Green IT Strategies and Practices for a Sustainable Europe

Dr. Colette Maloney – Head of Unit

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

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How can ICT *contribute*?

- ICT can bring about direct efficiency gains

  ➤ measuring, monitoring, intelligent management and control, etc

- ICT can help drive behavioural change

  ➤ provide reliable data to governments, industries, citizens about energy consumption / carbon emissions

  ➤ identify how much energy is used and where

  ➤ enable comparative analyses: identification of common inefficiencies, best practices and opportunities

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Energy Reductions enabled by ICT

Energy Consumption of ICT solutions

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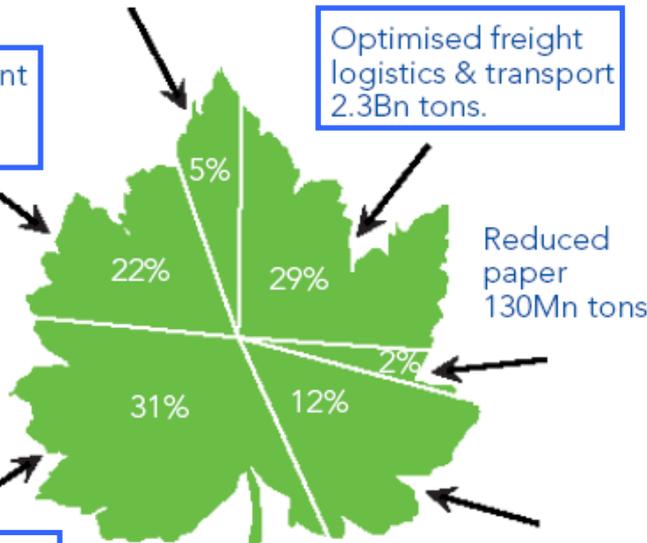

Telecommuting/ teleconference 360 Mn tons

Optimised freight logistics & transport 2.3Bn tons.

Energy efficient buildings 1.7 Bn tons

5%

22%

29%

Reduced paper 130Mn tons

2%

31%

12%

Smart Grid for energy 2.4 Bn tons
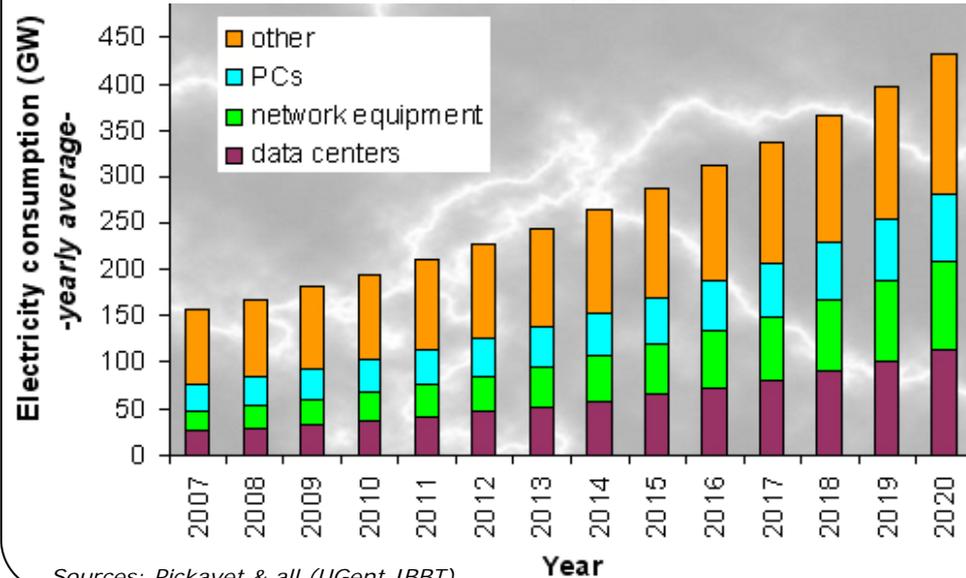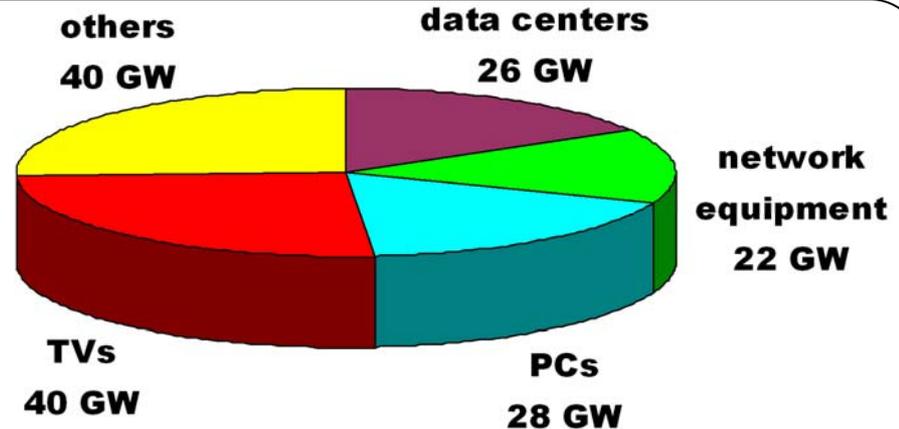
Process efficiency in manufacture 970 Mn tons

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

others 40 GW

data centers 26 GW

network equipment 22 GW

TVs 40 GW

PCs 28 GW

Legend: other; PCs; network equipment; data centers

Electricity consumption (GW) -yearly average-

Year: 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020

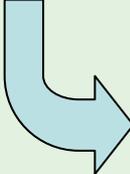# EC Past Roadmap for ICT and Energy Efficiency

Commission Communication May 2008
Points to ICT and ICT-based innovations as one of the potentially most cost-effective means to achieve the 2020 targets
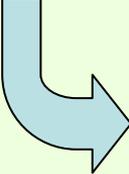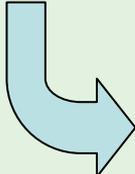
Commission Communication March 2009
Sets out a policy to exploit the enabling capacity of ICT in contributing to energy efficiency

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

? **Depends on industry reaction**

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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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Can we *measure* the contribution of ICT?

We don't have a common understanding today of <u>how to quantify energy efficiency gains</u>/ energy performance – in particular at the level of whole systems

in the ICT sector today, carbon and energy accounting are based on different measurement methodologies, estimates and assumptions

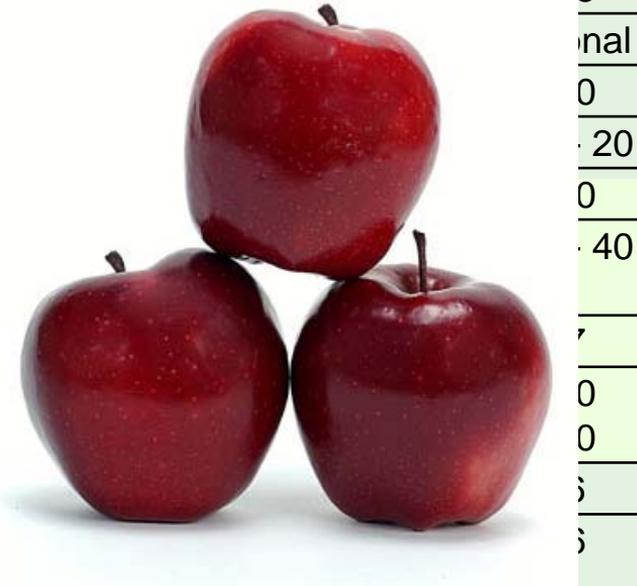Consequences are:

- lack of reliable data
- targets set by individual organisations by cannot be compared
- best practices are not transferrable across the industry
- 'green' claims by the industry are spurious

Until we have reliable data, we are all flying blind!

>>> **Need a common framework to measure** *(like accounting standards)* **and evaluate gains** *(energy cost-benefit analysis)*

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** **Projected energy use in 2020**	**2020** **2020**	CO_2 emissions Energy savings/ efficiency

'*… that the ICT sector:*

1. **commits to a progressive decarbonisation** *process leading to a measurable and verifiable reduction in energy intensity and carbon emissions of all processes involved in the production, transport and sales of ICT equipment and components.*

2. **participates, through its sector associations**, *in an exercise to be initiated by the European Commission (EC) that aims to:*

   a) **develop a framework to measure its energy and environmental performance**, *for which the sector will energy be expected to contribute the baseline data by 2010;*

   b) **adopt and implement common methodologies** *to this end* **by 2011***;*

   c) **identify, by 2011, efficiency targets** *that aim to exceed the EU 2020 targets by 2015;*

   d) *issue a* **roadmap within three months** *of adoption of this Recommendation, thereafter annual reports;*

3. *works with the EC and other relevant public bodies and international organisations in order to develop an* **auditing and verification framework** *…'*

The ICT sector takes on the challenge!

ICT FOR ENERGY EFFICIENCY — On the path towards a sustainable society — 23 -24 February 2010, Brussels

So far:

- ICT Industry Associations have responded collectively

- [High Level ICT for Energy Efficiency event](#) in Brussels took place on Febuary 23-24th
  - *Videos, presentations and policy conclusions available soon*

- 4 industry associations announced officially at the event the launch of the **ICT4EE Forum**:
  - Digital Europe
  - Global e-Sustainability Initiative (GeSI),
  - Japanese Business Council in Europe (JBCE)
  - TechAmerica Europe
  - Presentation of a 3 years roadmap to address EC Recommendation

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Focus Areas of the ICT4EE Forum:

- Measuring the Energy Efficiency of ICT Processes
    - Methodologies, targets, reporting, auditing and verification
    - Collaboration with the ITU to deliver a **common energy performance measurement framework**
    - Adoption and implementation of the framework by individual companies of the ICT sector
        - ➢ *Companies should contribute from the beginning if they don't want others to define the measurement framework for them!*

- Enabling Energy Efficiency in other Sectors
    - Transport & logistics, buildings & construction, energy supply

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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)*

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(1) 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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(2) 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 ...'*

(3) Transports and Logistics

- EC will support concrete cooperation between the ICT sector and the transport and logistics sector to address gaps/remove barriers

Focusing on:
- Identifying ICT solutions to improve the environmental and energy performance of Transports and Logistics services,
  - Leading to a **joint roadmap for large-scale adoption of such solutions**, in coordination with the work carried out under the ITS Action Plan.

- Drafting a systematic framework to provide comprehensive, comparable and reliable data on the energy consumption and carbon emissions of freight and transport operations and services to all potential users.

- Plans to be refined during 2010

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The Next Challenges

- Monitoring of the implementation of the **ICT4EE industry Forum** and definition of the common methodologies and targets by 2011

- Follow-up with Member States on the recommendation

- ICT for efficient **water** resources management to be addressed as a research topic

- ICT for energy efficient buildings, **neighbourhoods and urban areas**
  - o Progression in granularity level

Further Information

Policy

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

Research

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

ICT4EE Event

- http://ec.europa.eu/information_society/events/ict4ee/2010/index_en.htm

ICT4EE Forum

- http://www.ict4ee.eu

Contact

- colette.maloney@ec.europa.eu

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