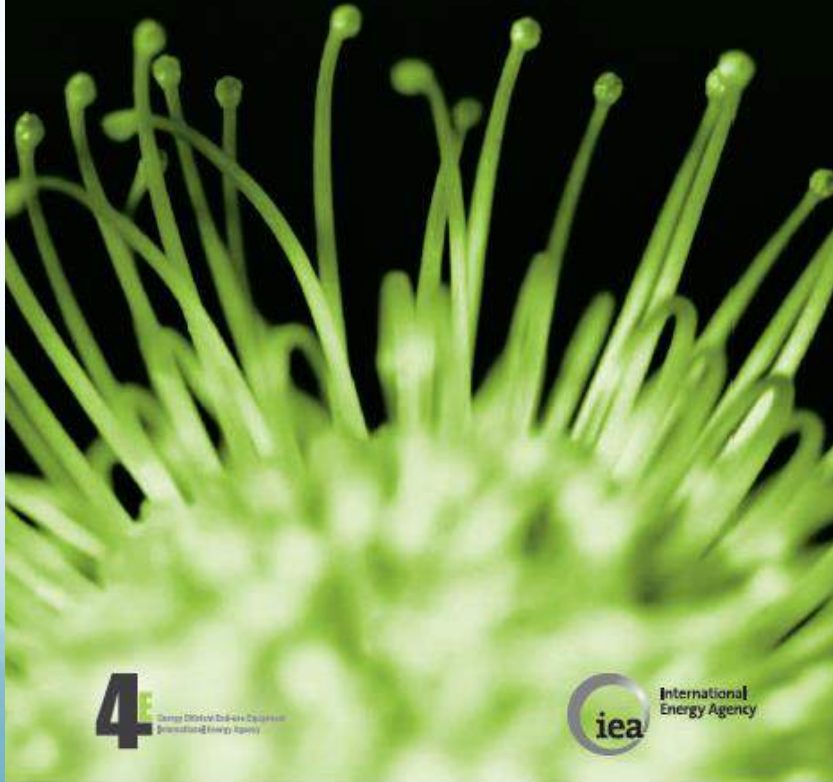


# The Energy Implications of Being Connected

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# More Data, Less Energy

Making Network Standby more Efficient  
in Billions of Connected Devices



**4E**  
Energy Efficiency Enabling  
Innovation (Energy Equity)

**iea**  
International  
Energy Agency

Free download:

[www.iea.org/etp/networkstandby](http://www.iea.org/etp/networkstandby)

More information about 4E activities:

[www.iea-4e.org](http://www.iea-4e.org)

More information about IEA activities.

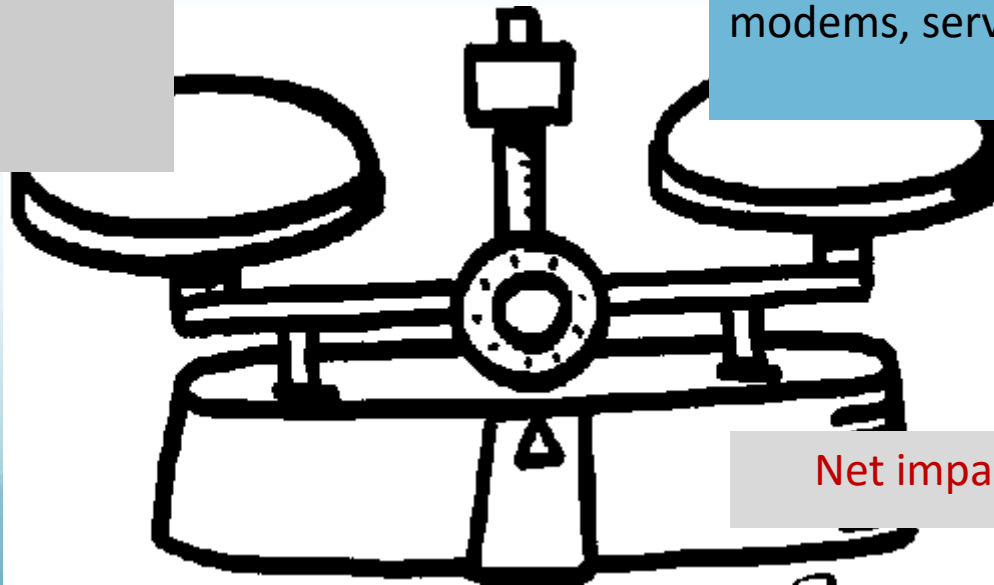
[www.iea.org](http://www.iea.org)

# ICT energy implications

- ICT products, applications and services that **enable energy efficiency** in other sectors
- ICT **own energy consumption**

Smart grids  
Smart homes  
Smart transport....

Deployment of computers, TVs,  
set top boxes, home gateways,  
modems, servers, sensors....



Net impact?

# Network connectivity is changing our world – rapidly

1991

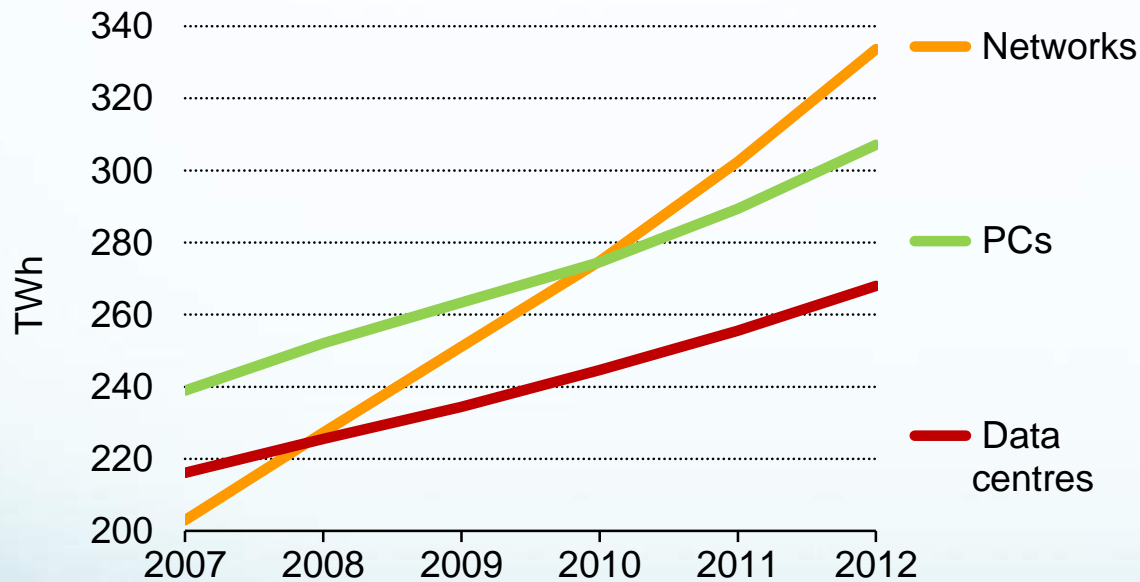


Today



# The global energy footprint of ICT is large and growing

Electricity demand of networks, PCs and data centres



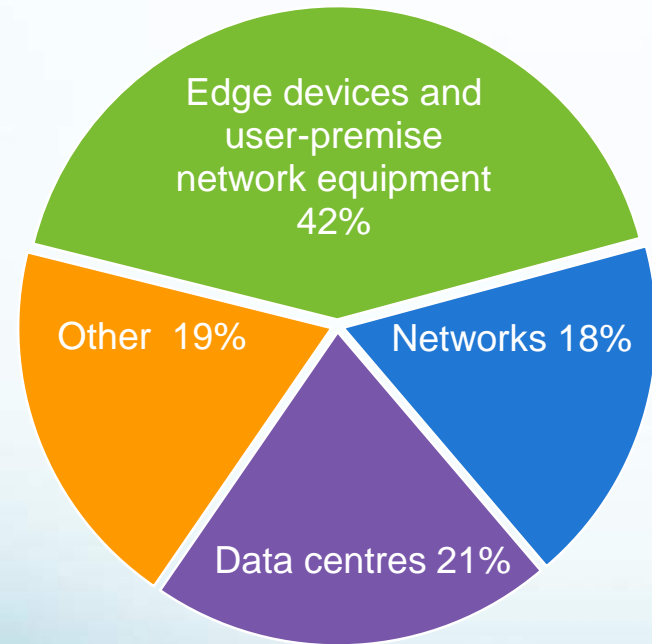
Total ICT energy demand reached 1560 TWh in 2013

IEA/4E, 2014

*Electricity demand of ICT is growing at a much faster rate than overall electricity demand*

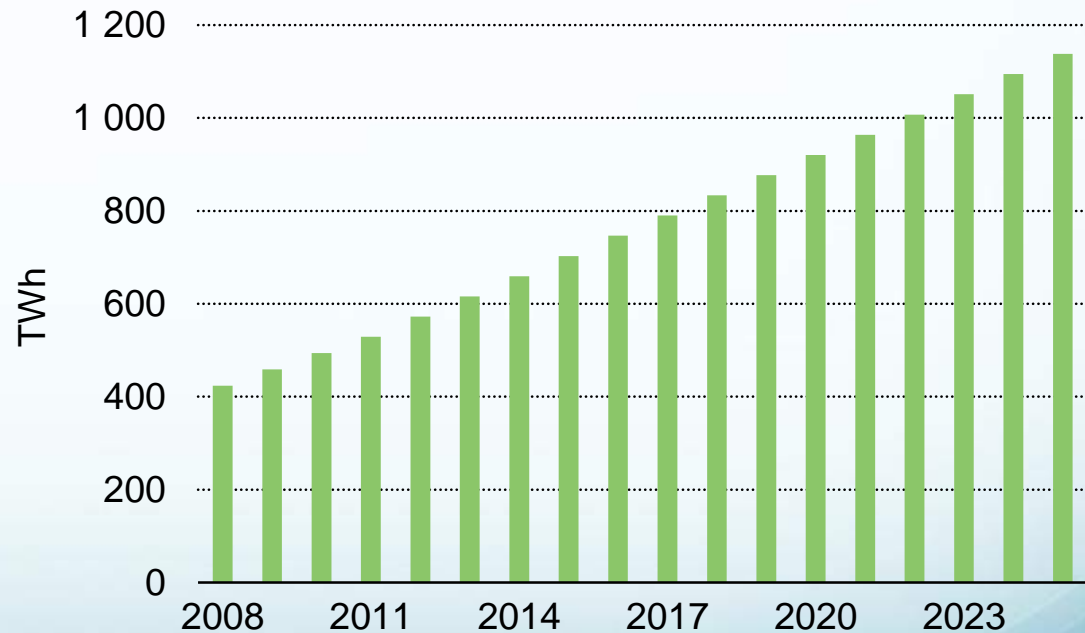
# Connected devices are driving ICT energy demand

ICT electricity demand by segment



IEA/4E, 2014

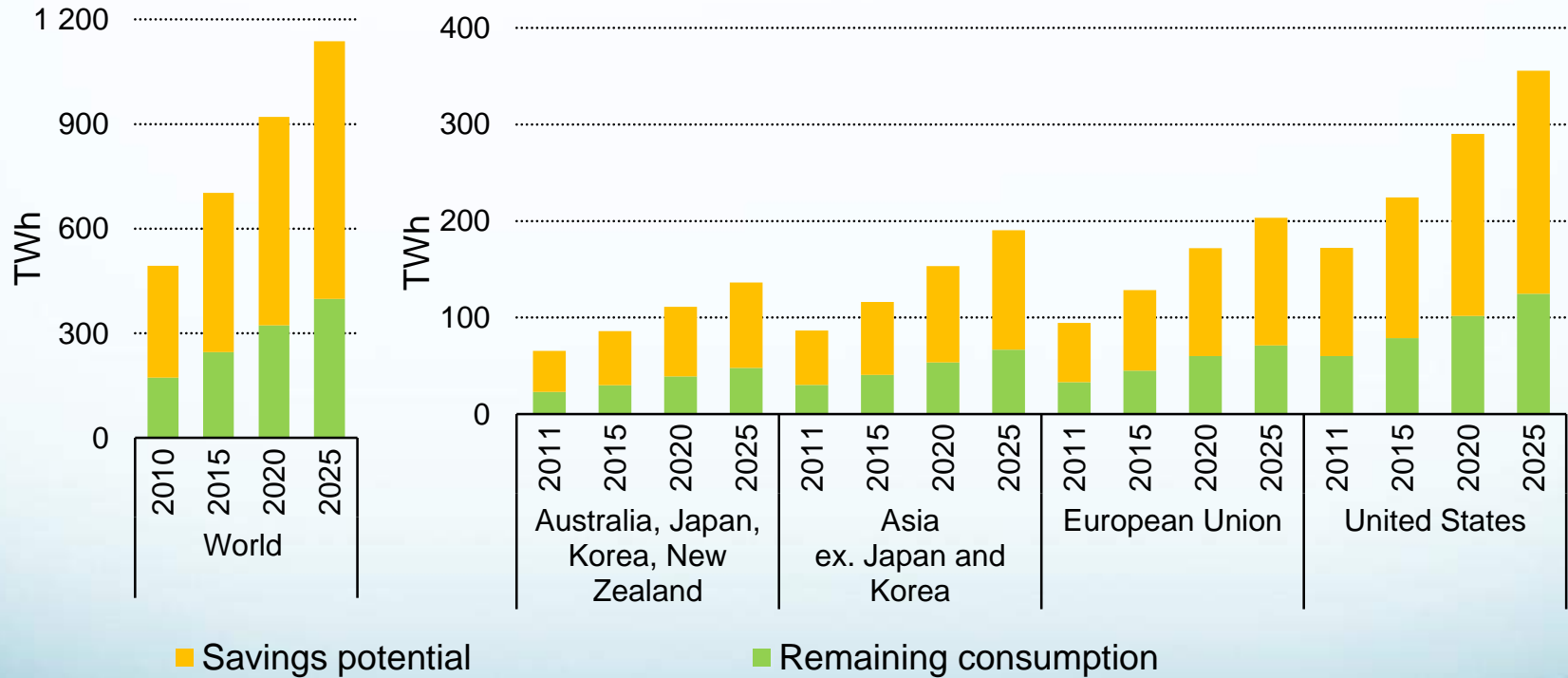
Network-enabled device electricity demand



*Network-enabled device electricity demand is growing at a rate of 6% per year*

# How much could we save?

Improving network standby in devices in homes and offices



# Efficient solutions

- Energy management – powering down
- Power scaling – matching power to work performed



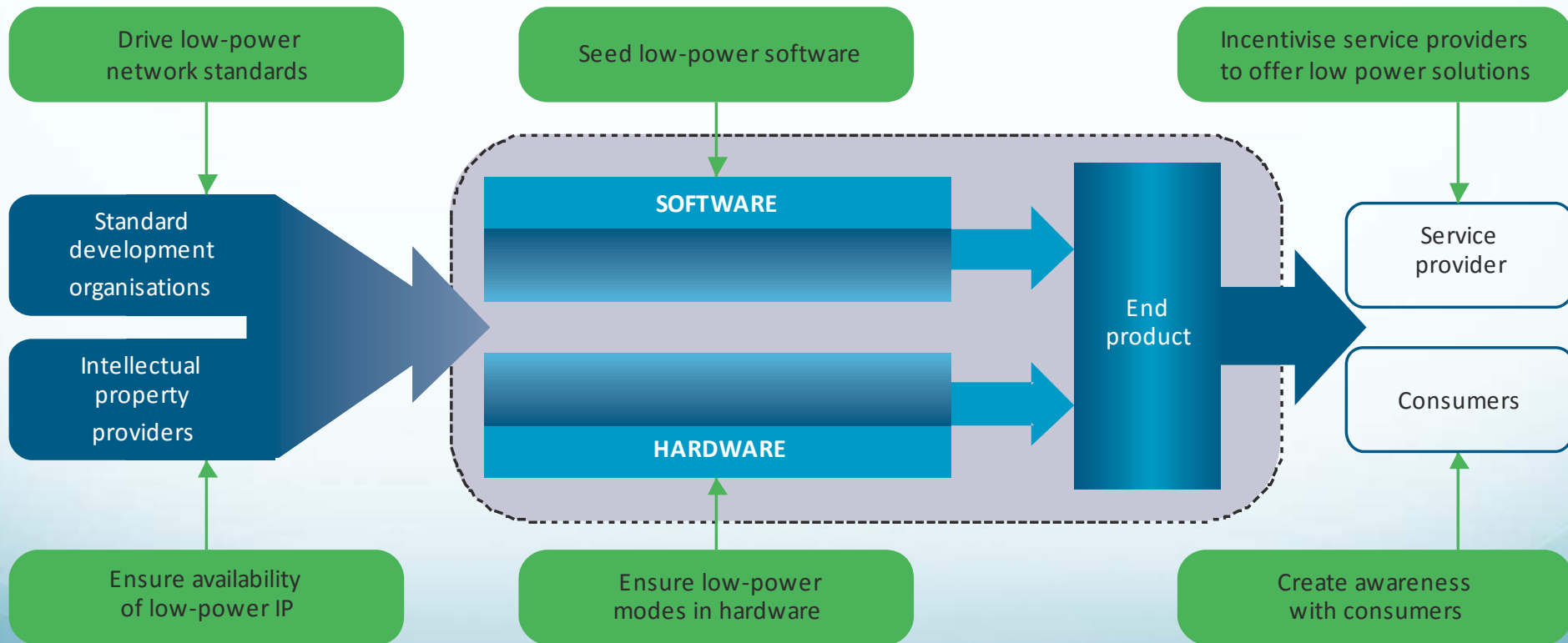


# Why are solutions not implemented

- Lack of incentives
- Lack of consumer demand
- Focus on functions and features
- Concerns of impact on quality of service perception
- Communication protocols and network architecture can counteract efficiency

# How to accelerate efficiency?

How different actors across the value chain can promote energy efficiency



*Everyone has a role to play in enabling the development and uptake of energy efficient solutions*

# Policy options and technical foundations

- **Policy approaches:** energy requirements, voluntary agreements, endorsement of best performers, consumer awareness campaigns
- **Technical foundations:** standards (testing and measurement, network architecture) and communication protocols

# Policy examples

- EU
  - Voluntary agreements
  - Mandatory requirements
- Republic of Korea
  - Mandatory and voluntary requirements
- US
  - Voluntary agreement on set-top boxes
  - ENERGY STAR LABEL
- Switzerland
  - Awareness raising campaigns

# Devices also need a holiday

Swiss consumer awareness raising campaign



**EN VACANCES,  
DÉBRANCHEZ!**

Offrez également une pause à vos appareils électroniques. Eteignez-les complètement ou retirez la prise. Ainsi vous éviterez des pertes d'énergie inutiles dues au standby. Si tous les ménages suisses éteignaient leurs appareils pendant leurs vacances, le gain en énergie se monterait à la consommation annuelle d'environ 15'000 ménages.

Plus d'informations sur [suisseenergie.ch](http://suisseenergie.ch)

En partenariat avec



*Savings of 65 GWh just by turning devices off for 4 weeks*



Questions on further IEA work  
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