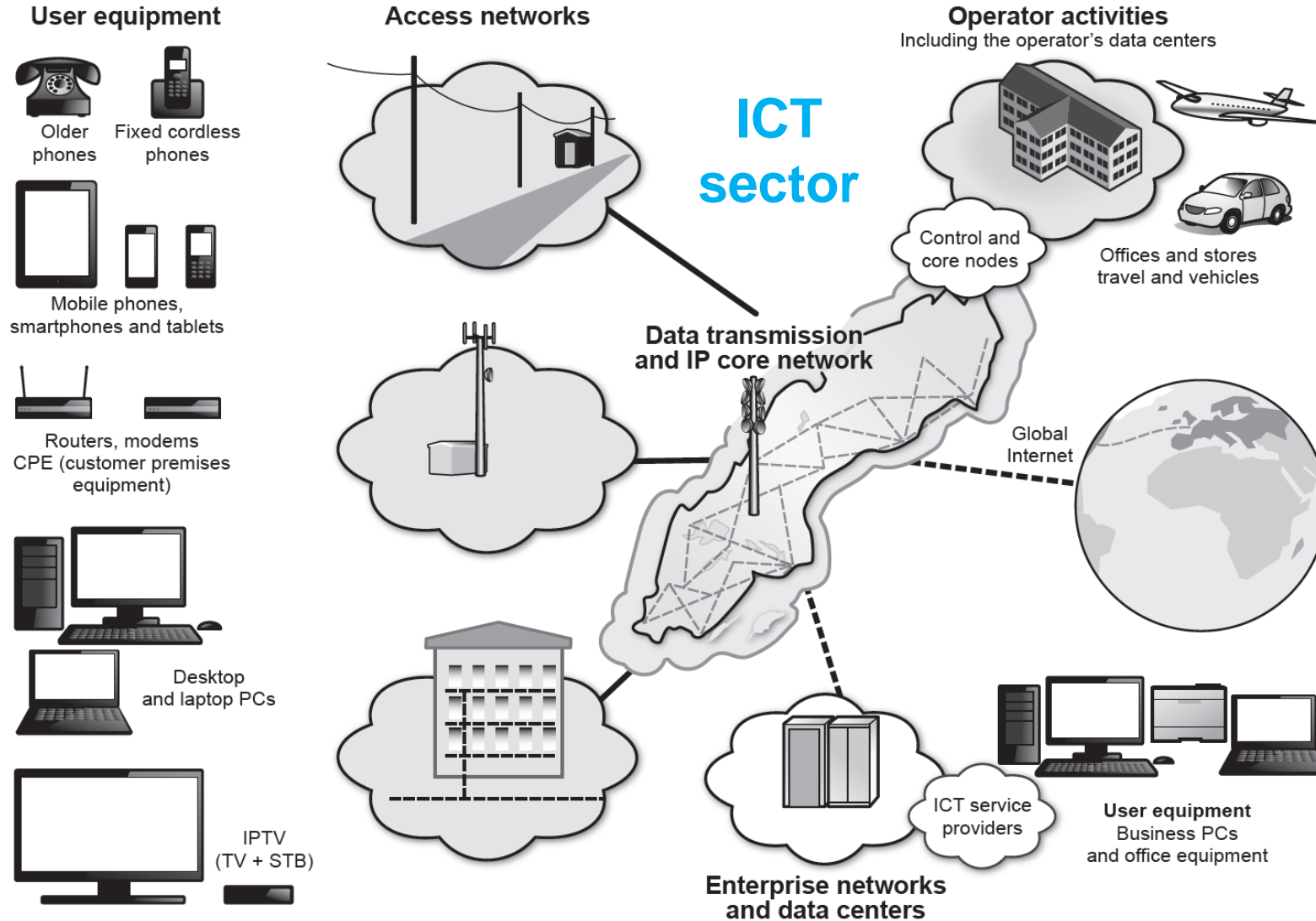# Sustainability impact of ICT, E&M and IoT
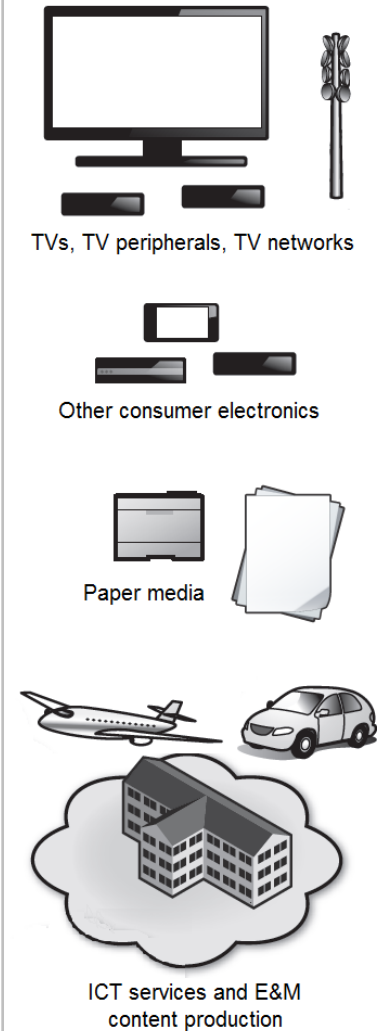
ICT = Information & Communication technology
E&M = Entertainment and media
IoT = Internet of Things

Jens Malmodin, Ericsson Research
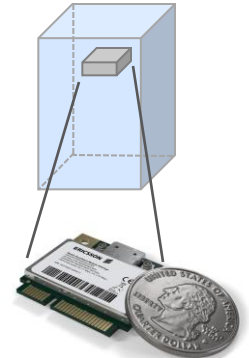IEA Digitalization and Energy WS 2017-04-05

ERICSSON

Scope

User equipment
- Older phones
- Fixed cordless phones
- Mobile phones, smartphones and tablets
- Routers, modems CPE (customer premises equipment)
- Desktop and laptop PCs
- IPTV (TV + STB)

Access networks

ICT sector

Data transmission and IP core network

Operator activities
Including the operator's data centers
- Control and core nodes
- Offices and stores travel and vehicles

Global Internet

Enterprise networks and data centers
- ICT service providers
- User equipment Business PCs and office equipment

E&M sector
- TVs, TV peripherals, TV networks
- Other consumer electronics
- Paper media
- ICT services and E&M content production

IoT

Com modules in other electronics (included in): vehicles, home appliances, HVAC-, health care-, meter-, security- and production equipment etc.
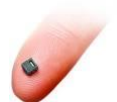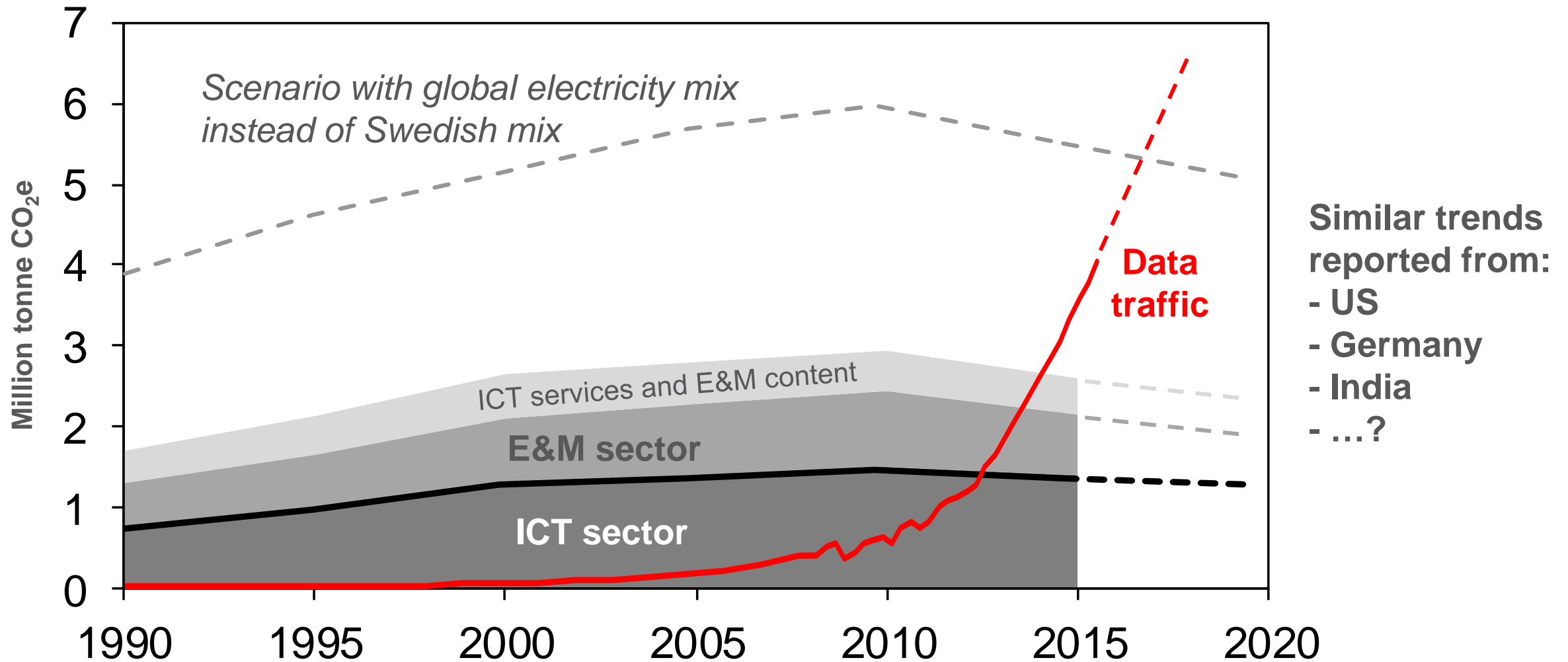
Sensors, tags etc., included in…

Trends in devices and data

What about the future?

What about IoT?

› From large TVs/PCs to small energy efficient tablets/smartphones

› From dedicated consumer electronics (CE) to smartphone apps

› From local servers to more energy efficient cloud data centers

› Data traffic and especially mobile data traffic keeps growing

› High impact from ICT on entertainment and media
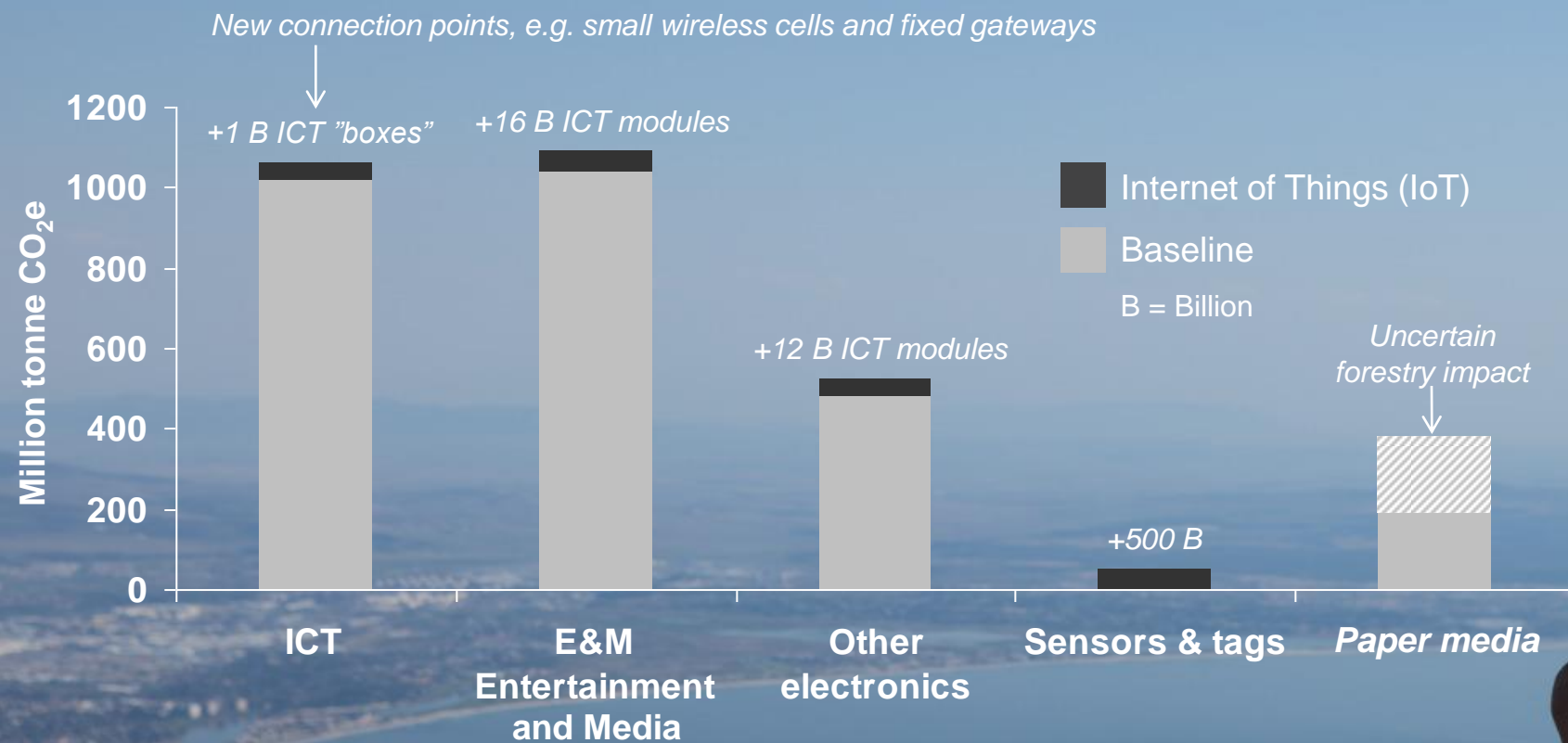
› …what will the IoT impact be in the future?

carbon footprint evolution
Sweden case study

Future IoT scenario

New connection points, e.g. small wireless cells and fixed gateways

Internet of Things (IoT)

Million tonne CO$_2$e

+1 B ICT "boxes" +16 B ICT modules

- Internet of Things (IoT)
- Baseline

B = Billion

+12 B ICT modules

Uncertain forestry impact

+500 B

1200
1000
800
600
400
200
0

ICT | E&M Entertainment and Media | Other electronics | Sensors & tags | *Paper media*

- The footprint of IoT can be small!

(Source: Malmodin 2013, "The future carbon footprints of the ICT and E&M sectors", ICT4S 2013 conference)

ICT enablement potential 2030

Smart Buildings

Smart Grid (Smart Home)

Smart Transports

Smart Work

Smart Travel

Smart Services

Smart Agriculture

Digital services and solutions

63.5 Gt

Total global greenhouse gas emissions 2030

15% *

REDUCTION POTENTIAL

Potential GHG reduction by 2030 due to ICT in a high reduction scenario. Note: 7% in a medium scenario.
Source: Malmodin 2015, "Exploring the effect of ICT solutions on GHG emissions in 2030", ICT4S conference

KEY NOTES

› *A shift in focus:*
From ICT products to how ICT is used and can be used in society
- ICT's own energy consumption is now under control (decreasing)

› *Companies and organizations own policies play a key role*
Example: ICT companies large investments in green energy

› *"If you measure it you can manage it"*
"What gets measured gets done"
- Appropriate, clear and simple measurements a key to success