

Energy Efficiency (EE) and Information Technology (IT): EU and US Developments

Stephen Harper
Chair

International Climate Change Partnership

能源效率(EE)和 信息技术(IT): 欧盟和美国的发展状况

Stephen Harper

主席

国际气候变化联盟

Overview

- US highlights
- EU highlights
- Keeping the “macro story” in mind
- EU/US “lessons learned”

概述

- 美国重要事件
- 欧盟重要事件
- 牢记“宏观案例”
- 欧盟/美国制定能源效率政策的一些体会

US Highlights

- Energy Star
 - PC Clients – Tier I
 - PC Clients – Tier II
 - Servers
- Data Center study

美国重要事件

- “能源之星”计划
 - PC 客户机 – 第一期
 - PC 客户机 – 第二期
 - 服务器

- 数据中心研究

Energy Star – PC Clients and Servers

- Tier I took effect July 2007
 - Mode-specific, component-specific specification
 - Mandatory for government procurement, but increasingly influential in private market
- Tier II under development
 - Intended to set overall, holistic standard
 - Scheduled to take effect in 2009
 - Ecma project leading model development
- Energy Star for servers – EPA has announced development plans

能源之星 – PC 客户机与服务器

- 第一期于 2007 年 7 月生效
 - 特定模式、特定组件的规范
 - 针对政府采购采取的强制性措施，但逐渐影响了自由市场
- 第二期尚在制定过程中
 - 旨在设定全面的标准
 - 预计于 2009 年生效
 - Ecma（欧洲计算机制造协会）项目率先进行模型开发
- “能源之星”服务器规范 – EPA（美国环保署）已经宣布了开发计划

EPA Data Center Study

- Commissioned by US Congress; released August 2007
- Data centers consume 1.5% of US electricity, doubling over last 5 years
- Study highlights positive role of data centers in serving society and driving energy efficiency in the US economy
- Study reinforces need to address data center energy efficiency holistically – servers, other hardware, software, cooling systems, center design
- Likely to establish the basis for further Energy Star and Congressional action

EPA 数据中心研究

- 由美国国会授权；于 2007 年 8 月启动
- 过去 5 年，美国数据中心消耗的电力增加了一倍，达到 1.5%
- 重点研究数据中心在社会服务及提高美国经济能源利用效率方面发挥的积极作用
- 研究强调从整体上解决数据中心能源效率的必要性，范围涉及服务器、其它硬件、软件、散热系统、数据中心的设计等
- 为推进“能源之星”计划，促使国会采取进一步行动奠定了基础

EU Highlights

- Energy Using Products (EuP) Directive Implementing Measures
- EU Strategy on ICT for Sustainable Growth

欧盟重要事件

- 耗能产品生态设计（EuP）指令实施方式
- 欧盟制定 ICT（信息通信技术）战略，推进可持续发展

Energy Using Products (EuP) Directive

- Adopted in 2005, EuP Directive intended to create comprehensive legislative framework for eco-design of products
- Taking a life-cycle perspective, EuP focuses on both on energy efficiency and broader design for environment (DfE) characteristics
- Various product categories targeted based on energy usage
 - PCs included
- Implemented through product category-specific “implementing measures” (IMs)

耗能产品生态设计（EuP）指令

- EuP 指令于 2005 年开始实施，其目的是创建一个产品生态设计综合立法框架
- EuP 着眼于产品整个生命周期，重点关注能源效率和环境化设计（DfE）的诸多特点
- 目的是使设计的各类产品都符合能源使用标准
 - 包括电脑
- 分类实施 — “实施方式”（IMs）

EuP (cont'd)

- EuP expected to create a two-tier system with Energy Star (EU is part of Energy Star)
 - Energy Star set “aspirational” goal for best 25%
 - EuP set mandatory “market access” requirement
- PC and other product category energy efficiency requirements now being developed through consultants’ projects and stakeholder consultation
- Anticipate later development of non-energy design requirements

EuP (续)

- EuP 有望创建一个类似于“能源之星”的二期系统（欧盟也部分参与了“能源之星”计划）
 - “能源之星”设定了最高 25% 的宏伟能耗目标
 - EuP 则提出了强制性“市场准入”要求
- 通过咨询，与相关方协商，正在制定电脑和其它类产品的能源效率要求
- 预计之后会制定非能源设计要求

EU Strategy – ICT for Sustainable Growth

- EU has made conscious decision to integrate energy and climate policy
- EU leaders set **combined targets**:
 - Reduction of GHG emissions of 20% by 2020 compared to 1990
 - 20% renewable energy sources by 2020 compared to the present 6,5%
 - Saving 20 % of the EU's energy consumption compared to projections for 2020

欧盟制定 ICT（信息通信技术）战略， 推进可持续发展

- 欧盟决定对能源和气候政策进行整合
- 欧盟领导人设定了各种目标：
 - 2020 年将 GHG（温室气体）排放量减少 20%（与 1990 年相比）
 - 到 2020 年，将可再生能源的使用比例从目前的 6.5% 提高到 20%
 - 到 2020 年，将欧盟的能源消耗量降低 20%

EU strategy – ICT for Sustainable Growth

- ICT accounts for approximately **half of the productivity growth** in modern economies
- IT offers a great potential for **re-engineering society** towards more sustainable economic, social and environmental patterns
- It could possibly contribute to a lower Carbon economy through **progressive dematerialisation**
- Many examples of ICT addressing societal challenges, e.g.:
 - Improved **energy efficiency**
 - Improved management of our **environment and disasters**
 - **eGovernment** including online services for modern administrations
 - **eInclusion** including services for an ageing European population
 - **eHealth** and improved healthcare systems and services

欧盟制定 ICT（信息通信技术）战略，推进可持续发展

- 在现代经济体中，ICT 对生产力提高的贡献率几乎可以达到 50%
- IT 将在重新构建一个可持续发展的经济、社会与环境模式过程中发挥巨大的作用
- 通过“去物质化”进程，IT 可能会在降低能耗的过程中发挥作用
- 有很多采用 ICT 解决社会问题的案例，例如：
 - 提高能源效率
 - 提高管理环境和灾难的能力
 - 电子政务包括现代管理在线服务
 - **eInclusion** 包括欧洲人口老龄化服务
 - 电子健康以及改进的医疗系统和服务

Policy context in Europe i2010 strategic framework



Objectives:

- *To reinforce the contribution of ICT to Europe's performance...*
- *To create a favourable environment for competitiveness and growth...*
- *To increase the welfare of European citizens through increased use of ICT...*
 - Scope for all electronic communications, services and media sectors, investment in research, inclusiveness and public services
 - Link to the Lisbon strategy, stating objectives and benchmarking performance

欧洲 i2010 战略框架政策环境



目标:

- 提高 ICT 对于欧洲业绩的贡献率...
- 创造一个有利于竞争和增长的环境...
- 通过提高 ICT 的使用率增进欧洲人民的福利
 - 覆盖所有电子通信、服务和媒体部门，应用于科研、综合服务和公共服务
 - 围绕《里斯本战略规划》制定目标，评估取得的成绩

The “Micro” and “Macro” Stories

- “Micro” story – The IT industry continues to invent more energy efficient devices
- “Macro” story -- IT drives energy efficiency throughout the modern economy, including
 - Internet commerce
 - More energy efficient vehicles
 - “Smart” buildings
 - More efficient industrial process controls

“微观”和“宏观”案例

- “微观”案例——IT 业持续发明创造更多节能设备
- “宏观”案例——IT 业将节能理念融入当代经济的方方面面，涉及：
 - 互联网商务
 - 节能的交通工具
 - “智能”楼宇
 - 高效工业流程控制

Sustainability Implications of the “Macro” Story

- Dramatic advances in IT have driven recent surge in US economic productivity
 - *“Two thirds of the US gains in productivity from 1997 to 2002 can be directly attributed to the application of information technology...”* (ITIF, Digital Prosperity, 2007)
- In parallel, IT advances have enabled “de-materialization”
 - Bits and bytes traveling through the Internet now increasingly take the place of material resources, including energy
- Productivity increases have lead to “de-coupling”
 - Economic growth now can occur much faster than growth in energy demand

