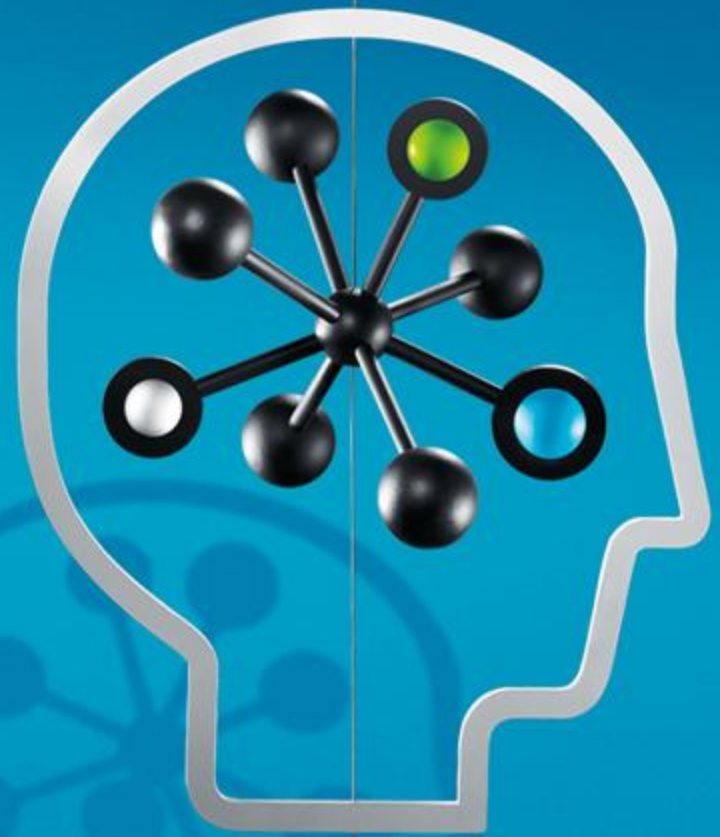


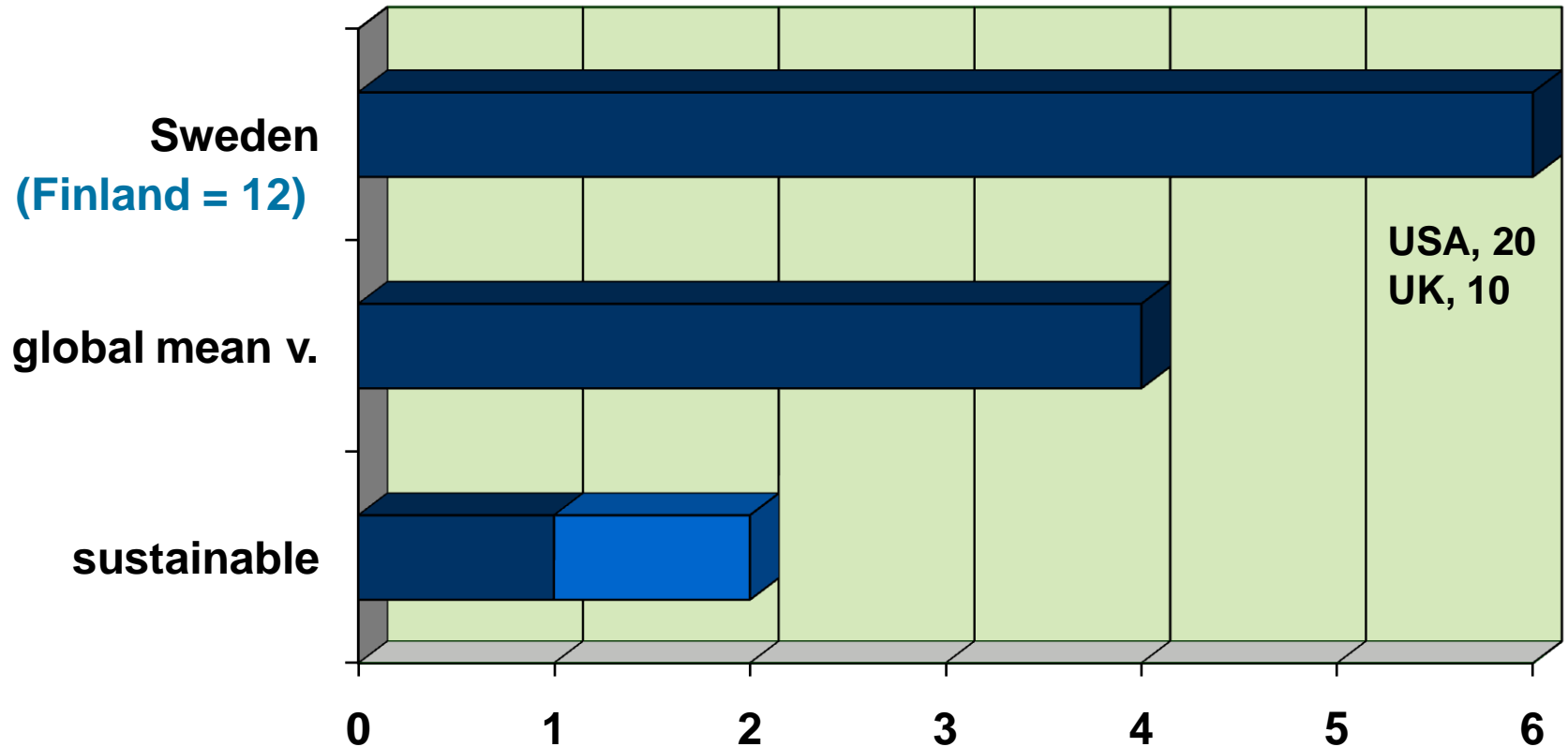
”HP climate initiatives in a changing business environment “

by Madeleine Bergrahm
HP Nordic Environmental Manager

2009-05-07

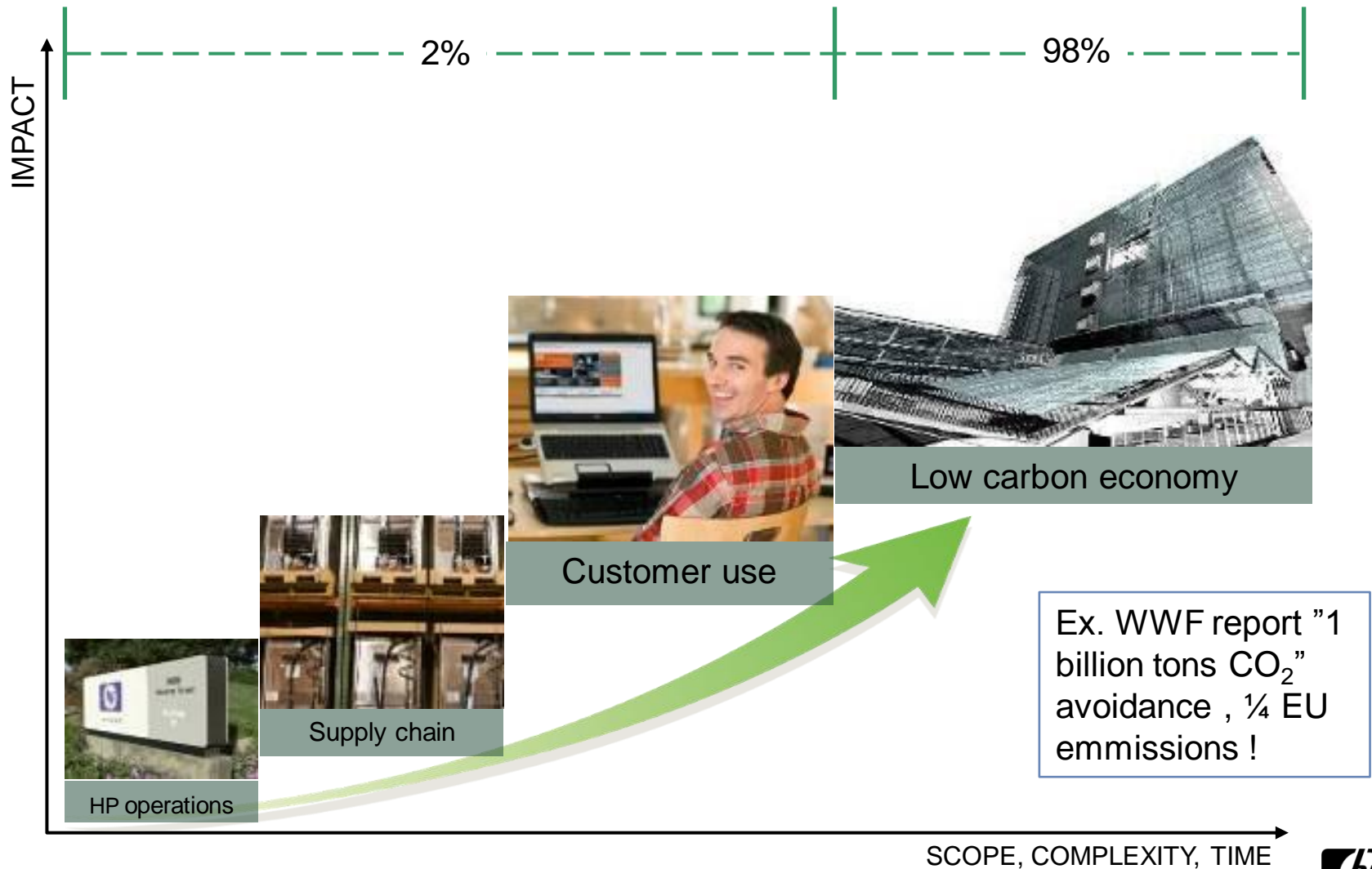


The individual share...



Emissions,
tons CO₂-equivalents /year and inhabitant 

From responsibility on IT's 2% footprint to business opportunity in the 98%

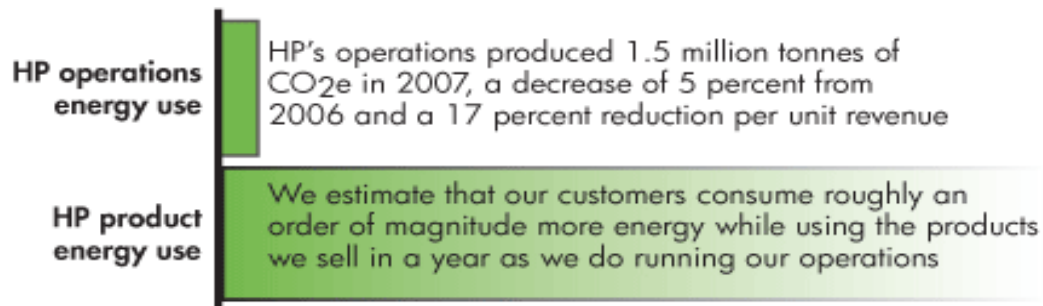


HPs climat strategy

- Develop with industry energy efficiency measurement standards
- Globally recognized energy label(s)
- Global method to proactively provide product performance information to customers
- Share our vision externally
- Promote an HP internal energy vision

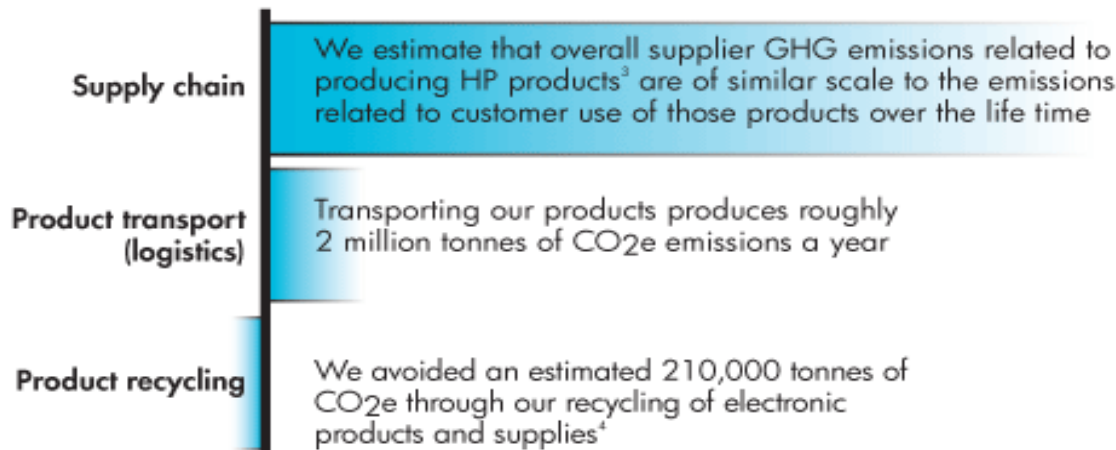
HP's environmental impact of OPERATIONS, PRODUCTS and SERVICES

Improving our climate impact...



2005 – 2010
~25% less
ww energy
consumption

...and extending our greenhouse gas accounting



OPERATIONS – 16%

HP will reduce the absolute energy consumption of its facilities by 16% (absolute goal) year 2005 - 2010

- **IT Transformation.**

Consolidate 85 datacenters into 6 = \$33 million

- **Workplace transformation**

- Teleworking and office space consolid. = - 6% of total space
- Business travel reduction via HALO
- Employee equipment energy efficiency upgrades
- Print transformation

- **Renewable energy**

- 2x use of renewables to 8% year 2012

- **Employee engagement**

- "Live Green" program



Business case for SUPPLY CHAIN emissions accounting

Good for the environment:

- Climate mitigation
 - Eg 15-25% of China's GHG are export related
- side benefits: energy, pollution...

Good for business:

- Expectations: emerging labeling and regulatory initiatives
- Supply chain efficiency = cost savings
- Proactive risk management (energy and raw material price volatility) + carbon cost mitigation



\$50 billion => Over 1 million print cartridges, 110,000 printers, 75,000 PC systems and 3,500 servers. Depth 6-7 tiers, >10,000 active SKUs

SUPPLY CHAIN: Building a **simple** and **scalable** CO₂ accounting process

Process:

- OEM aggregate emissions based on suppliers revenue share:
 - Eg: if 30% supplier revenue comes from HP, HP will allocate 30% supplier emissions to HP
- In future: self reporting by suppliers to an online secure database

Benefits:

- Simplicity: each supplier reports once
- Based on actual, observed data, not estimates or models
- Can be reproduced further down the chain



SUPPLY CHAIN: Pilot program results

September 2008 announcement:

- HP released emissions data associated with largest suppliers, representing more than 80 % of HP's costs for the materials, manufacturing and assembly of its products worldwide.
- This totaled approximately 3.5 million metric tons in 2007.

How HP will use this data:

- Incorporate energy efficiency into HP's supplier management process
- Set multi-year reduction targets with suppliers, track progress
- Develop and launch supplier carbon reporting methodology with EICC
- Use learnings to influence industry standard development (CDP, GHG Protocol)
- Propagate to the rest of the supply chain to drive further emissions reductions



Enabling customers to reduce energy use, PRODUCTS & SERVICES

- Reduce the total energy usage of the HP PCs that are sold*, with **25%** year 2010
- Increase energy efficiency year 2010 for
 - Printers **-30%**
 - Servers **-50%**
- Optic (s.w.) **-40%** of cost for cooling DC
- Managed print services : **-25%** of cost
- Carbon Assessment Service (total IT use)
- Print Calculator (printer range) or Thermal Assessment (DC)



* Based on a defined user profile



Virtual meetings – HP HALO and Tandberg



- C-C-Q, cost – climate – quality (Volvo)
- HP will avoid 20 000 trips annually...
... save 100s million USD

Energy innovation

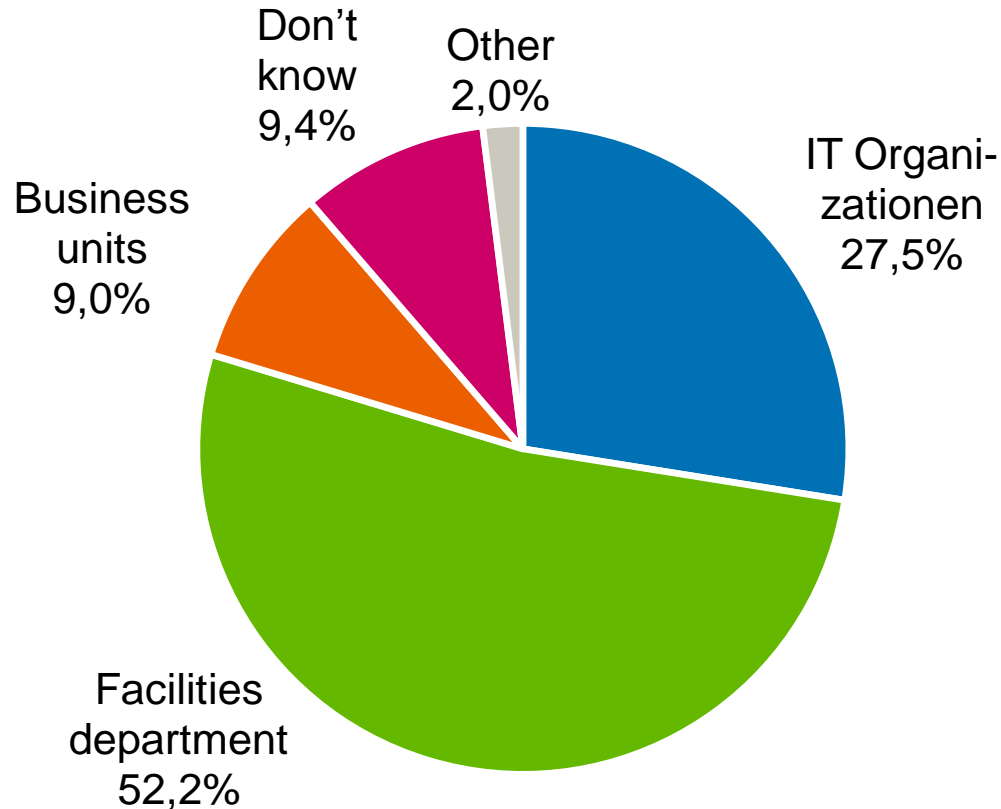


Energy efficient



Energy effective

Who's paying for electricity and cooling in datacenters?



EXAMPLE

300 m² data center,
500 servers incl. storage.
500 kW /h (where 300 kW for
cooling)

Yearly cost energy= 2.190.000
SEK (*approx. 200 000 Euro*)
where cooling is 60%, or
1.314.000 SEK

Source: IDC's Enterprise IT Advisory Council
From presentation on "GreenStorage at HP", June 2007

GreenIT Index from Swedish IT Industry Association, mid 2008:

"Only 14 % of companies measure energy usage in their DC's. Another 5 % plan to start measurements within 12 months time."

Efficient use – energy save functions enabled or disabled

| Example | Energy use kWh/year with energy save functions... | |
|----------------------------------|--|-----------------|
| | enabled | disabled |
| Desktop + 19" LCD-screen | 220 | 830 |
| Stationary PC + 19" | 110 | 400 |
| Thin client ⁽¹⁾ + 19" | 75 | 170 |
| Notebook + 19" | 60 | 160 |
| Notebook | 30 | 50 |

**1000 units of stat.PC and screen x 290 W
x 0,052 Euro/kWh = 15 080 Euro**

(1) The increased energy demand in a server placed in other location is not taken into account
User profile, "Average office", number of hours per mode and day = 2 ON + 9 STAND-BY +13 OFF

www.eu-energystar.org/en/en_calculator.shtml



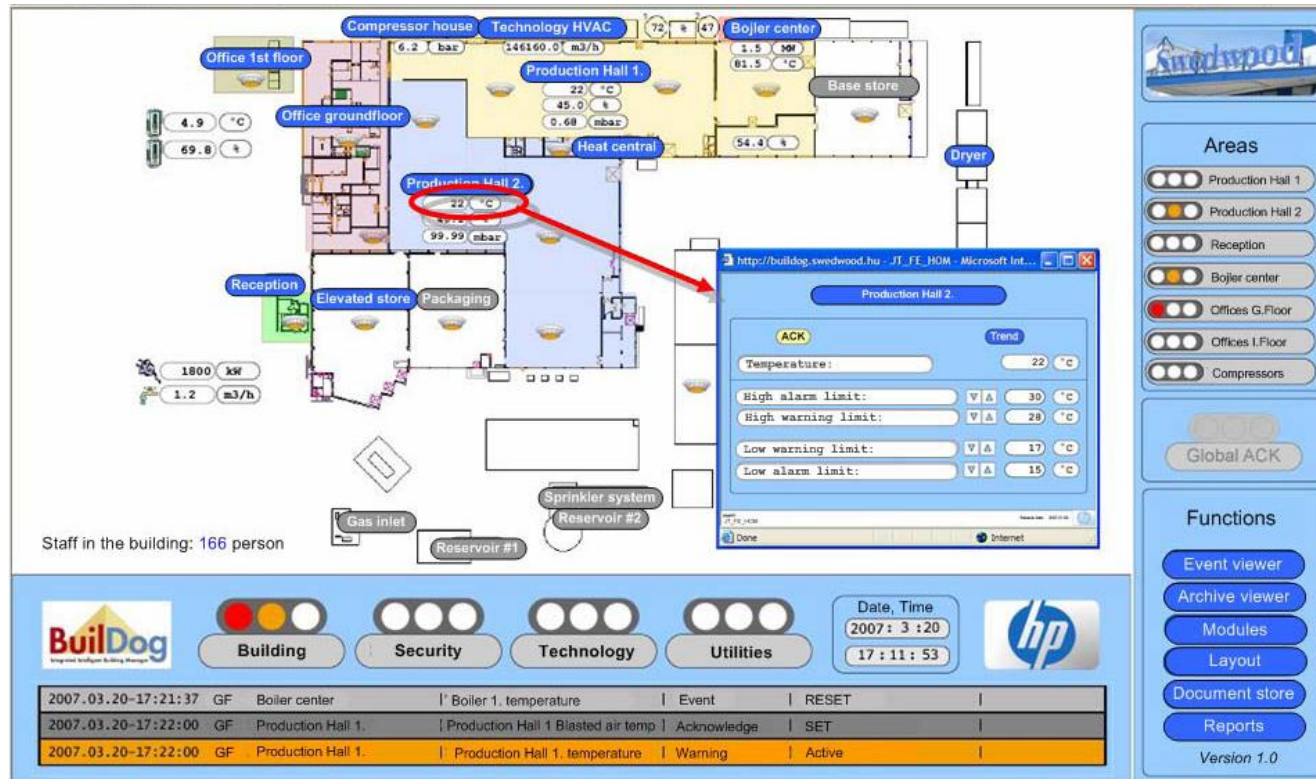
The Eco Declarations (TED)



- TED is released for almost all HP products
<http://www.hp.com/hpinfo/globalcitizenship/environment/productdata/index.html>
- Energy data acc. to Energy Star standard
- TED is gathering requirements from:
 - TCO
 - Blue Angel
 - EU Flower
 - Nordic Swan
 - US EPEAT



HP Integrated Site Management Solution



- Single interface to monitor/control different production subsystems (air condition, energy consumption etc)
- Simplified root cause analysis of unexpected events with event “learning”
- Real-time database prevents loss of data, regional hub allows future analysis and reports
- HP neural-network based “self correcting” consumption forecasting

<http://www.hp.hu/IBCC/>



Case study – Swedwood (the industrial group of IKEA)



Functions

- Efficient air cooling by enabling optimal mixing of external and recycled production air flows
- Monitoring of separation objects (doors, windows) to prevent gas / air mixing and avoid contamination
- Appropriate cost distribution for resource consumption by e-metering
- Demand calculations to prevent unplanned surplus energy needs
- Consumption based energy demand forecasting

Benefits

- *11.3% power consumption reduction*
- *After 6 months 75% less contamination incidents*
- *50% cost reduction for sewage handling*
- *Compensation claim for charged but unused energy*

UPS label printing ... , Green through

IT'

- HP Handheld sp400 All-in-One Scanner-Printer
- scan packages, send data wirelessly, then print handling instructions directly onto the package
- Before: moving trolleys loaded with thermal printers, PCs, monitors and keyboards

Benefits

- >1300 tons of paper (~ 1900 t CO₂) less per year
- >30 Mio\$ savings until 2013
- enlarged quality and competitiveness



"At UPS, we're always looking for process re-engineering opportunities supported by IT to help gain efficiencies, reduce cost, and meet our customers' expectations. The HP Handheld sp400 All-in-One allows us to accomplish these objectives while also significantly reducing the environmental impact of paper waste."

—Ted Abebe, Senior Project Manager, UPS

<http://h71028.www7.hp.com/enterprise/cache/617988-0-0-225-121.html>



Initiatives in a changing business environment...

This :



+



=



instead of:



What can your company do?

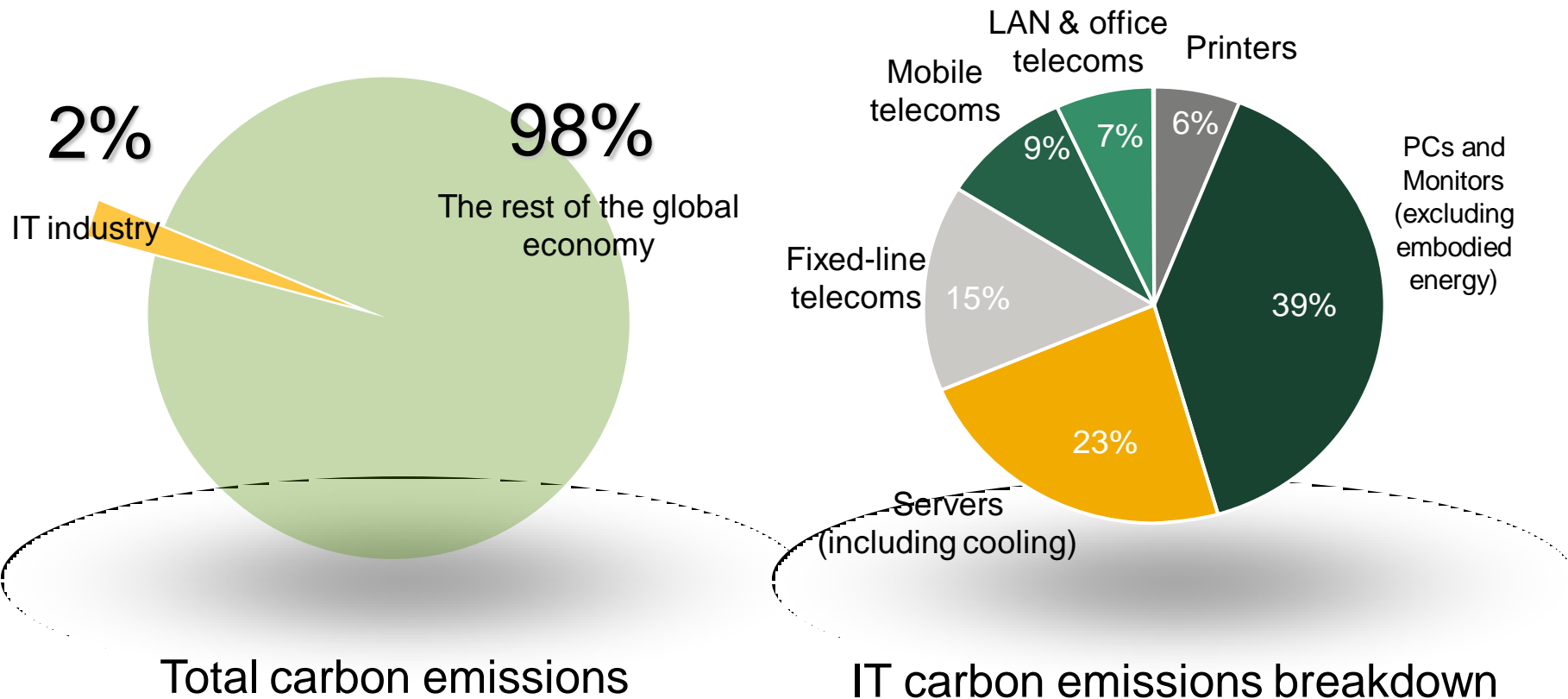
= Low carbon economy

Technology for better business outcomes

madeleine.bergrahm@hp.com



IT's use of energy is responsible for approximately 2% of the worldwide greenhouse gas (GHG) emissions

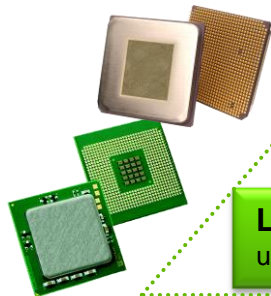
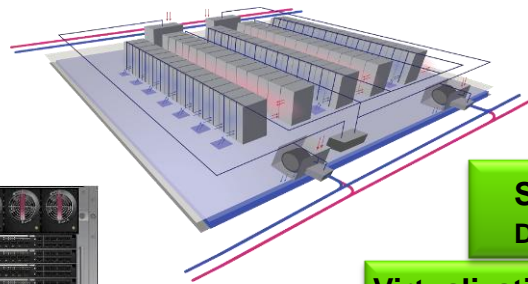


Source: Gartner – IT Vendors, Service Providers and Users Can Lighten IT's Environmental Footprint, December 2007



HP “green” data center potentials

up to 40%
of energy
savings



Power & Cooling Optimization
up to 45% cooling cost savings w/Mapping

HP Services: Thermal Mapping
over 10% cooling cost red.

**Storage Thin & Provisioning/
Dynamic Capacity Mgt** saves up to 45%

Virtualization/Consolidation: up to 40%
reduction in power cost for data centers

Insight Power Manager & iLO 2: 10%
power reduction w/regulator

Power Distribution Rack & MCS
15% - 20% savings on power & cooling

BladeSystem & Thermal Logic:
25% cost savings to power & cool

**Power Optimized ProLiant
Servers:** 18% less power

SFF Drives: 2.5" 9 watts
vs 18watts for 3.5"

Power Supplies: 90%
efficient supplies

Low Power processors:
up to half the power consumption



‘Optimizing from
chip to chiller’



SUPPLY CHAIN:

HPs large and complex supply chain

- Annual spend of approximately \$50 billion
- Daily shipments:
 - Over 1 million print cartridges, 110,000 printers, 75,000 PC systems and 3,500 servers
- Supply chain depth 6-7 tiers
- >10,000 active SKUs, high refresh rate
- SKUs can have 1,000s of parts and 100s of suppliers
- Highly configurable SKUs: 1 PC can have 200+ different configurations