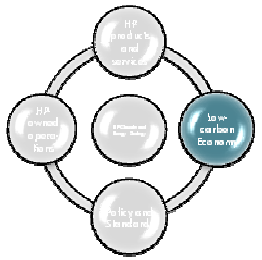
The “Macro” Story

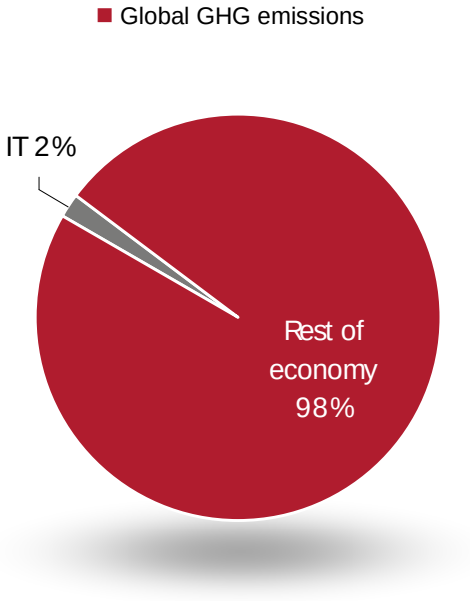
- The “Micro” story – addressing the direct emissions of the ICT industry
  - Global ICT emissions – 2%
  - Currently being addressed by government mandatory programs and voluntary initiatives
- The “Macro” story -- ICT is a key part of the broader global solution to climate change
  - 98% of climate emissions from non-ICT sources (Gartner analysis)
  - This is where ICT can play a bigger role

The Central Role of ICT

- ICT strategies could reduce up to 15% percent of global emissions in 2020 against a "business as usual" baseline (Source: "Smart 2020: Enabling the Low Carbon Economy in the Information Age" (2008))
  - ICT enables efficiency through smart motors, smart logistics, smart buildings, and smart grid
  - Many energy efficiency actions based on ICT actually save society money
- "ICTs have transformed our economy and our lives, but they also have revolutionized the relationship between economic production and energy consumption." (Source: American Council for an Energy-Efficient Economy (ACEEE), "Information and Communications Technologies: The Power of Productivity" (Feb. 2008)
  - "For every extra Kwh of electricity that has been demanded by ICT, the US economy increased its overall energy savings by a factor of about 10…" (2008)
  - Note -- These numbers may be even more dramatic in developing countries
- "There probably is no other sector where the opportunities through the services provided hold such a reduction potential as for the IT industry." (Source: WWF 2008)
  - "The direct emission reductions of one billion tonnes of CO2 which could be achieved…is equivalent to approximately a quarter of EU's current CO2 emissions and, thus, very significant." This conclusion based on ten specific strategies involving greater IT inclusion in realms such as city planning, smart buildings, smart appliances, process optimization, smart work, and intelligent transportation

Reducing the Broader Footprint





IT enables:

REDUCE

Reduce energy intensity and carbon footprint

- Smart buildings, power grid, appliances…
- Advanced modeling for more energy-efficient design (aircrafts, cars, machines)
- Energy intelligence in industrial equipment to increase manufacturing energy-efficiency

SUBSTITUTE

Substitute carbon-intensive processes by low-carbon ones

- Telepresence to reduce business travel
- Web services such as eCommerce and eBanking to replace physical transactions

ENABLE

Enable low-carbon economy management

- Carbon trading platforms
- Carbon monitoring and reporting software
- Deforestation monitoring infrastructure

hp invent

Leverage Computing to Drive Energy Savings

Automation

Industrial Robots

Logistics for Transportation

LEED Certified Buildings

Smart Power Delivery

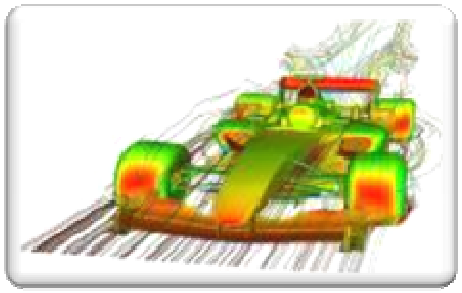
Substitution

Video Conferencing

On-line Entertainment

E-commerce

De-materialization



Converting Atoms to Bits

On-line Banking

Digital Music

Policy Options

- Utility decoupling
- Traffic management systems
- Standards/codes for smart buildings
- Government procurement and e-government
- Tax incentives for the use of ICT innovations
- Telework incentives and elimination of barriers
- Promotion of home energy management systems
- Broadband deployment and availability
- Others?