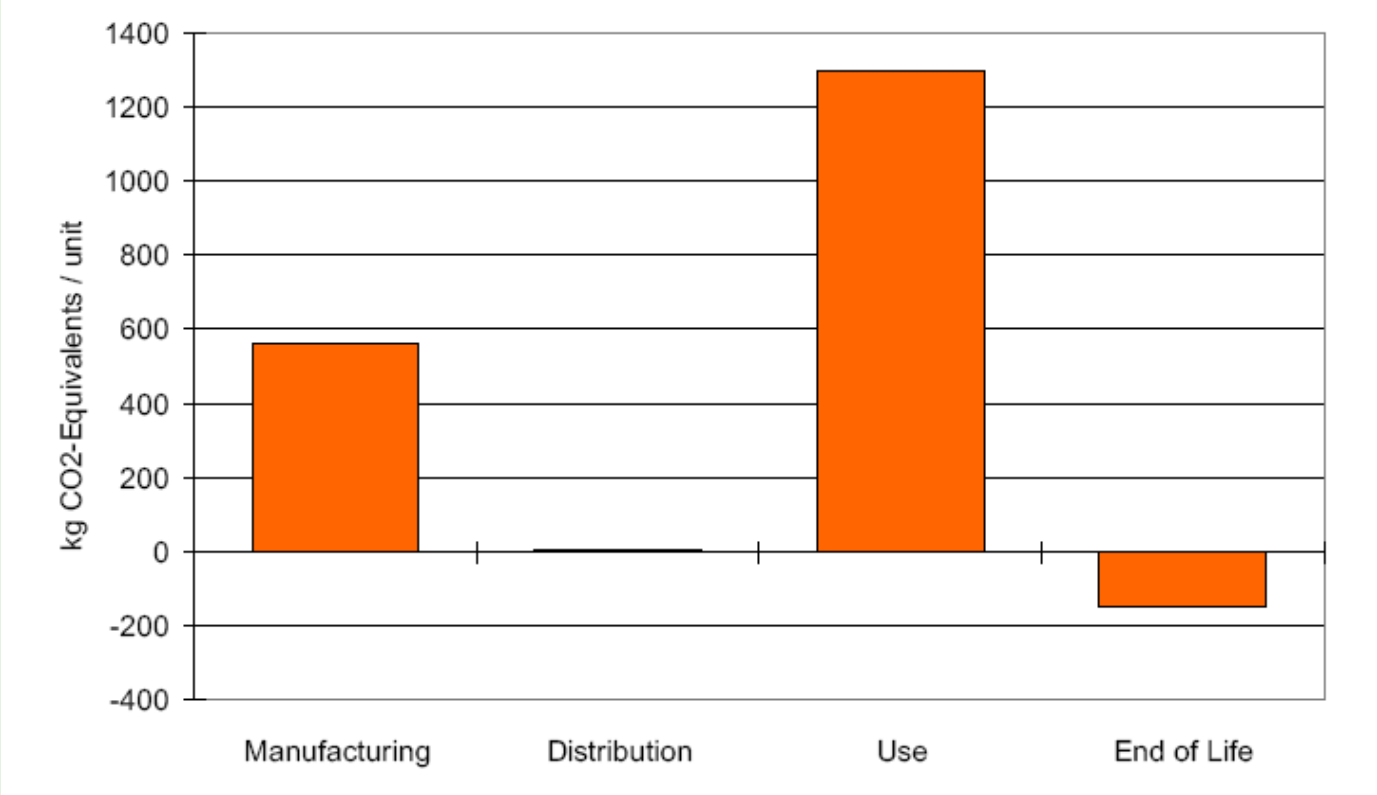
Lifecycle Assessment Results



Source: ETH, EMPA

- Essential usage in Green Public Procurement and Labelling of Products

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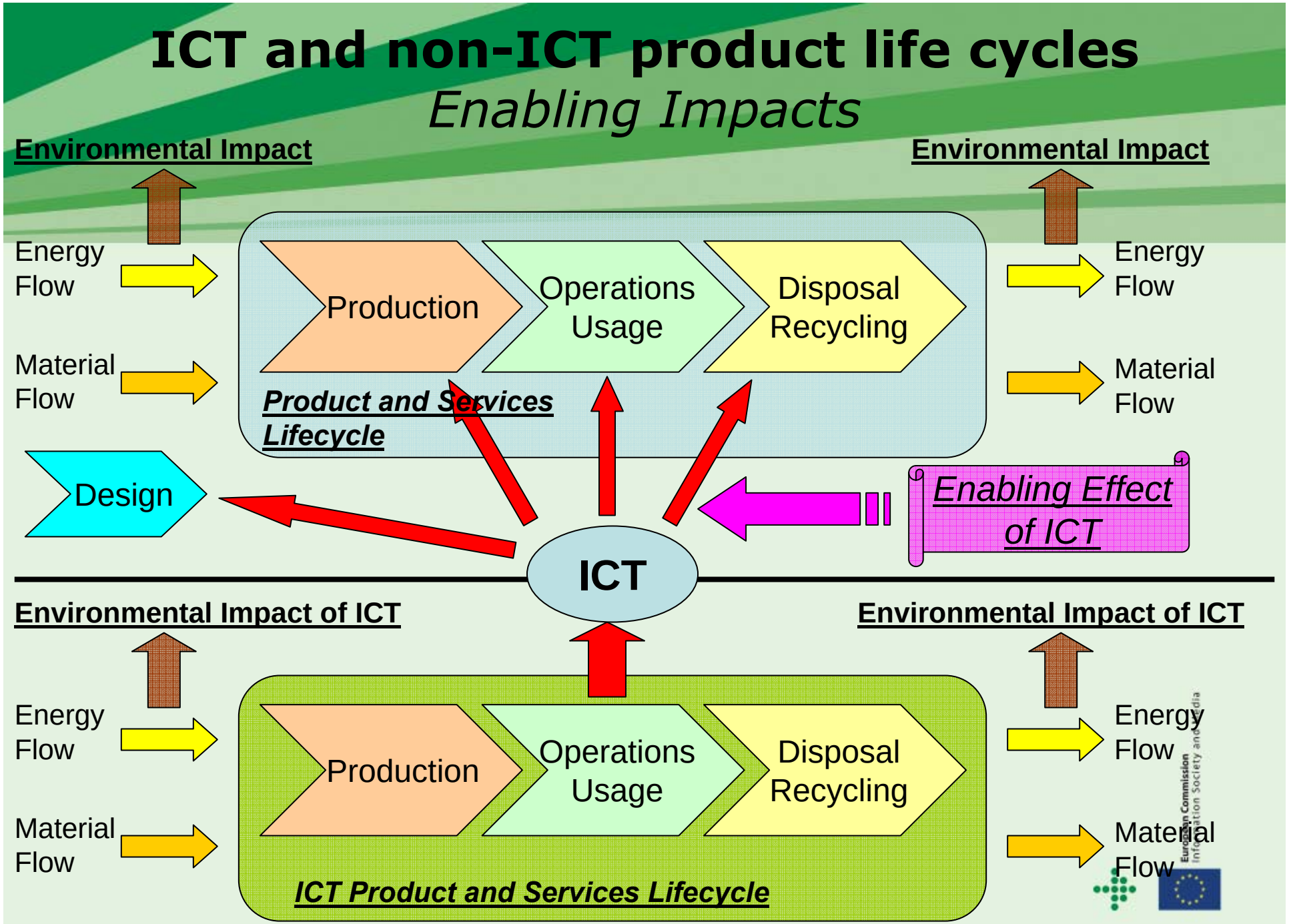
ICT and non-ICT product life cycles

Enabling Impacts



Source: Inspired from L.Hilty (2008) quoted in OECD Greener and Smarter - ICTs, the Environment and Climate Change (2010)

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EC supports ICT's key Role in 'greening' other Sectors

Commission Recommendations of 09.10.2009

There is a role for ICT, and the potential for a significant impact in:

1) Energy demand /energy end-use management through Smart-metering
2) Buildings & Construction *(40% of EU energy end-use)*
3) Transports & Logistics *(26% of EU energy end-use)*

(1) Building and Construction - Policy

-> EC supports ICT contributions to improving the energy performance of Building & Construction

Commission Recommendation of 09.10.2009:
'… *that the ICT sector … in close cooperation with the buildings and construction sector:*

(4) identifies ICT solutions to ***improve the environmental and energy performance of new and existing buildings, and construction and renovation practices****, leading to a joint roadmap for large-scale adoption of such solutions.*

(5) addresses ***barriers*** *to the wider use of ICT modelling and simulation tools and other relevant applications that facilitate and assist* ***compliance with applicable regulatory regimes*** *governing buildings performance …'*

(2) Smart Metering - Policy

-> EC supports smart-metering that genuinely benefits consumers

Commission Recommendation of 09.10.2009:
'… *that Member States through their competent national authorities:*

a) by the end of 2010 at the latest, agree on a ***common minimum functional specification*** *for smart metering*
…that focuses on providing ***consumers*** *with improved information on, and improved capabilities to manage, their energy consumption;*
b) by the end of 2012 at the latest, set up a coherent timeframe for the ***rollout of smart metering****. … '*

- A number of implementation experiences already on the ground
- Only the genuinely-smart meters will open up entirely new opportunities for ICT applications

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EC Involvement on Smart Grids

Energy

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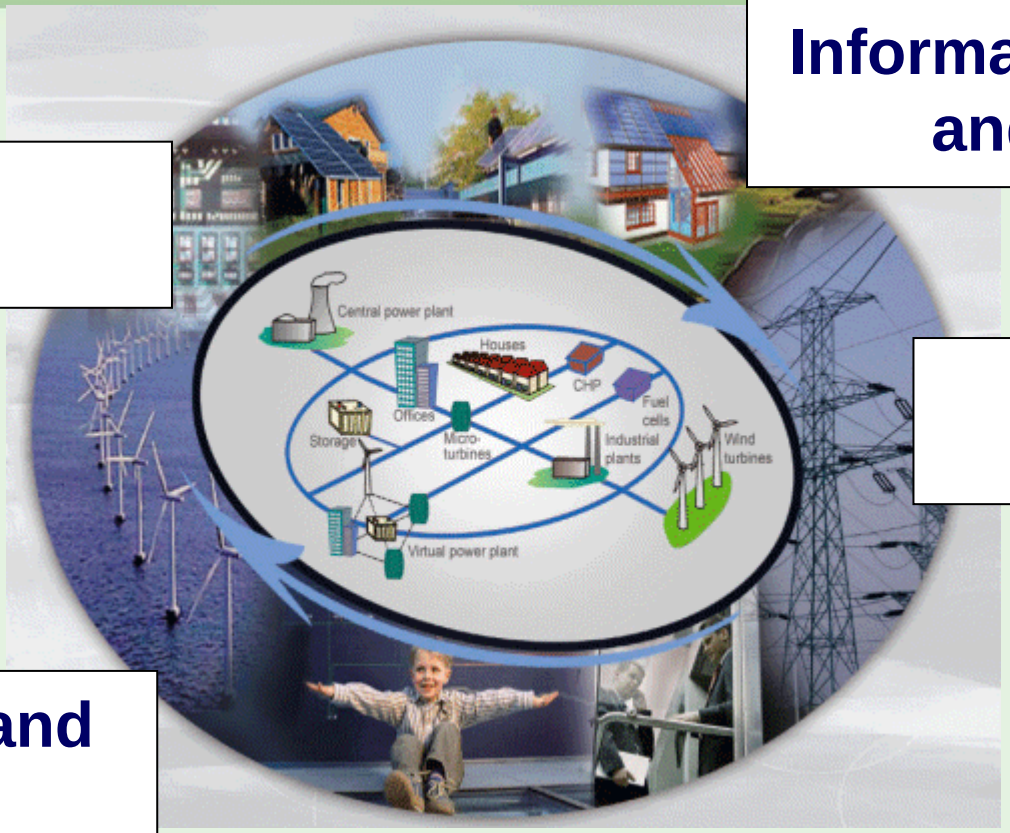

Research

Enterprise and Industry

Source : SAP (2009)

- Requires a combination of research, policy and regulation

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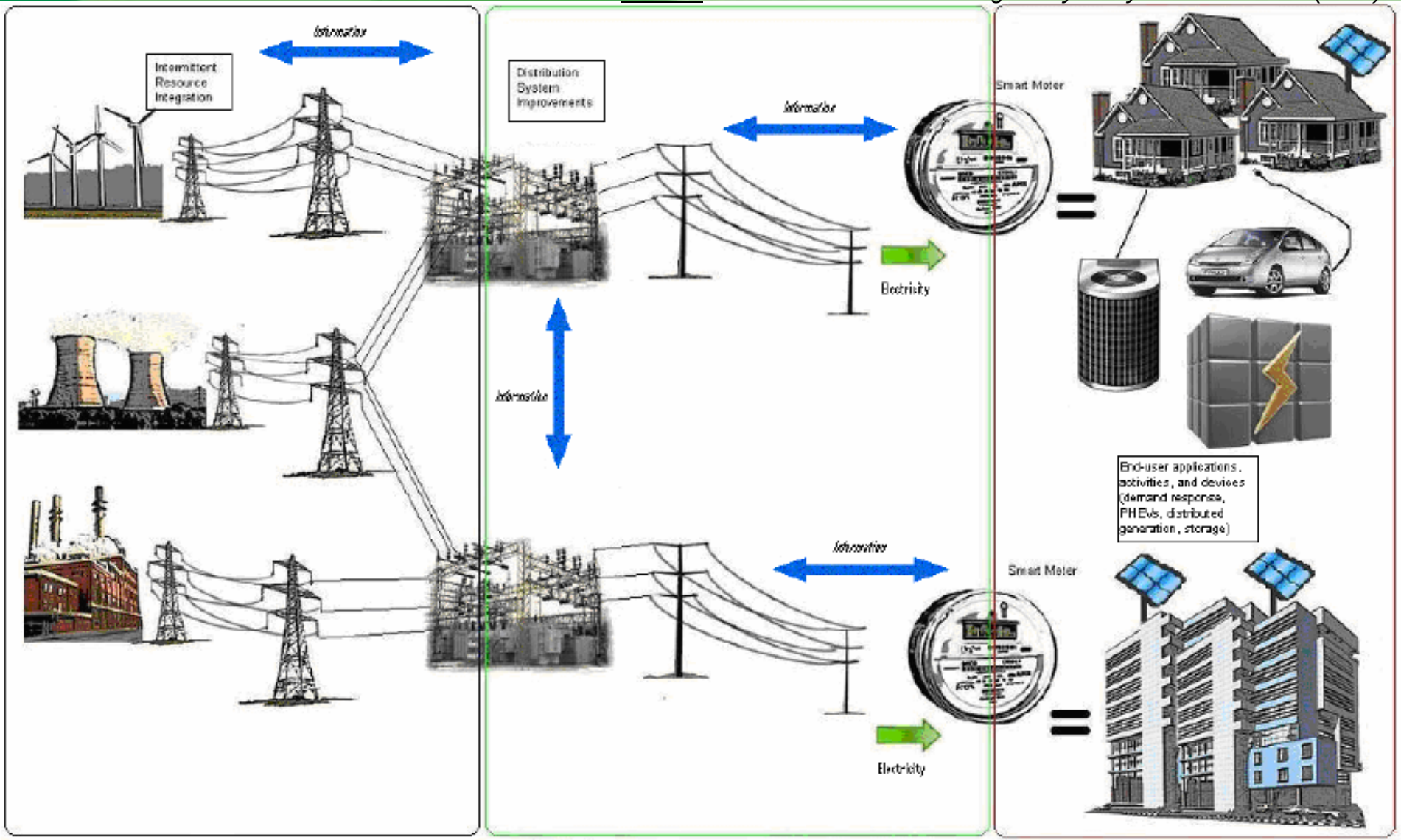
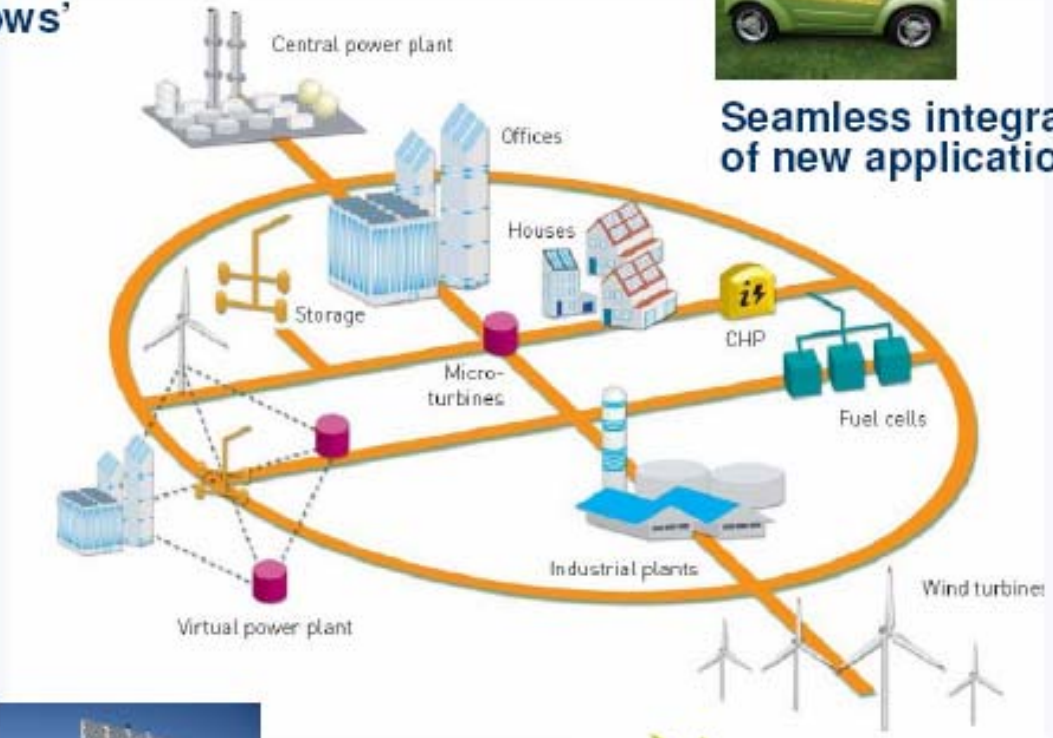
What is a 'Smart' Grid?

Source: National Association of Regulatory Utility Commissioners (2009)



Smart Grids – The Vision

Multi-directional 'flows'



Seamless integration of new applications

End user real time Information & participation

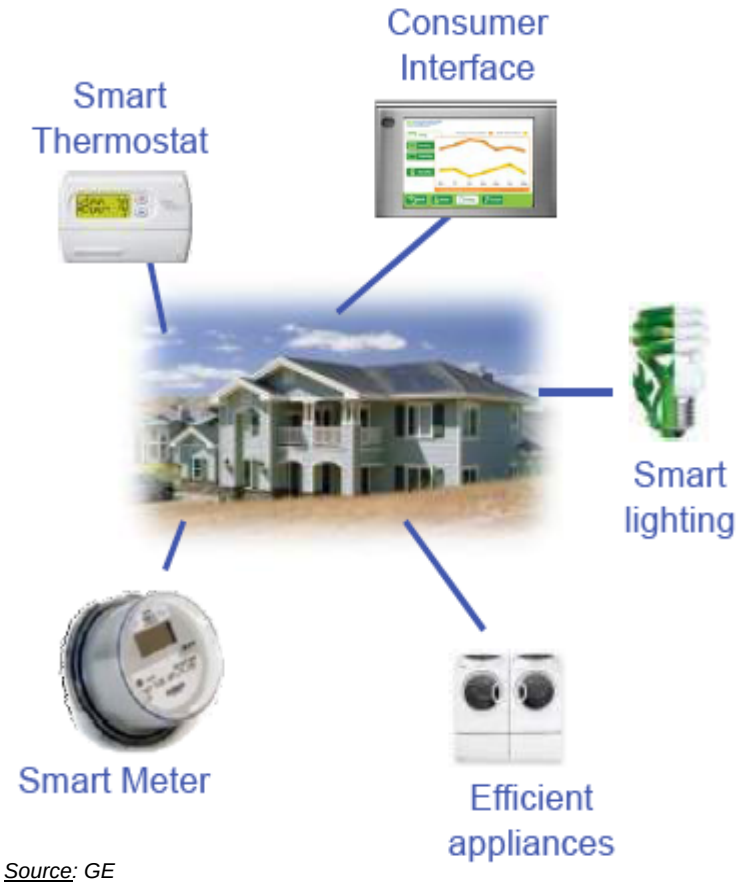
Central & dispersed intelligence

Central & dispersed sources

SMARTGRIDS

Smart materials and power electronics

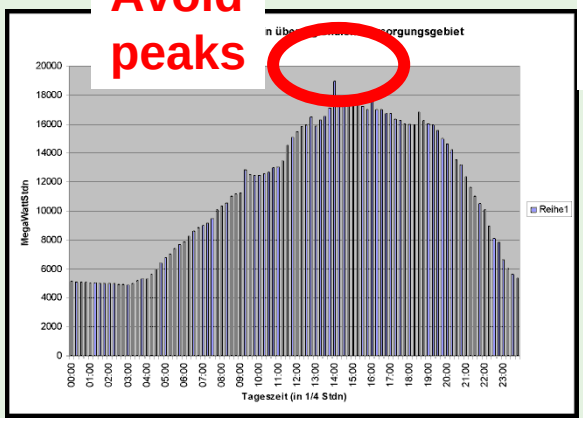
Source: SmartGrids ETP

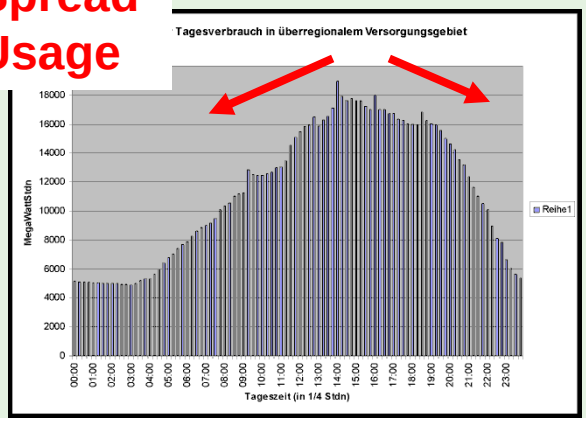


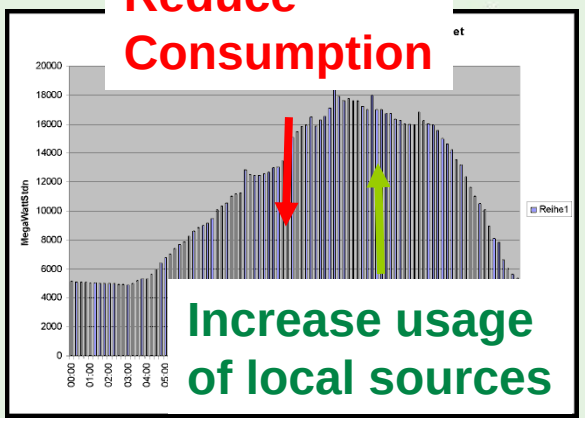
Source: GE

Demand Optimization

- Bi-directional flow of information
- Information collection through extensive sensors networks
- Local communication network (HAN)
- Empowering user with real time information to create awareness and change of behaviour
- Integrated management and decision support based on data collection and aggregation







Key Expected Benefits of Smart Grids

• **Security of supply**: efficient mix of centralised with decentralised operation allows the use of domestic energy resources, whilst maintaining a high level of reliability and quality of supply.

• **Climate change**: higher efficiency in energy transport and use of RES and cleaner Distributed Generation, results in a real contribution to reduce emissions.

• **Competitiveness of Industry**: stimulate innovation of network and associated ICT represents a positive effect, worldwide.

The Next Challenges

- Monitoring of the adoption of common methodologies by the ICT sector to measure its own footprint by end 2011
- Benefits of **smart grids** and ICT contribution
- ICT for efficient **water** management and resources efficiency at large
- ICT for energy efficient buildings, **neighbourhoods and urban areas**
  - Progression in granularity level
- Integration of these elements into **Smart Cities**
  - Green Digital Charter

Further Information

Policy

- http://ec.europa.eu/information_society/activities/sustainable_growth/index_en.htm

Research

- http://cordis.europa.eu/fp7/ict/sustainable-growth

Contact

- pierre.chastanet@ec.europa.eu