# The European Programme for Energy Efficiency in ICT
# The Codes of Conduct

**Paolo Bertoldi**
**European Commission DG JRC**
**Institute for Energy**

CODE OF CONDUCT
DATA CENTRES

# EU Key Climate and Energy Objectives for 2020

**By 2020 -20% EU GHG**

**By 2020 +20% ENERGY SAVING**

**By 2020 binding 20% RENEWABLES in final energy consumption at EU level**

**RES in transport**

**Min 10% binding**

**ELECTRICITY**

**MS binding choice**

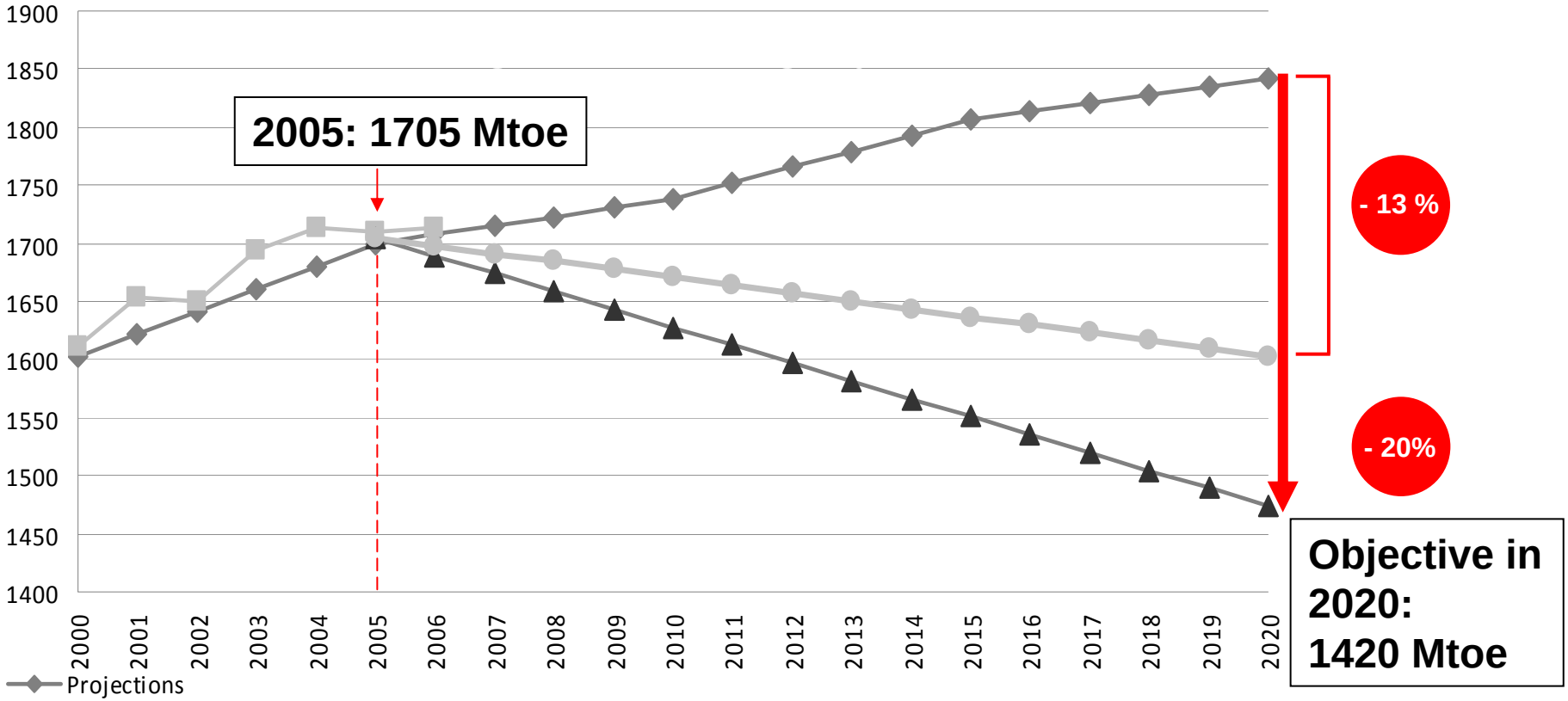
**HEATING & COOLING**

**MS binding choice**

**NATIONAL TARGETS & ACTION PLANS**

# EU primary energy consumption by 2020

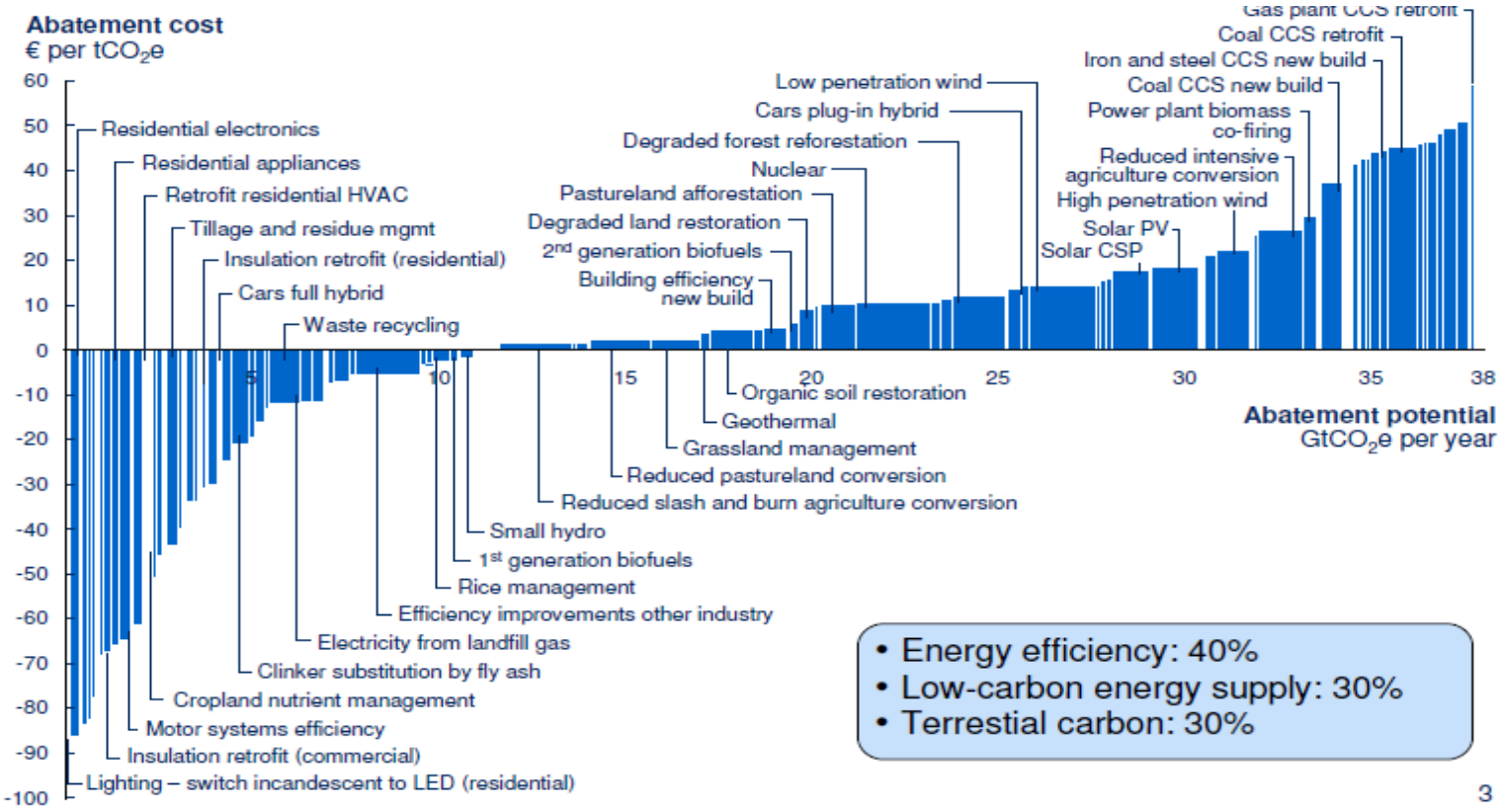




# Investments in energy efficiency pay-off



End-use efficiency is recognised as the fastest and cheapest way to reduce CO2 emissions by 2020.




- Energy efficiency: 40%
- Low-carbon energy supply: 30%
- Terrestial carbon: 30%

3

Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €60/tCO2e if each lever was pursued aggressively. It is not a forecast of what role different abatement measures and technologies will play.

McKinsey&Company

CODE OF CONDUCT DATA CENTRES

# EU Codes of Conduct



- Led by European Commission 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 DATA CENTRES

# What is the Code of Conduct?

- Code of Conduct is a **voluntary commitment** of individual companies, which own or operate data centers (including colo), with the aim of reducing energy consumption (against a BaU scenario) through the adoption of best practices in a defined timescale.

- Energy efficiency targets are complemented by **general commitments** of monitor power and energy consumption, adopt management practices, switching off components not needed, and reducing energy consumption where possible

CODE OF CONDUCT DATA CENTRES

# Aims

- 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.

CODE OF CONDUCT DATA CENTRES

# Past Successes



- Since 2002 Codes of Conduct on:
  - External power supply units
  - Digital TV services
  - Uninterruptible power supplies

- Lays groundwork which has been used by other European policies (e.g. Eco-Design)

CODE OF CONDUCT DATA CENTRES

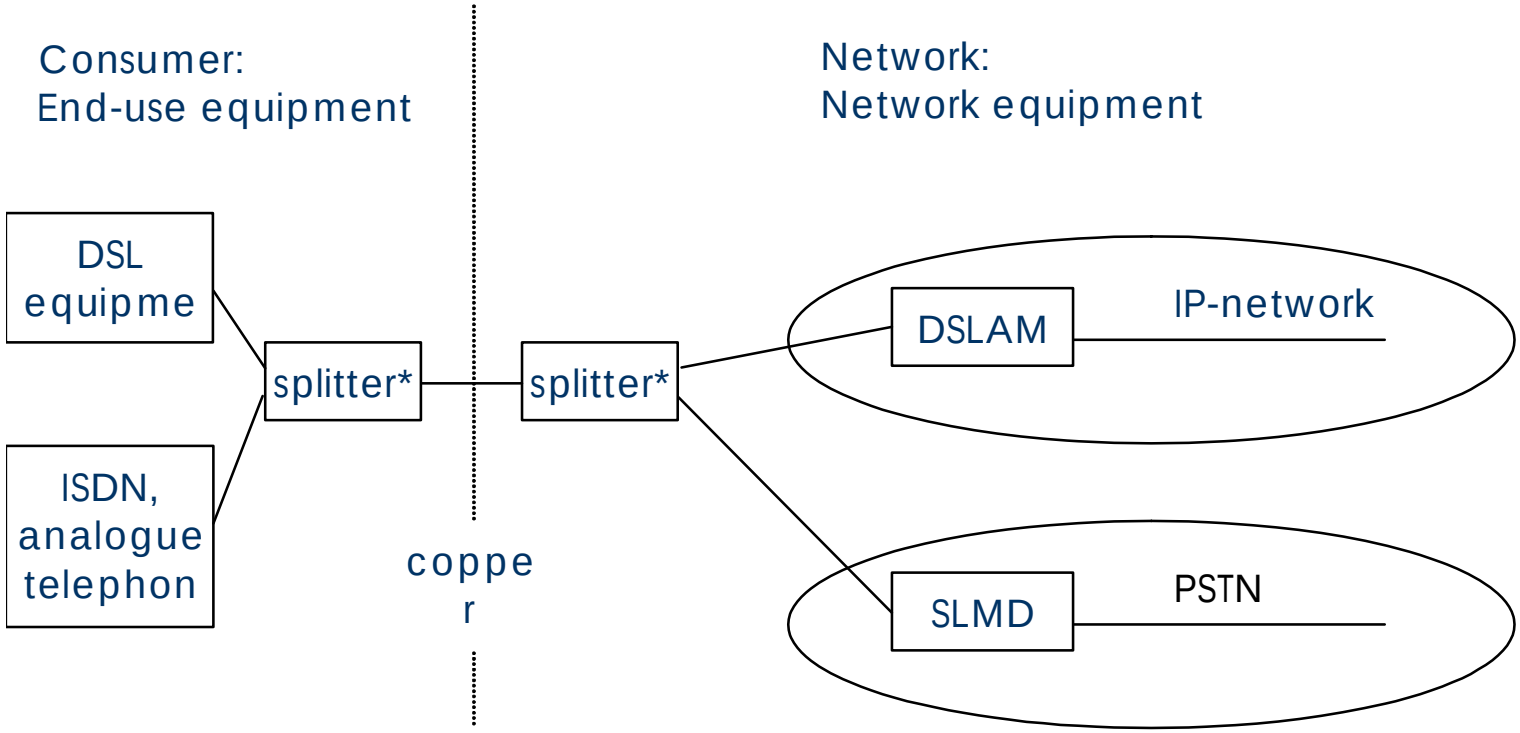
# Why Broadband?



- 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.




CODE OF CONDUCT DATA CENTRES

# Equipment covered by the Code of Conduct for Broadband Equipment

| End-user equipment associated with broadband distribution for residential customers and SOHO | Network equipment |
|---|---|
| • DSL modem<br>• Cable modem<br>• PLC modem<br>• (DSL) router with/without WLAN up to 5 ports (1WAN port and 4LAN ports) up to 1000 Mbits/s<br>• Small hubs and switches up to 8 ports (10/100/1000 Mbits/s)<br>• WLAN access points<br>• WiMAX<br>• Small printer server (connected to broadband)<br>• Home gateway<br>• Telephone devices for VoIP (ATA or VoIP-Handset)<br>• Optical network termination (ONT)<br>• Equipment that is a combination of one or more of the equipment above | • DSL port (example: ADSL, ADSL2, ADSL2+, VDSL2)<br>• Combined port (example: MSAN, POTS/ISDN + ADSL2+ etc)<br>• NTBA (ISDN terminator at customer premises)<br>• WiMAX Base Stations<br>• PLC & Cable service provider equipment<br>• Optical line termination (OLT) |

# Signatories of the Code of Conduct

- Equipment suppliers: E.g. Technicolor, Alcatel Lucent, Huawei, Nokia Siemens, CISCO
- Equipment purchasers, e.g. Telecom companies:  DT, Telecom Italia, Swisscom, TDC Services, TeliaSonera, KPN, France Telecom, Telecom Portugal, Belgacom, etc.
- In addition, it is important that companies in any case follow the CoC requirements to their best efforts

CODE OF CONDUCT DATA CENTRES

EUROPEAN COMMISSION
JOINT RESEARCH CENTRE
INFORMATION SOCIETY AND MEDIA

EU Stand-By Initiative

Brussels, September, 28th 2010

## Joint Codes of Conduct Signature Event

The following Operators and Vendors have attended the "Joint CoC Signature Event", hosted in Brussels on September, 28th 2010, and have signed one or both the CoC on BroadBand and Data Centres.

| | |
|---|---|
| Alcatel-Lucent | Emmanuel Darmois<br>VP Corporate Standards |
| BT | Henk Mannekens<br>European Regulatory Manager |
| T | Luis Neves<br>Vice President Corporate Responsibility |
| hp | Maria Morse<br>CFS Business Development Principal |
| kpn | Marga Blom<br>Manager Energy Management Group |
| Nokia Siemens Networks | Van Hemeledonck Walter<br>Head of European Union Policies |
| PT | José Fino Gomes<br>Wireline Network O&M Director |
| TDC | Henning Andersen<br>Environmental Manager |
| Telefónica | Alberto Andreu Pinillos<br>Director on Corporate Responsibilty |
| telenor group | Lotte Abildgaard<br>VP Representative Office in Brussels |
| TURK TELEKOM | Kemal Uzunboy<br>Telecommunication Expert |
| belgacom | Concetta Fagard<br>VP Group Reputation |
| CISCO | Klaus Vanschuere<br>Technical Leader Eco-Design |
| orange | Marc Fossier<br>Executive VP - Chief CSR Office |
| HUAWEI | Kathrin Neunteufel<br>Public Affairs Manager, EU Department |
| Microsoft | John Vassallo<br>Vice President EU Affairs |
| OTE | Tim McPhie<br>OTE representative – APCO |
| swisscom | Stefan Kilchenmann<br>Head of public affairs |
| TELECOM | Sandro Dionisi<br>Head of Technology R&D |
| A1 Telekom Austria | Elisabeth Mattes<br>Director of Corporate Communications |
| TeliaSonera | Kaisu Karvala<br>President European Affairs |
| | |

Digital Agenda for Europe

GeSI

CODE OF CONDUCT DATA CENTRES

# Why Data Centres?



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

# Why a New Initiative?



- Many activities have been initiated including US EPA Energy Star, US *DoE Save Energy Now* 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

CODE OF CONDUCT DATA CENTRES

# Scope

- 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

CODE OF CONDUCT DATA CENTRES

# Four Basic Scenarios

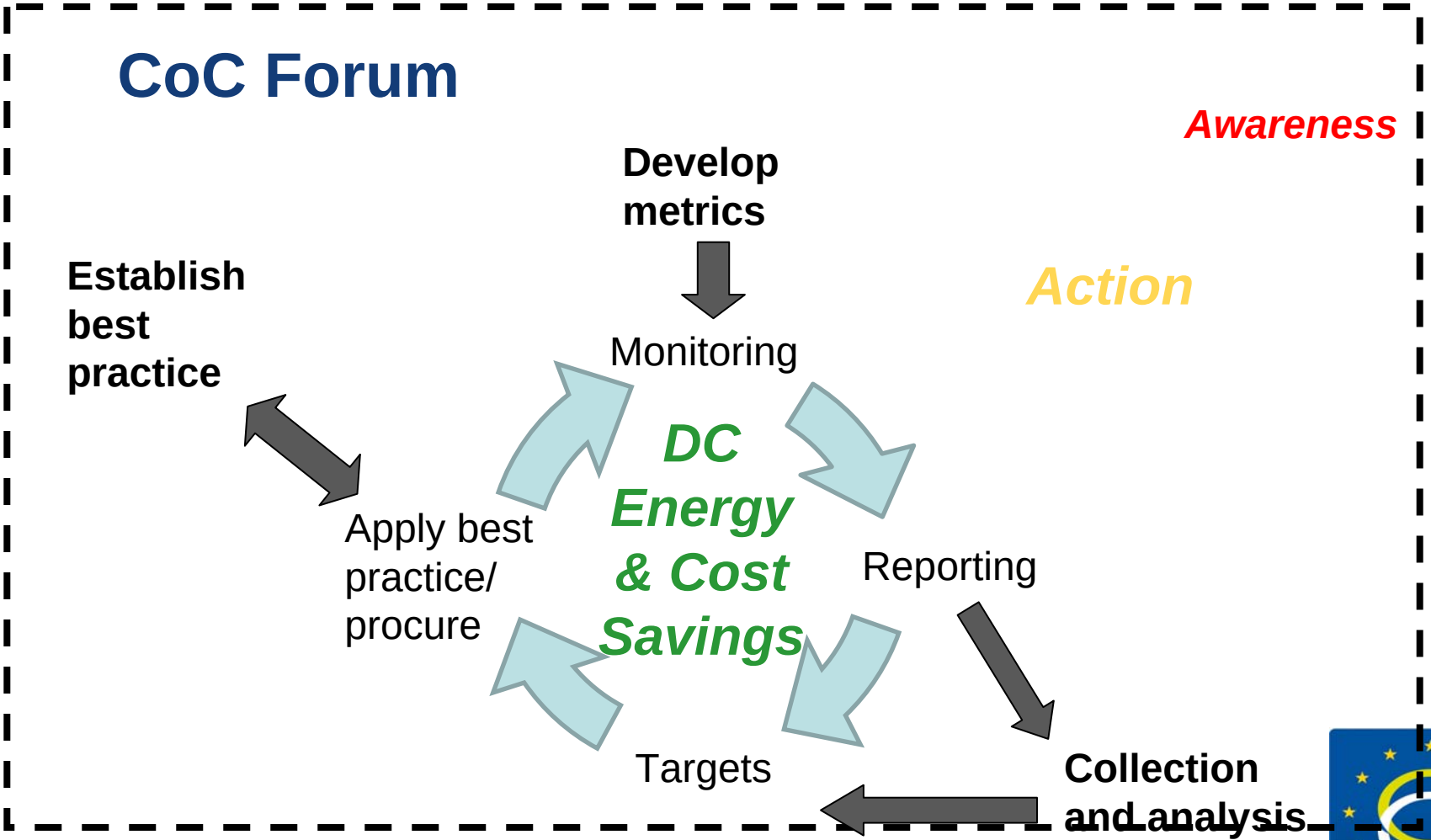


- Day to day operations (energy management)
- Normal replacement cycle/adding new servers
- Retrofit/ dedicated energy efficiency programme
- Designing new data centres

# Working Groups



- Metrics and measurements
  - How to measure and report efficiency
- Best Practice
  - Establishing guidance and support
- Data  collection & analysis
  - Monitor and report on savings




CODE OF CONDUCT DATA CENTRES

# Best Practices



| Category | Description |
|---|---|
| Entire Data Centre | Expected to be applied to all existing IT, Mechanical and Electrical equipment within the data centre |
| New Software | Expected during any new software install or upgrade |
| New IT Equipment | Expected for new or replacement IT equipment |
| Build or retrofit 2010 onwards | Expected for any data centre built or undergoing a significant refit of the M&E equipment from 2010 onwards |

## Best Practice Intent:

- Neither a prescriptive nor exhaustive list of specific technologies
- Focussed on goals and processes
- Structured to allow the addition of new technologies

CODE OF CONDUCT DATA CENTRES

# Best Practices



- Establish common vocabulary and terminology
- Provide operators with an understanding of the available technology options
- Their relative merits
- The processes they should establish
- The communication that is necessary
- The relationship between technology areas
- Most people are non-expert in some area(s) of the data centre
- Best Practices are guidance to operators on how they might improve energy efficiency
- Practices are scored 1-5 (min-max) based upon their likely energy use benefit
- Practices are ordered by score
- Practice scores are not intended to be summed for an ‘overall score’

# Benefits for participants



- Participants will receive public **recognition** for their efforts, through the **Code of Conduct promotion campaign**, aimed at raising public awareness of energy issues.
- Participants may use the **Code of Conduct logo (under development)**, publicising their energy saving actions and the contribution they are making to the environment.
- Participants that score a low energy for the data centre, will be allowed to indicate that are Code of Conduct Low Energy Champion and will be eligible for the annual Data Centre Awards (still under development).
- The list of **Participants**, including a description of their specific contribution to energy saving will be published widely (brochure, Internet, etc.)..
- The Participant Data Centres may be included in promotional activities, such as Awards and the Catalogue.
- Participants will be invited to a Code of Conduct **Stakeholder Forum** to review progresses and further develop the Code of Conduct. The Code of **Conduct Stakeholder Forum** will meet regularly and at least once per year.

# Participants



- A1 Telekom Austria AG - data centre in Vienna
- Bracknell Forest Borough Council
- British Telecommunications plc data center in Cardiff (Ty Cynnal)
- Bull SAS
- Business & Decision - Corporate level
- Bytesnet BV - Data Centre in Groningen
- EvoSwitch Netherlands B.V. - Data Centre in Haarlem (Amsterdam)
- FUJITSU Services - 2 data centres in London, one DC in Slough, one DC in Warwick and one DC in Manchester
- Hewlett-Packard - Data Centre Doxfrod Park
- IBM Deutschland Business Services GmbH, data centre located in Frankfurt
- IBM United Kingdom Limited : Data Centre in London
- INTEL - Data Centre Leixlip
- LAMDA Hellix S.A. - Data Centre Koropi Attica
- Memset Ltd. Corporate level - 2 Data Centres in Reading
- Microsoft Corporation - Data Centre in Dublin
- Onyx Group Limited - Data center in Edinburgh
- Petroleum Geo-Services (PGS) - Data Centre in Weybridge
- Reed Specialist Recruitment - Corporate level
- TCN Telehousing - Data Centre in Groningen
- TelecityGroup (corporate level) with datacentres: Paris 1 and 2; Stockholm 1 and 2; Frankfurt 1 and 2; Amsterdam 1, 2, 3 and 4; Milan 1, 2; London 1,2,3,4,5,6,7 and 10, Manchester 1 and Dublin 1
- The UK Grid Network Ltd -data center located in Mancehster
- Thomson Reuters
- TISSAT S.A. - Data Centre Tissat, Valencia
- UK Meteorological Office - Data Centre in Exeter
- VCD Infra Solutions - Data Centre in Groningen
- Vodafone Group Service GmbH - Data Centre Rehhecke, Ratingen

1E
3Com Corporation
3PAR Inc.
A.C.I.E.
Active Power Solutions Ltd.
ADA Networks Ltd
ADJUGO SA/NV
Aegide
AIT Partnership Group Ltd.
AMSTEIN +WALTHERT LAUSANNE
APC By Schneider Electric
APL France
AST (Advanced Shielding Technologies)
Atrium Data
BCS HQ
Belden
Bull
Business & Decision
ByrneDixon Associates
Camco International Limited
Cap Ingelec
Capitoline LLP
Carbon3IT Ltd.
CBI Plc
C.e.s.i.t. comité des exploitants des salles informatiques
Chloride Spa
Connectix Ltd.
Corning Cable Systems GmbH & Co. KG
CNet Training
Colofinder (Anytime Office Limited)
Comms Room Services Ltd.
Critical Building
CS Technology Ltd
Datacentre UK Limited
Dataracks
Daxten GmbH and Ltd
DECLIC Telecom TOUR AREVA
Deerns
Dell Corporation Limited
Dimension 85 Ltd
e-Business & Resilience Centre
EC2 Partners Limited
eCool Solutions
Eaton Corporation
Electron Technical Services T/A Optimum Data Centres
EMC Corporation
Enefgy
Evolved IT Services Ltd
Externus Ltd.
FIBREOPTIC INDUSTRY ASSOCIATION
FUJITSU Services
Future-Tech SCI Ltd
Gimélec
Greenvision
Haskoning Nederland B.V.
Hewlett Packard Company
Hewlett-Packard - Critical Facilities Services
Hitec Power Protection bv
IBM Data Center Services (EMEA)
Ingenium nv
INS Sudlows Ltd
ITE Projects Ltd
ITM Communications Ltd
JLBdata
Keysource Ltd
LAMDA Hellix S.A.
Memset Ltd. Corporate level
MANSYSTEMS NEDERLAND BV
Microsoft Corporation
NDSL Ltd., makers of Cellwatch.
NETPLEX Ltd.
Nexans Cabling Solutions
nlyte Software
Norland Managed Services
Nubis Solutions Ltd.
On365 Limited
Prism Power Ltd
Powertech Ltd
PTS Consulting Group plc
REM Enterprise
Rittal GmbH & Co. KG
Romonet Limited
Shoden Data Systems
Siemens NV/SA
Sir Robert McAlpine Integrated Solutions
SNIA Europe (Storage Networking Industry Association Europe Ltd.)
Société d'Etudes et des Management de Project (SEMP)
Societe Schneider Electric
Spook limited
Stratégies S.A.
STULZ GmbH
TA Migration Solutions Ltd.
TelecityGroup
Thames Renewables
The Green Grid Administration
UK Department for Environment Food and Rural Affairs (Defra)
Uniflair S.p.A.
Upsite Technologies Europe bv
Waterman Building Services
Weatherite Building Services Ltd
Workspace Technology Ltd

CODE OF CONDUCT DATA CENTRES

Thank you for your attention

paolo.bertoldi@ec.europa.eu

**http://re.jrc.ec.europa.eu/energyefficiency/**