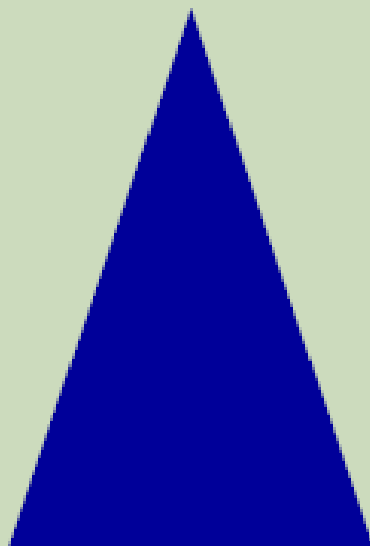


# European Policies for Energy Efficiency in ICT

**Paolo Bertoldi**  
**European Commission DG JRC**

- Office Equipment is responsible for about 60 TWh of electricity consumption in the EU (with another 20 TWh in the residential sector)
- Data Centres are responsible for about 50 TWh and is projected to increase to 100 TWh per year by 2020
- Broadband equipment electricity consumption will be up to 50 TWh
- Standby consumption in the residential sector is about 40 TWh (this includes STBs)
- All the above consumption is the fastest raising consumption in the EU

## Competitiveness: Lisbon



Environment:  
Kyoto

Security of  
supply

- **Competitiveness:** internal market, competition, interconnections (TEN-T), European electricity grid, research & innovation (clean coal, carbon sequestration, alternative fuels, energy efficiency, nuclear)
- **Environment:** renewable energy, energy efficiency, nuclear, innovation & research, emission trading
- **Security of Supply:** international dialogue, European stock management (oil/gas), refining capacity and storage of energy, protection against terrorism

- **Double the share of renewable energy** in national gross energy consumption from **6% to 12% by 2010** and the new target adopted by the Heads of State in March 2007 of **20% by 2020**
- **Increase the share of green electricity** in total electricity consumption from **14% to 22% by 2010 (the RES-E Directive)**. This target will be met!
- **Raise the share of biofuels** in the transport fuel market to **5,75% by 2010**. The Commission therefore proposes reinforcing the legislative framework, with a **10% minimum for the market share of biofuels in 2020**.
- **Reduce energy consumption by 20% by 2020**

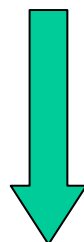
# Action Plan for Energy Efficiency

Realising the potential

October 2006



## Improving energy efficiency



Realising the over 20 % estimated savings potential  
in EU annual primary energy consumption by 2020

- Mobilising the general public, policy-makers at all levels of governments and **market actors**
- To transform the internal energy market to provide EU citizens with the globally most energy-efficient infrastructure, buildings, appliances, processes, transport means and energy systems available

## Eco-Design of Energy Using Products Directive


- Framework Directive
- Focus on energy-using products over life-cycle
- Complementary with Buildings and Energy Services directives
- Legal base *Article 95*. Ensures free movement for the products conforming to the applicable eco-design requirements and a high level of environmental protection



- EuP framework does not create immediate obligations for manufacturers but allows the Commission to do so through implementing Directives;
- Proposed draft implementing measures or voluntary agreements are first discussed with stakeholders in the Consultation Forum; Impact assessment precedes the submission of Commission draft measures;
- Implementing measures are adopted by the Commission assisted by a regulatory Committee;
- Stakeholders participate throughout the whole process (studies, impact assessments, preparatory discussions within the Consultation Forum);

Preparatory Study				
Significant Environmental Impacts/life cycle (Including energy)	Best Available Technology (Worldwide)	Improvement Potential	Least Life Cycle cost	Measurement requirements leading to mandates etc)


**Specific Eco-Design Requirements**



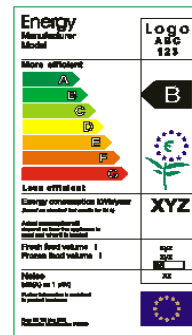
Maximum levels tolerated for "CE" marking

**Eco-Label**

top of the class



**Energy Label**



**Voluntary Agreements**

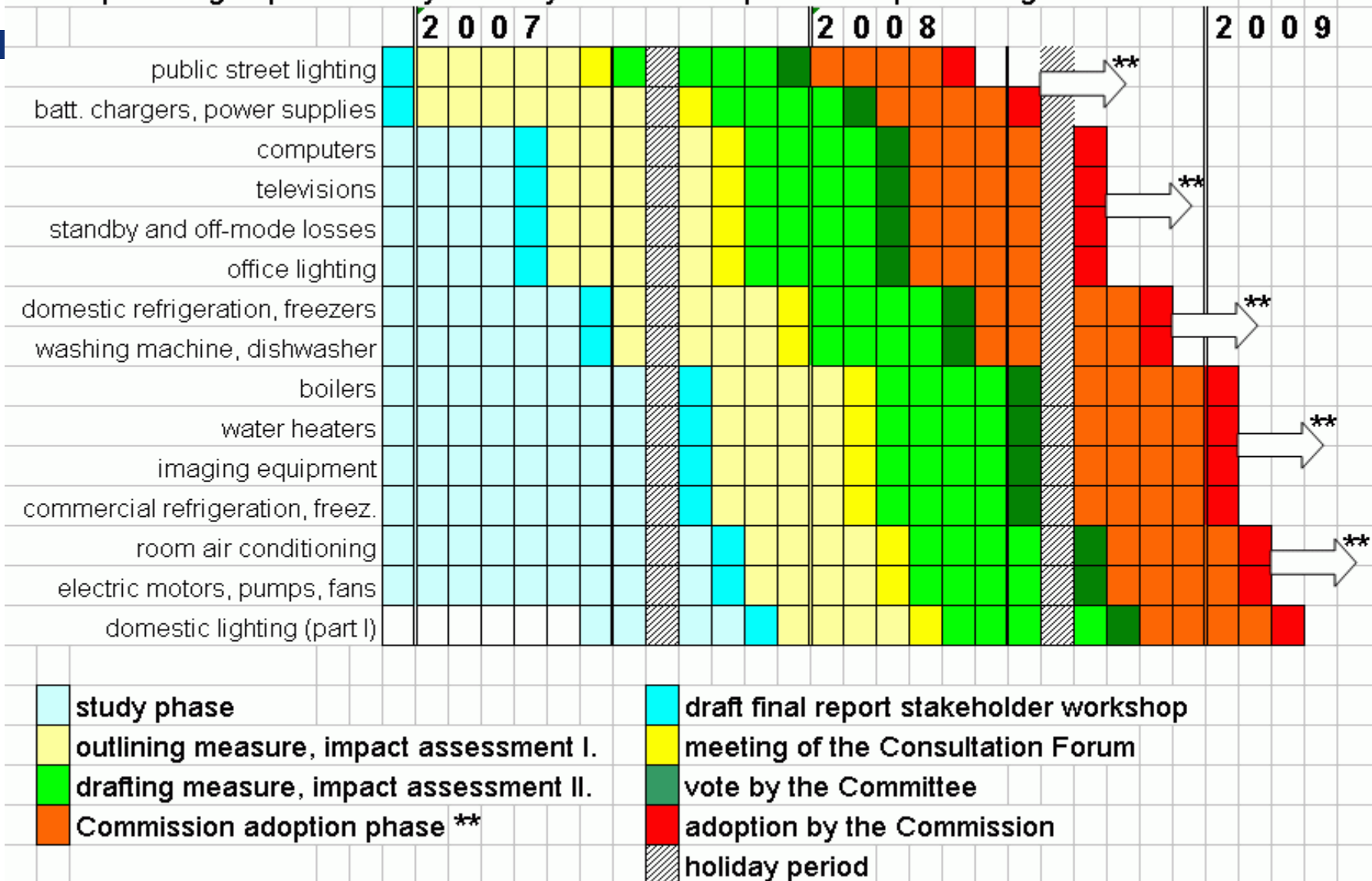
when ambitious compared with Business as usual and significant share of the market

EN Measurement Standards

- Revision**
- **5-10** years depending on product group and progress of technology but staged requirements possible
  - **Dynamic** but predictable to encourage improvement products while providing clarity on investments for Industry
  - **Consistent**
    - Thresholds to be maintained (A becomes D etc.)
    - Reward Development of 'good' products, compatibility of incentives

## Planning for the adoption of ecodesign implementing measures \*

14 product groups + standby currently examined for potential implementing measures:



\* Assumption: Committee and EP are immediately in favour of the draft

\*\* Could take from 4 to 12 months depending in particular on discussions on reinforced scrutiny by EP - includes WTO notification and translations

# The EU Energy Star Programme



## Voluntary energy efficiency labelling of office equipment: computers, monitors, printers, copiers ...

### Basis:

- EU-US Energy Star Agreement, in force until end 2011  
(OJ L 381 of 28.12.2006, p. 26)
- Council Decision on its conclusion  
(OJ L 381 of 28.12.2006, p. 24)
- Energy Star Regulation of EP and Council  
(OJ L 39 of 13.2.2008, p. 1)



- General principle: when specifications are set **25%** of the models on the market may qualify  
(Agreement, Article I)
- Time delay between specification setting and effective date (usually approx. 1 year) means that a higher market share will qualify when specification is effective (which is the desired impact of the programme)



- Agreement contains recent energy efficiency criteria for all product categories
- Updated tier 2 criteria for computers and imaging equipment (copiers, printers ...) and new monitor criteria currently under development, entry into force planned for 2009
- Specifications for servers under development, to be added to the Agreement
- EU market survey (beginning 2008 to end 2010): input to efficiency criteria update, monitoring of programme impact in Europe (with a view to a possible successive Agreement)



[www.eu-energystar.org](http://www.eu-energystar.org)

## Contains

- Up-to-date information on specifications, revision process, documents related to Board meetings
- Up-to-date database of registered products meeting the criteria, available in the EU
- Energy savings calculator
- further related information





# The New European Policy for ICT: The Code of Conduct

- Led by EC Joint Research Centre
- Flexible mechanism to initiate and develop policy
- Forum for industry, experts and Member States
- Open and continuous dialogue on market and product performance
- Identify and focus on key issues and agree solutions
- Set ambitious voluntary standards and commitments

## Code of Conduct:

a voluntary commitment of individual companies, with the **aim of reducing energy consumption of products and/or systems** through the setting of agreed targets in a defined development timescale, without hampering the fast technological developments and the service provided

Targets could expressed in **maximum allowed power consumption** for the different operational modes or based on indicators (e.g. W, KWh/m<sup>2</sup>) or benchmarking.

Energy consumption levels are complemented **by general commitments of power and energy management**, switching off components not needed, and reducing energy consumption where possible.

Since 1999:

- External power supply units
- Digital TV services
- Broadband (since 2007)
- Uninterruptible power supplies (since 2007)
- Data Centres (under development)

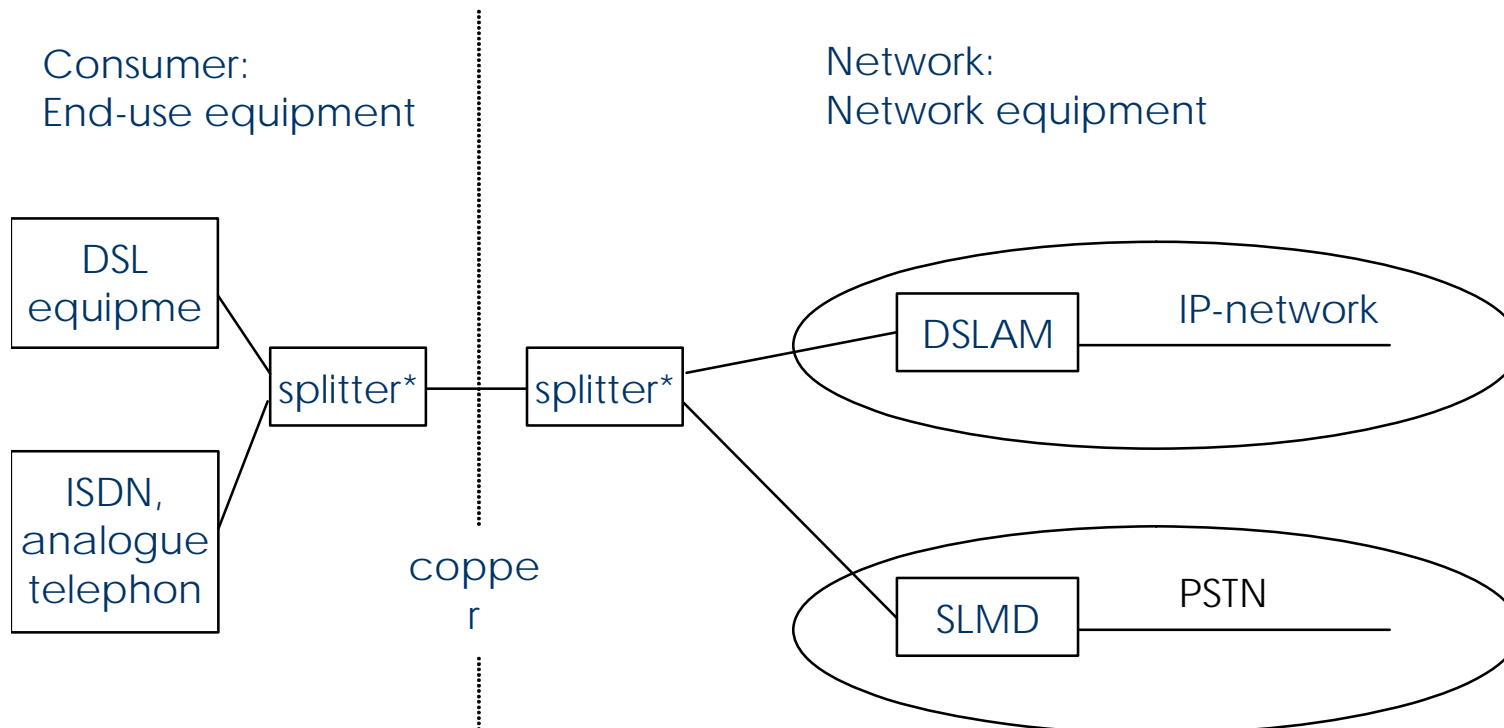
Lays groundwork which has been used by other European policies

- To **raise awareness** among managers, owners, investors, with targeted information and material on the opportunity to improve efficiency.
- To provide an **open process and forum** for discussion representing European stakeholder requirements.
- To create and provide an **enabling tool for industry** to implement cost-effective energy saving opportunities
- To develop a set of **easily understood metrics** to measure the current efficiencies and improvement.
- To produce a **common set of principles** in harmonisation with other international initiatives.
- To **support procurement**, by providing criteria for equipment (based on the Energy Star Programme specifications, when available, and other Codes of Conducts), and best practice recommendation for complex systems.
- Set efficiency targets**, for public and corporate data centre owners and operators (targets could be differentiated according to the status of existing data centres, the geographical location, the return on investments, etc).

- Broadband equipment will contribute to the electricity consumption in European Community depending on the penetration level, the specifications of the equipment and the requirements of the service provider, a total European consumption of up to 50 TWh per year can be estimated for the year 2015.
- With the general principles and actions resulting from the implementation of this Code of Conduct the (maximum) electricity consumption could be limited to 25 TWh per year, this is equivalent to 5,5 Millions tons of oil equivalent (TOE) and to total saving of about €7,5 Billions per year.

## Equipment covered by the Code of Conduct for Broadband Equipment

Equipment both on the consumer side (end-use equipment) and the network side (network equipment), for services providing a two way data rate of 144 kb/s or above.



## Equipment covered by the Code of Conduct for Broadband Equipment

End-user equipment associated with broadband distribution for residential customers and SOHO	Network equipment
<ul style="list-style-type: none"> <li>• DSL modem</li> <li>• Cable modem</li> <li>• PLC modem</li> <li>• (DSL) router with/without WLAN up to 5 ports (1WAN port and 4LAN ports) up to 1000 Mbits/s</li> <li>• Small hubs and switches up to 8 ports (10/100/1000 Mbits/s)</li> <li>• WLAN access points</li> <li>• WiMAX</li> <li>• Small printer server (connected to broadband)</li> <li>• Home gateway</li> <li>• Telephone devices for VoIP (ATA or VoIP-Handset)</li> <li>• Optical network termination (ONT)</li> <li>• Equipment that is a combination of one or more of the equipment above</li> </ul>	<ul style="list-style-type: none"> <li>• DSL port (example: ADSL, ADSL2, ADSL2+, VDSL2)</li> <li>• Combined port (example: MSAN, POTS/ISDN + ADSL2+ etc)</li> <li>• NTBA (ISDN terminator at customer premises)</li> <li>• WiMAX Base Stations</li> <li>• PLC &amp; Cable service provider equipment</li> <li>• Optical line termination (OLT)</li> </ul>





Equipment suppliers: E.g. Thomson

Equipment purchasers: Telecom companies, e.g.  
Swisscom, TDC Services, TeliaSonera

In addition, it is important that companies in any case follow  
the CoC requirements to their best efforts

- Continuing demand for IT services
- Rising DC electricity consumption projected:
  - Western Europe: 56 TWh in 2007, rising to 104 TWh in 2020
- Expected to contribute substantially to the UK and European Union (EU) commercial sector
- Maximise energy efficiency of data centres to ensure the carbon emissions and energy consumption are mitigated

- Many activities have been initiated including EPA Energy Star, *DoE Save Energy Now*, IEE E-Server project and The Green Grid
- But no EU regulatory or voluntary initiatives addressing the energy efficiency of data centres. This creates risk of confusion, mixed messages and uncoordinated activities
- Need for independent assessment and coordination – tailored to European conditions such as the climate and energy markets regulation
- The new Code of Conduct provides a platform to bring together European stakeholders to discuss and agree voluntary actions which will improve energy efficiency

The Code of Conduct covers:

- “Data centres” of all sizes – server rooms to dedicated buildings
- Both existing and new
- IT power and Facility power
- Equipment procurement and system design

The Code of Conduct is for:

- **Participants**: Data centre owners and operators
- **Endorsers**: Vendors, consultants, industry associations

- Day to day operations (energy management)
- Normal replacement cycle/adding new servers
- Retrofit/ dedicated energy efficiency programme
- Designing new data centres

## Metrics and measurements

- How to measure and report efficiency

## Best Practice

- Establishing guidance and support

## Data collection & analysis

- Monitor and report on savings

- Energy efficiency is the fastest and most cost effective way to reduce CO2 emissions.
- The ICT sector is responsible for an increased energy consumption. The same services could be offered to citizens and companies by using less energy without any negative impact on the service provided
- The Codes of Conduct try to set commonly agreed (shared) targets that would reduce the energy consumption. We hope that the ITC sector could join these effort.

**Thank you!**

**We welcome comments**

**For more information!**

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[http://energyefficiency.jrc.cec.eu.int/html/standby\\_initiative.htm](http://energyefficiency.jrc.cec.eu.int/html/standby_initiative.htm)