The Coalition for ENERGY SAVINGS

Energy Savings Scenarios 2050

Almut Bonhage

EEB, CAN Europe,
Renewables Grid Initiative

Workshop, 9 July 2019

Who we are

The Coalition for ENERGY SAVINGS

- 29 industry, NGO, professional, cooperatives and local authorities associations
  - more than 500 associations, 200 companies, 1,500 cooperatives
  - 15 million supporters and 1 million citizens as members of cooperatives
  - 2,500 cities and towns in 30 countries in Europe

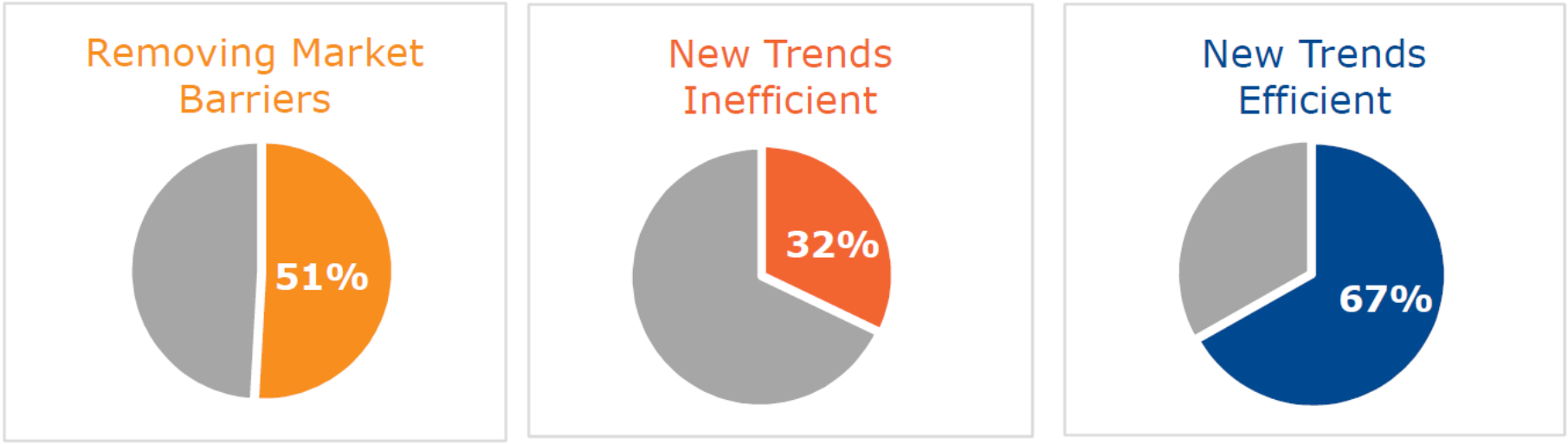
Advisory members:

Fraunhofer ISI Study
Energy Savings Scenarios 2050

The Coalition for ENERGY SAVINGS

Key results

Savings on EU final energy demand in 2050 compared to baseline



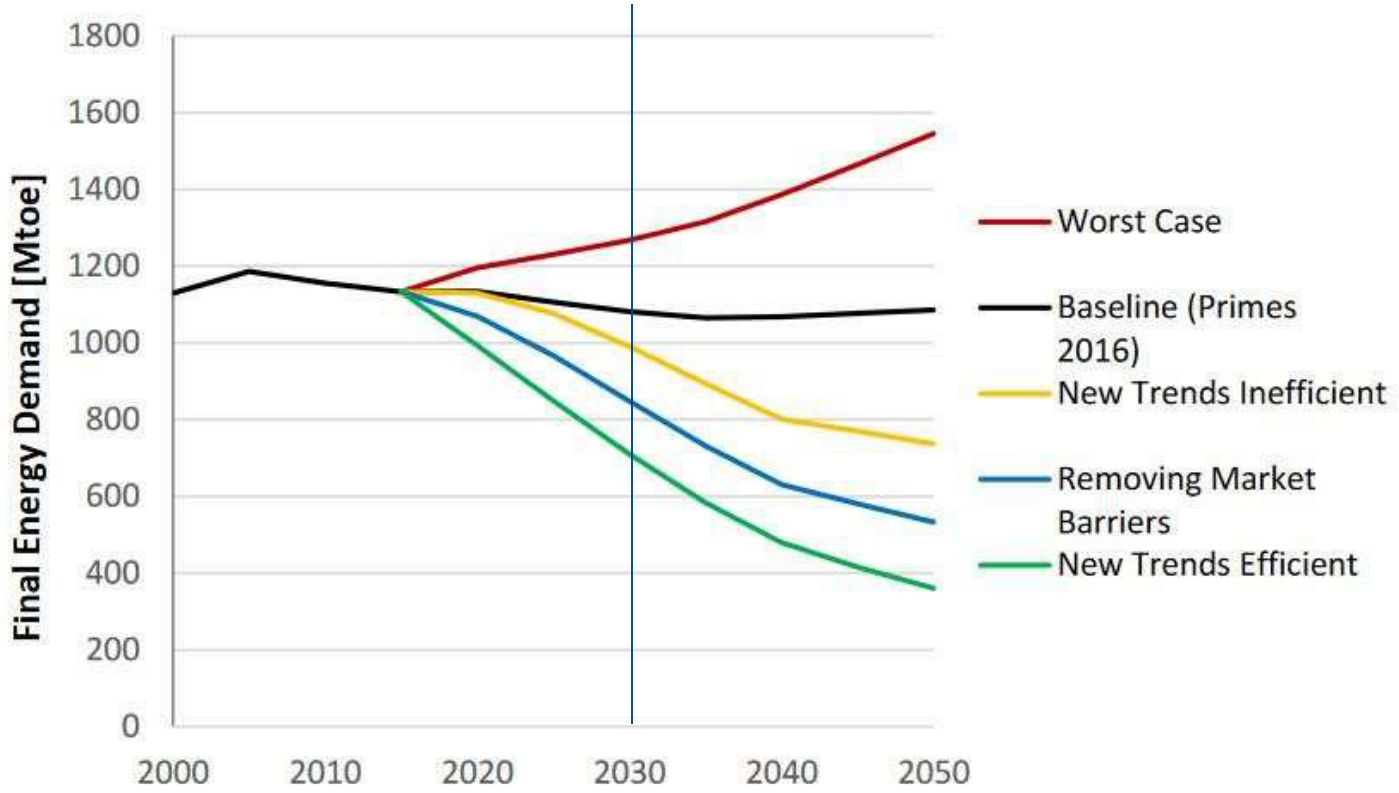
The *Baseline* projects that Final Energy Demand (FED) in 2050 is 1,086 Mtoe (including UK). The additional techno-economic savings that result from running the *Removing Market Barriers* Scenario is **51%**, bringing the FED to **533 Mtoe**. The *New Trends Inefficient* Scenario estimates the savings potential is lowered to **32%,** resulting in **737 Mtoe** FED in 2050. In the *New Trends Efficient* Scenario, the savings increases reaching **67%,** corresponding to a FED of **361 Mtoe** in 2050.

Fraunhofer ISI study on 2050 Energy Savings Scenarios: www.energycoalition.eu/publications-0

Energy Savings Scenarios 2050
Result overview

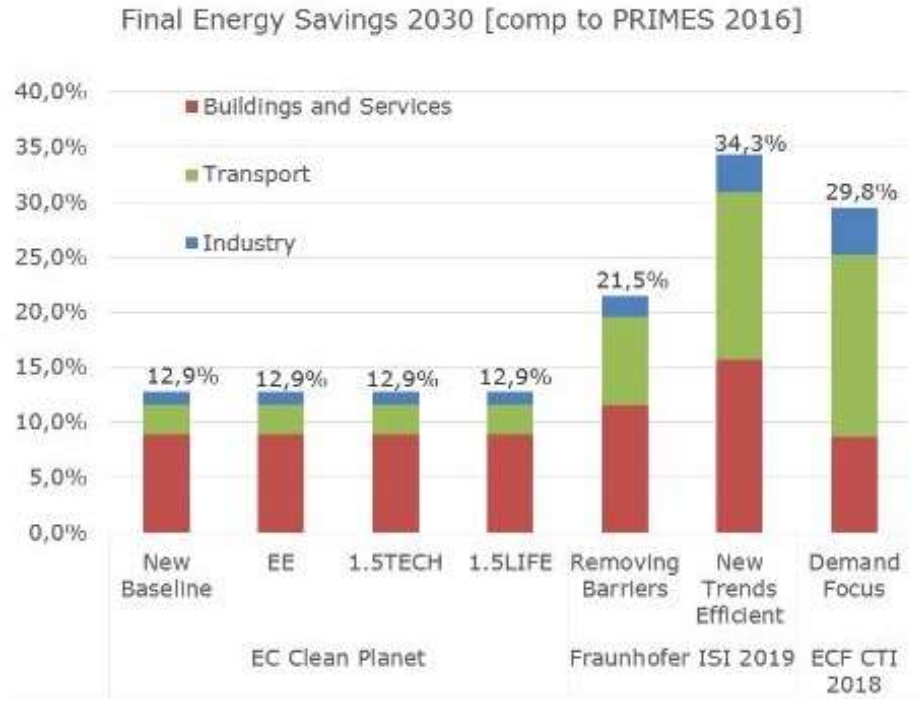
The Coalition for ENERGY SAVINGS

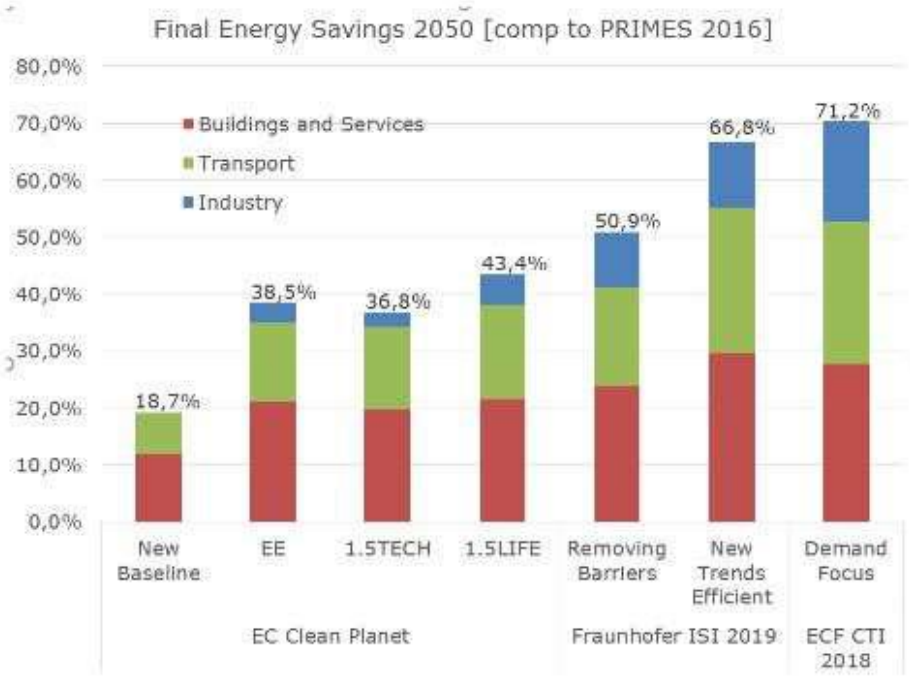
Figure 15: Final energy demand (EU28) in the three scenarios and the variant Worst Case. The lower graph shows the contribution of the four large Trend Clusters in the case of the New Trends Efficient Scenario



FED 2030 and 2050 in Fh ISI study compared to other scenarios

The Coalition for ENERGY SAVINGS



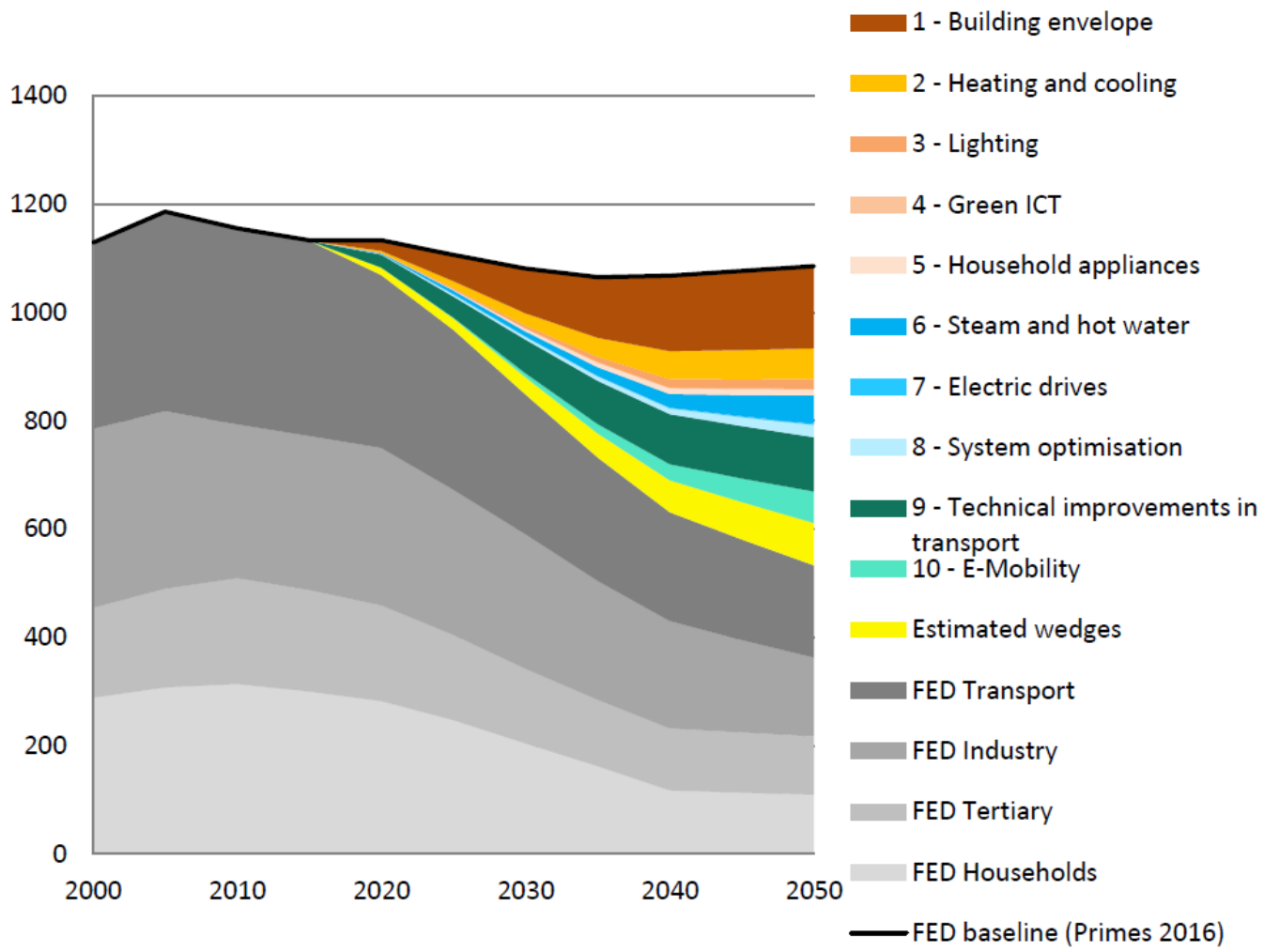


Stefan Scheuer, An energy efficiency review of the Modelling supporting the EC long-term strategic vision:
http://stefanscheuer.eu/20190125%20EC%20long-term%20climate%20startegy%20-%20EE%20review%20of%20modelling.pdf

Removing Market Barriers scenario: FED techno-economic potential

The Coalition for ENERGY SAVINGS

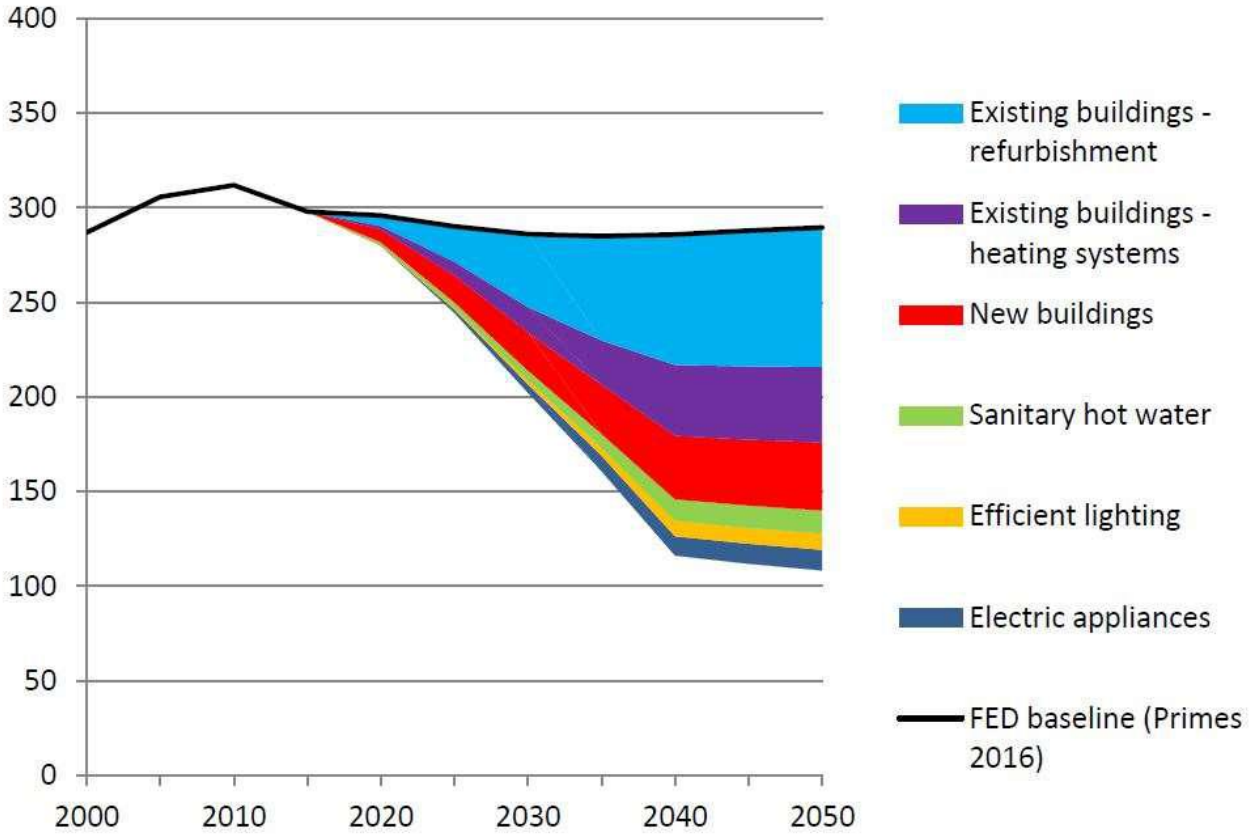
Figure 7: Overall final energy demand and final energy savings (Mtoe)



Removing Market Barriers scenario: FED techno-economic potential – households (renovation rate 2.5%)

The Coalition for ENERGY SAVINGS

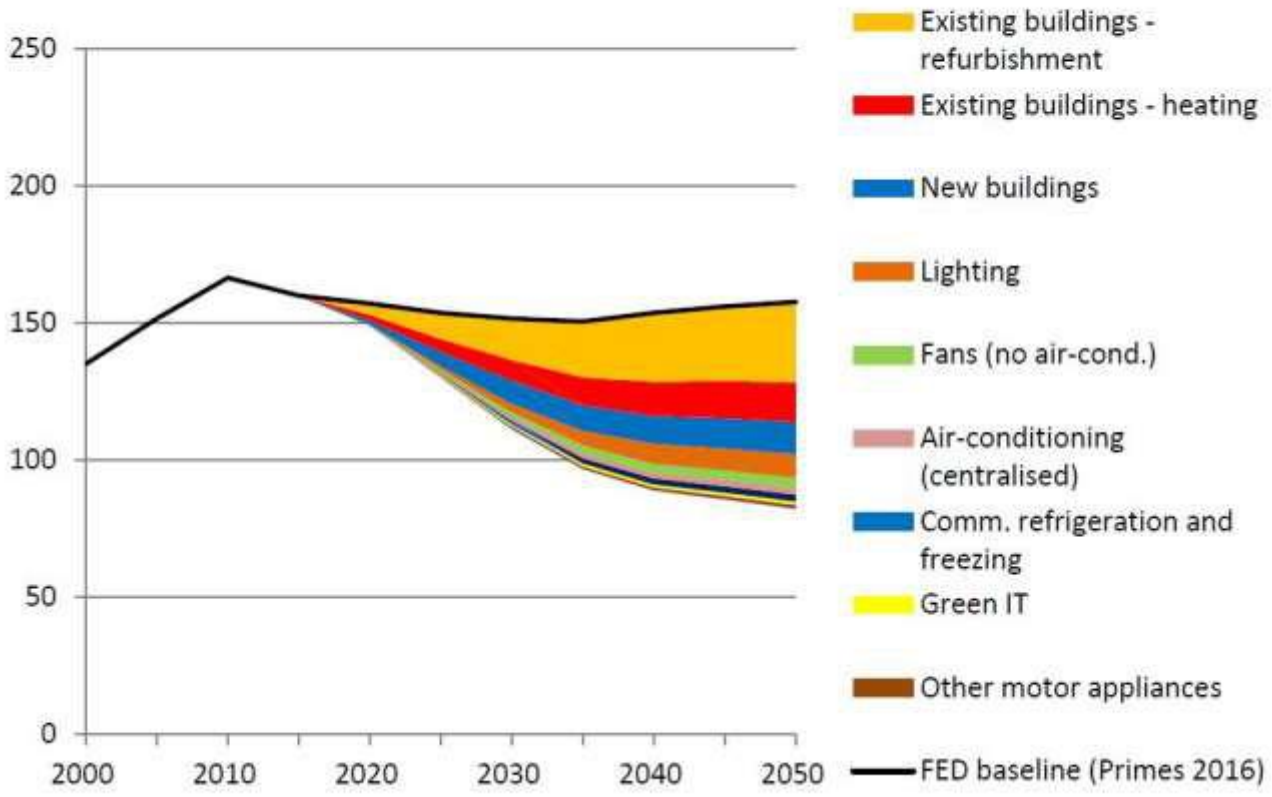
Figure 10: Final energy demand and energy saving potentials by wedge in the household sector (in Mtoe)



Removing Market Barriers scenario: FED techno-economic potential – tertiary (renovation rate: 3.5%)

The Coalition for ENERGY SAVINGS

Figure 11: Final energy demand and energy saving potentials in the service sector (in Mtoe)



New Trends scenarios
Trend Clusters

The Coalition for ENERGY SAVINGS

Cluster	Trends	Estimated lost/additional energy savings 2050 compared to the Removing Market Barriers scenario	
		New Trends Inefficient	New Trends Efficient
Digitalisation of Life	Shift towards smart products and services/ automatisation	**- 11%**	**+ 5%**
New Social and Economic Models	Sharing economy Prosumer Awareness of personal footprint Social Disparities / Energy Poverty New forms of funding - Public spending towards greener and more efficient options	**- 4%**	**+ 6%**
Industrial Transformation	Reindustrialisation Circular economy and resource efficiency Low-carbon industry / Decarbonisation	**- 1%**	**+ 1%**
Quality of Life	Increasing importance of health (e.g. air quality, noise, heat) Regionalisation - governance solving global challenges locally Urbanisation - Global trend towards living in cities	**- 4%**	**+ 5%**

New Trends scenarios
Main impacts on buildings

The Coalition for ENERGY SAVINGS

Household and Tertiary Sector

For the household and tertiary sectors the following main impacts of the New Societal Trends on energy consumption and scenario parameters are relevant:

In the New Trends Inefficient Scenario (increasing impacts on energy consumption):

- Building automation and interconnection of appliances increases the energy demand of the buildings
- Despite a widespread awareness consumers have increasing energy demands (e.g. due to changes in comfort levels)

In the New Trends Efficient Scenario (decreasing impacts on energy consumption):

- Building automation raises consumer awareness
- Decentral generation of electricity raises the awareness of the value of energy
- Urbanization contributes to reducing living areas and adapting them to the living context.
- Consciousness about the personal (carbon) footprint impacts consumer choices on buildings and appliances.

Behavioural choices such as the adaptation of space to the living context, consciousness about the personal footprints and decentral generation of electricity, supported by policy settings, contribute to New Trends Efficient Scenario.

Fraunhofer ISI Study
Main impacts on buildings (2)

The Coalition for ENERGY SAVINGS

Table 6: Major parameter settings derived from studies and estimates for the main trend clusters and main wedges in the household and tertiary sectors

	Energy demand	
	Heating and Cooling	Appliances and Lighting
New Trends Efficient Scenario		
Digitalisation of Life	0.95	0.79
New Social and Economic Models		
Consumer / Citizens	0.8	0.9
Sustainable Finance	0.95	1
Industrial Transformation	1	1
Quality of Life		
Health & Comfort	1	1
Regionalization / Urbanization	0.9	1
Total Scenario Changes	0.65	0.71
New Trends Inefficient Scenario		
Digitalisation of Life	1.1	1.5
New Social and Economic Models		
Consumer / Citizens	1.1	1.1
Sustainable Finance	1	1
Industrial Transformation	1	1
Quality of Life		
Health & Comfort	1.1	1.1
Regionalization / Urbanization	1	1
Total Scenario Changes	1.33	1.82

Own estimate based on projections by *IEA 2017 - Digitalization & Energy*

Gains through increased public spending in renovation

Increasing demand based on longer heating and cooling hours due to remote control

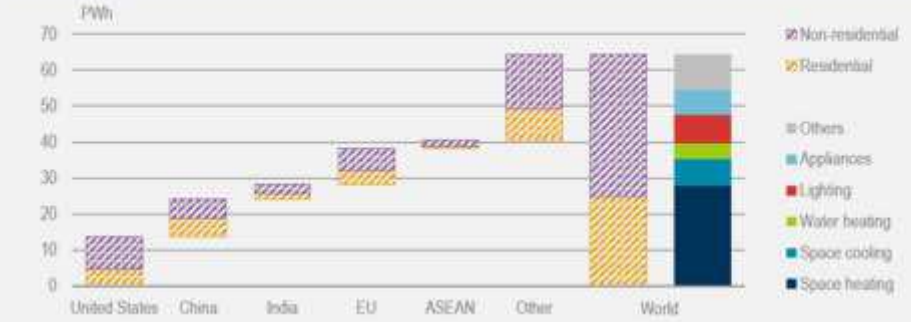
Own estimate based on *UKERC - Energy 2050 - Energy Demand Lifestyle and Energy Consumption*

Changes in comfort levels, e.g. room temperatures

Fraunhofer ISI Study
Main impacts on buildings (3)

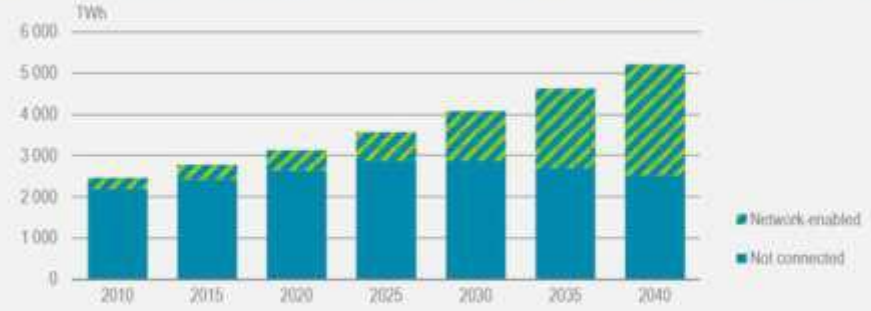
The Coalition for ENERGY SAVINGS

Figure 2.4 Cumulative energy savings in buildings from widespread digitalization



Key message: The widespread deployment of active controls, assuming limited rebound effects, would save up to 65 PWh cumulatively to 2040, or twice the energy consumed by the entire buildings sector in 2017.

Figure 2.5 Household electricity consumption of appliances and other small plug loads



Key message: The share of connected "network-enabled" appliances in total household electricity consumption is set to grow rapidly, presenting opportunities for smart demand response but also increasing the need for standby power consumption.

The Coalition for ENERGY SAVINGS

Thank you!

Contact

The Coalition for Energy Savings
Rue de Toulouse 49, 1040 Brussels, BELGIUM

secretariat[at]energycoalition.eu

www.energycoalition.eu
@Euenergysavings

AISBL Reg Nr: 644.403.860
Transparency Register: 72911566925-69