GeSI SMARTer 2020: the Role of ICT in Driving a Sustainable Future

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8th ITU Symposium on ICTs, the Environment and Climate Change
Torino, 6 May 2013

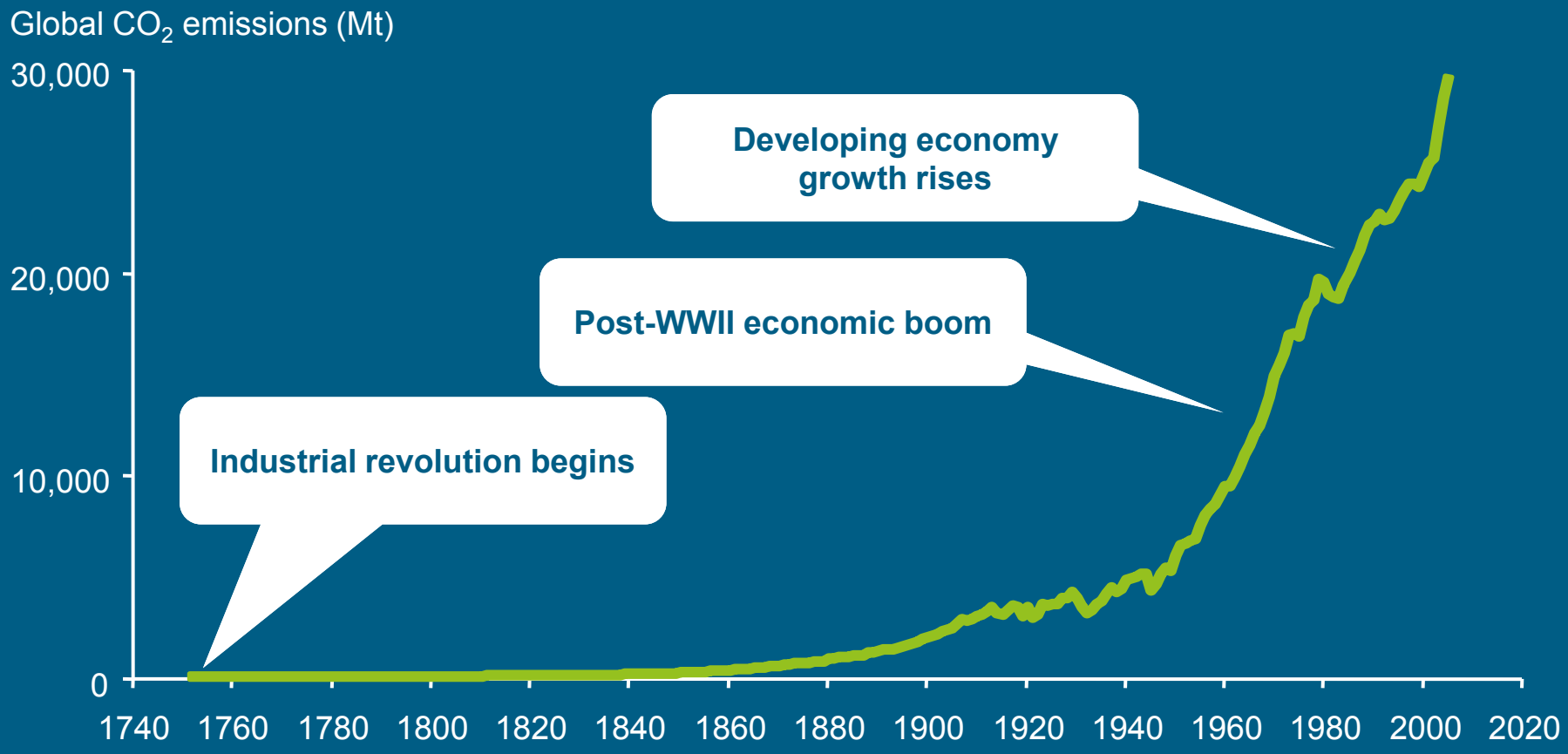
Members

Partners

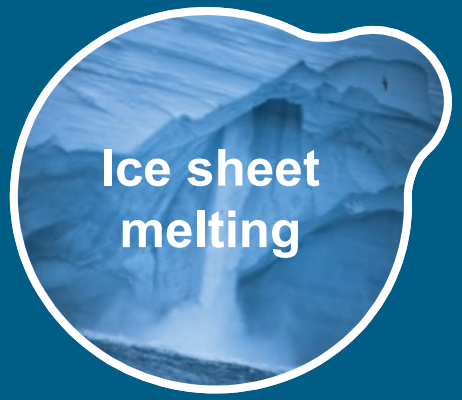
GeSI vision

A sustainable world through responsible, ICT-enabled transformation.

Human activity combined with limited emissions abatement has pushed CO_2 emissions to nearly 32,000 Mt in 2009



GHG emissions lead to dramatic and widespread temperature changes – there are also other destabilizing effects



GeSI has re-evaluated ICT's potential to enable a low-carbon economy in 2020

SMARTer 2020 follows up the SMART 2020 study, which first evaluated ICT's potential to enable a low-carbon economy in 2020

In 2008

SMART2020

Today

SMARTer 2020

The potential for information technology to reduce global carbon emissions has been under-estimated until now

9.1 $GtCO_2e$

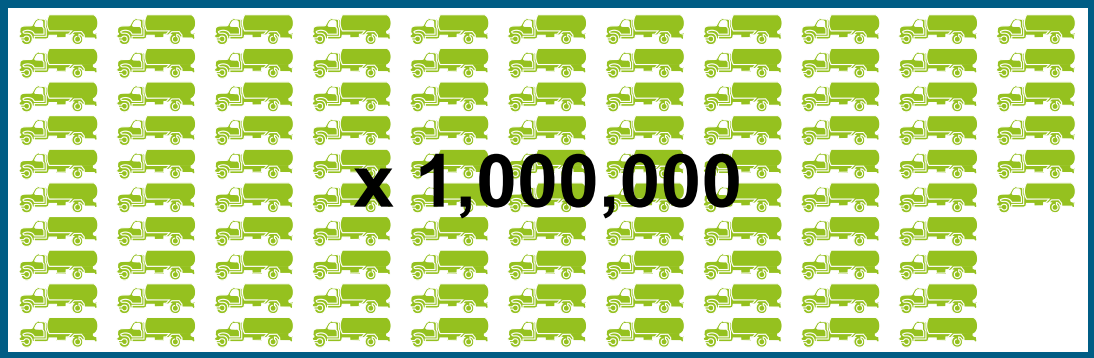
Total abatement potential of ICT-enabled solutions in 2020

16.5%

% of global GHG emissions in 2020

9.1 Gt of GHG emissions is equivalent to USD 1.9 trillion in gross energy and fuel savings

Savings of 21.6 billion barrels of oil[1]



Equivalent to GDP of the Russian economy[2]

1. Number of barrels of oil with equivalent emissions assuming Barrel of oil emits 0.43 metric tons of CO_2 2. At today's crude oil price, value of the oil that would be saved ($87.99 per barrel of crude oil as of Nov 6, 2012)

The new research study identifies GHG abatement potential from ICT-enabled solutions ranging across six sectors

- **Agriculture & Land-Use**
- Buildings
- Manufacturing
- Power
- Service & Consumer
- Transportation

Example 1: Smart farming

The new research study identifies GHG abatement potential from ICT-enabled solutions ranging across six sectors

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- Power
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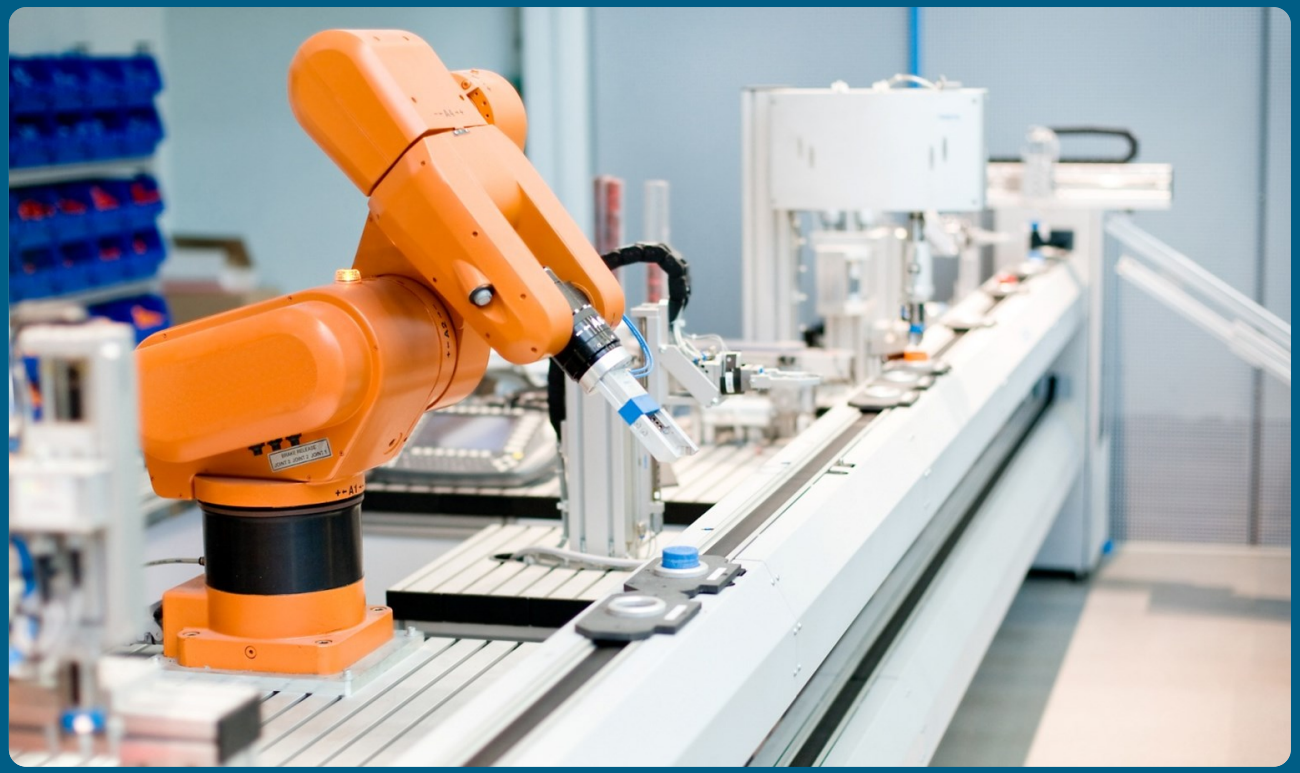
Example 2: Automation of industrial processes



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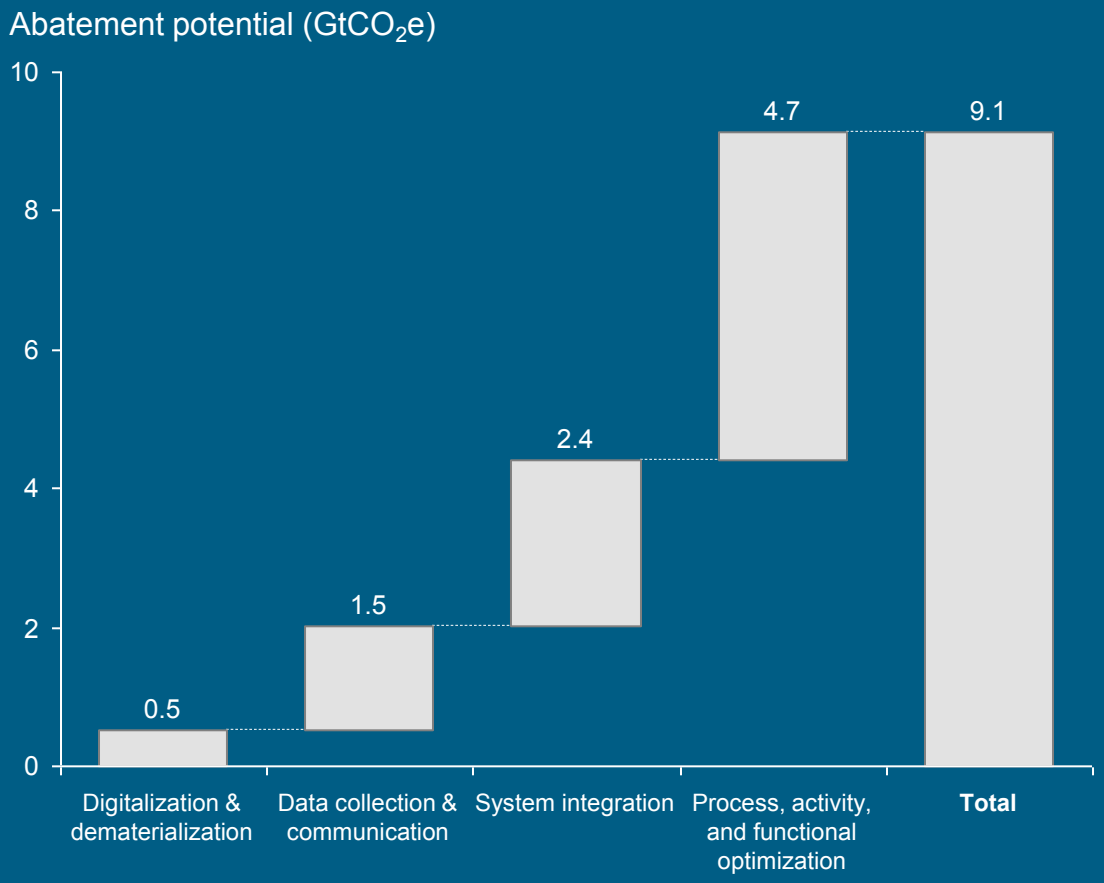
Example 3: Integration of renewables

Emission reductions come from virtualization initiatives such as cloud computing, but also through efficiency gains

Abatement potential by change lever



1.Of global GHG emissions in 2020
Source: BCG analysis

Major drivers

Digital. & dematerial.

- Establishment of technologies that **substitute** or **eliminate** the need for a carbon-intensive product
- Not many new technological innovations in change lever

Data coll. & Comm.

- Trends in **increased data complexity** require real time analysis and communication
- **Social media** and networking are also a major driver

System integration

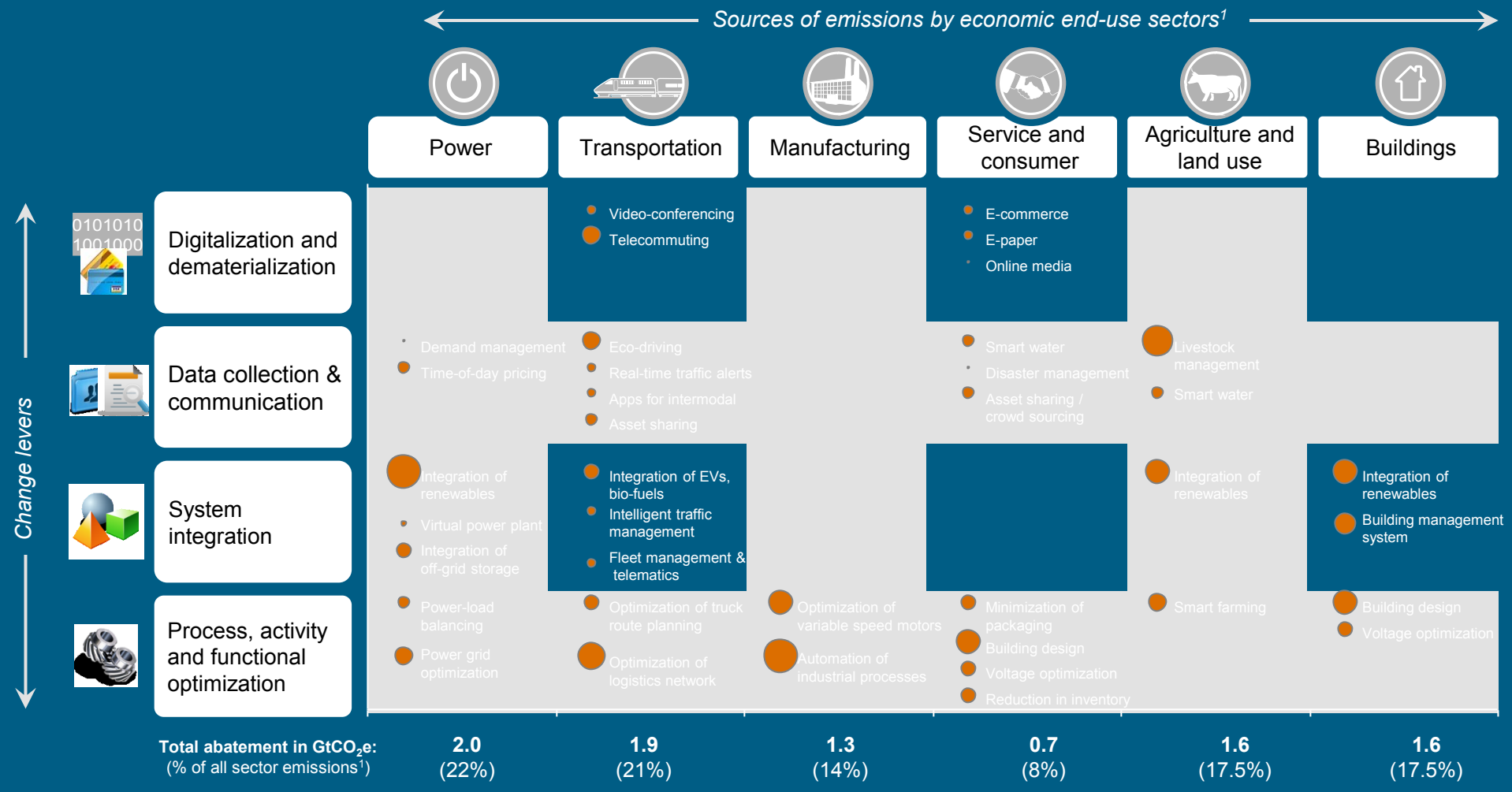
- Driven by solutions that **manage** the use of resources (e.g. building management system) and **integrate** less-carbon intensive processes (e.g. renewables)

Optimization

- Result of **intelligent** simulation, automation, redesign, or control
- Improved **processing power** driving growth of change lever

35 ICT-enabled abatement solutions identified in the study

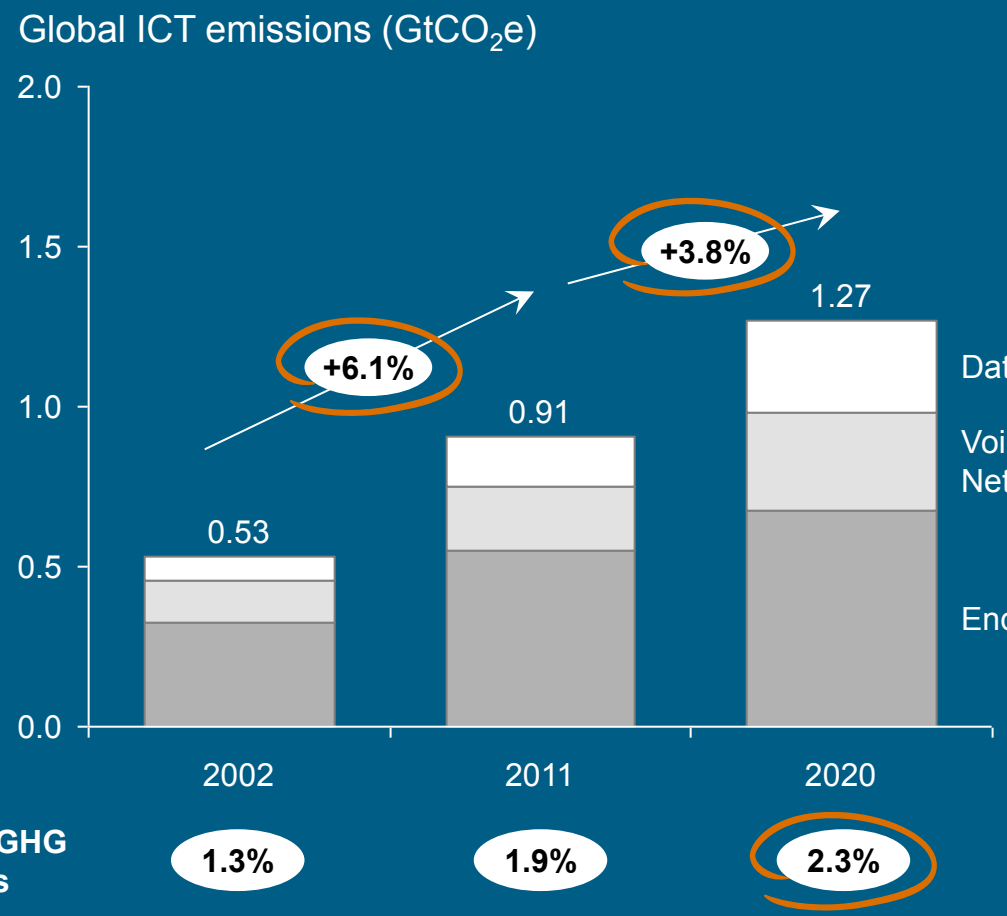
Abatement potential modeled individually for each sublever



Source: EDGAR, BCG analysis

ICT emissions growth expected to slow down from 6% to ~4%

ICT emissions 2.3% of global emissions by 2020

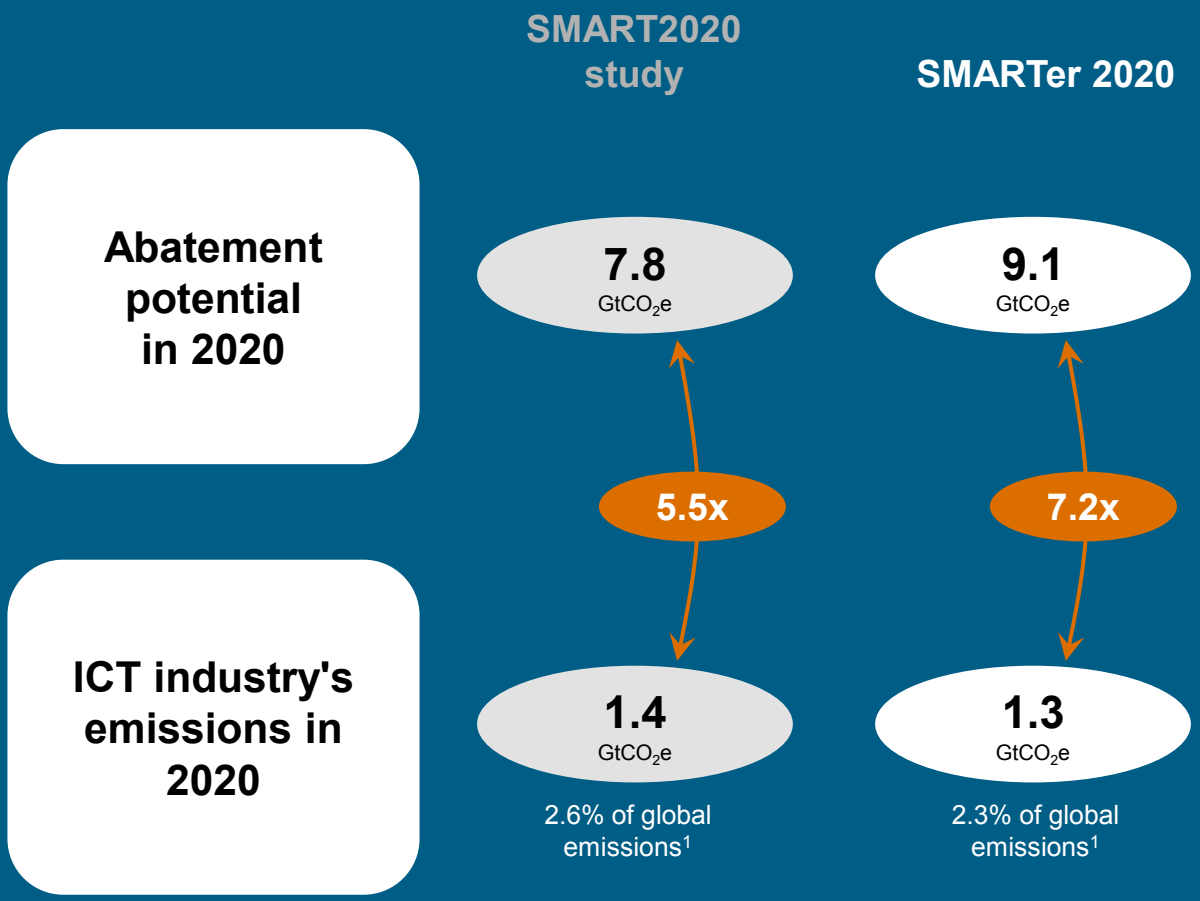


	CAGR 2002-2011	CAGR 2011-2020
Data centers	8.6%	7.1%
Voice and Data Networks	4.7%	4.6%
End-user devices	6.1%	2.3%

1. Data for 2010 2. Previous study used an incorrect number for the wireless network emissions (50 vs. 24kWh/yr) and therefore ended up with higher total emissions

Source: Gartner; Forrester ; U.S. Census Bureau; IEA; Greentouch; CEET; CDP; Ovum; GSMA; CERN; Cisco; CEET; SMART 2020: Enabling the low carbon economy in the information age; academic publications; industry experts; academic experts; manufacturer websites; GeSI Smart2020 Refresh team members; BCG analysis

The abatement potential of ICT is seven times the size of the ICT sector's own carbon footprint



Key changes

Increase in potential due to:

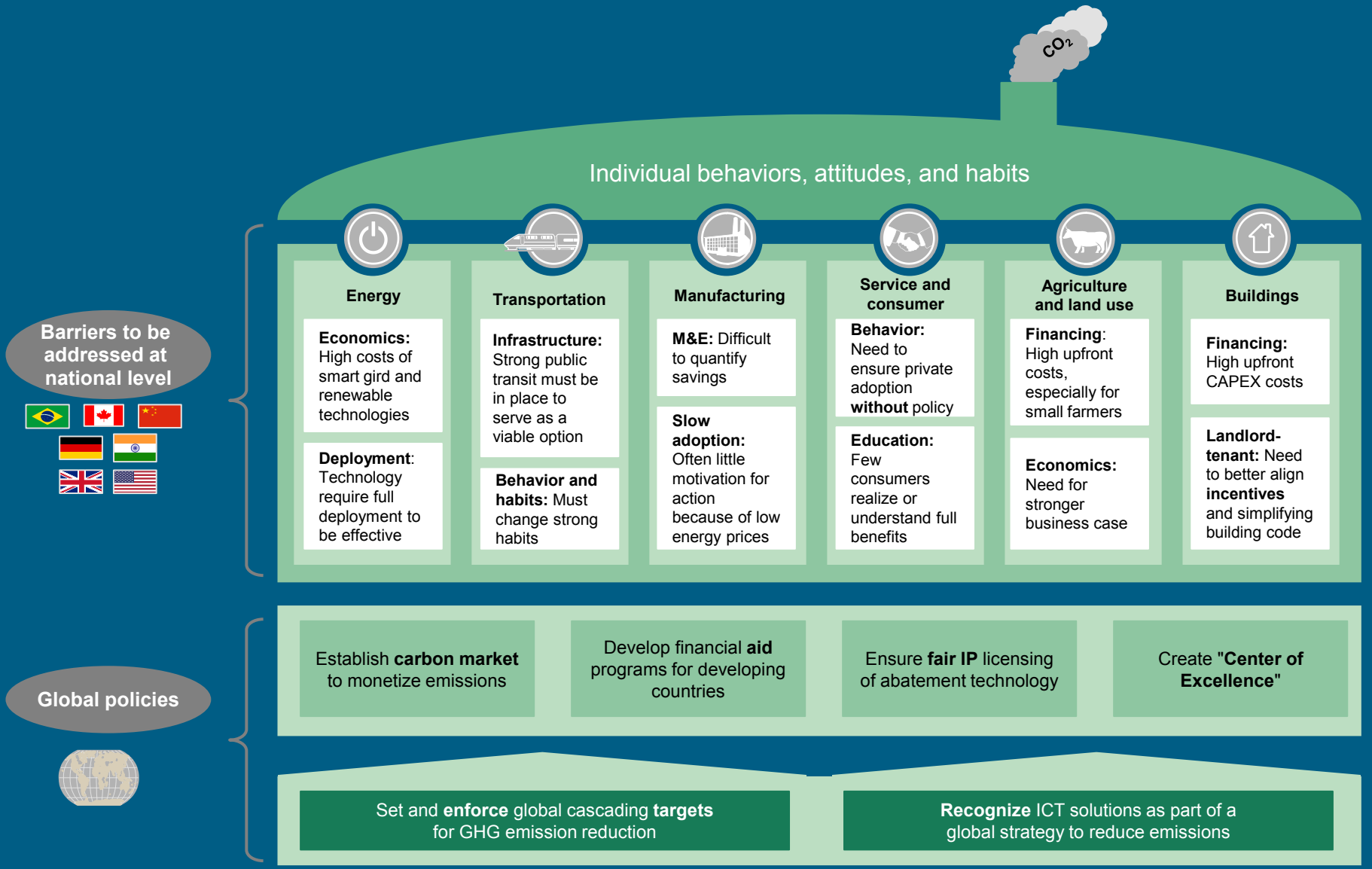
- Availability of new abatement solutions
- Updates to previous estimations due to recent trends and technological innovations
- Increase in total global GHG emissions

Lower estimate due to:

- Emergence of smart devices which have lower footprint than PCs
- More precise estimates of wireless networks emissions available
- Global economic slowdown also a factor

1. On a base of 55 Gt CO_2e GHG emissions (IEA)

Policies at the national level have the most significant potential to drive sub-lever adoption



Country deep-dives provide context to demonstrate how national and local policies can yield higher abatement


Brazil


Canada


China


Germany


India


U.K.


U.S.

All countries have unique circumstances that impact their ability to abate GHGs

Those differences drive which end-use sectors and which sub-levers deserve most attention

Policies at the national level are the most effective drivers of change in all countries

The findings can be found in the “SMARTer 2020” report

Please visit www.gesi.org/SMARTer2020 for the full version of SMARTer 2020

Thank you

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