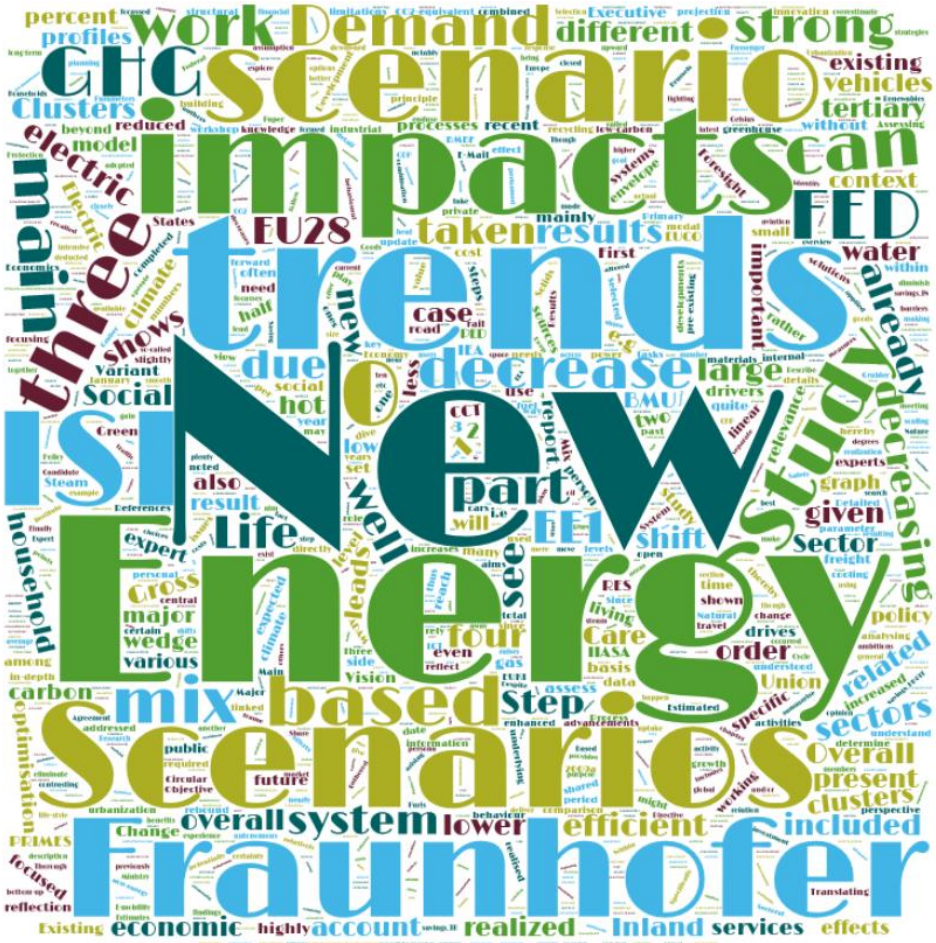
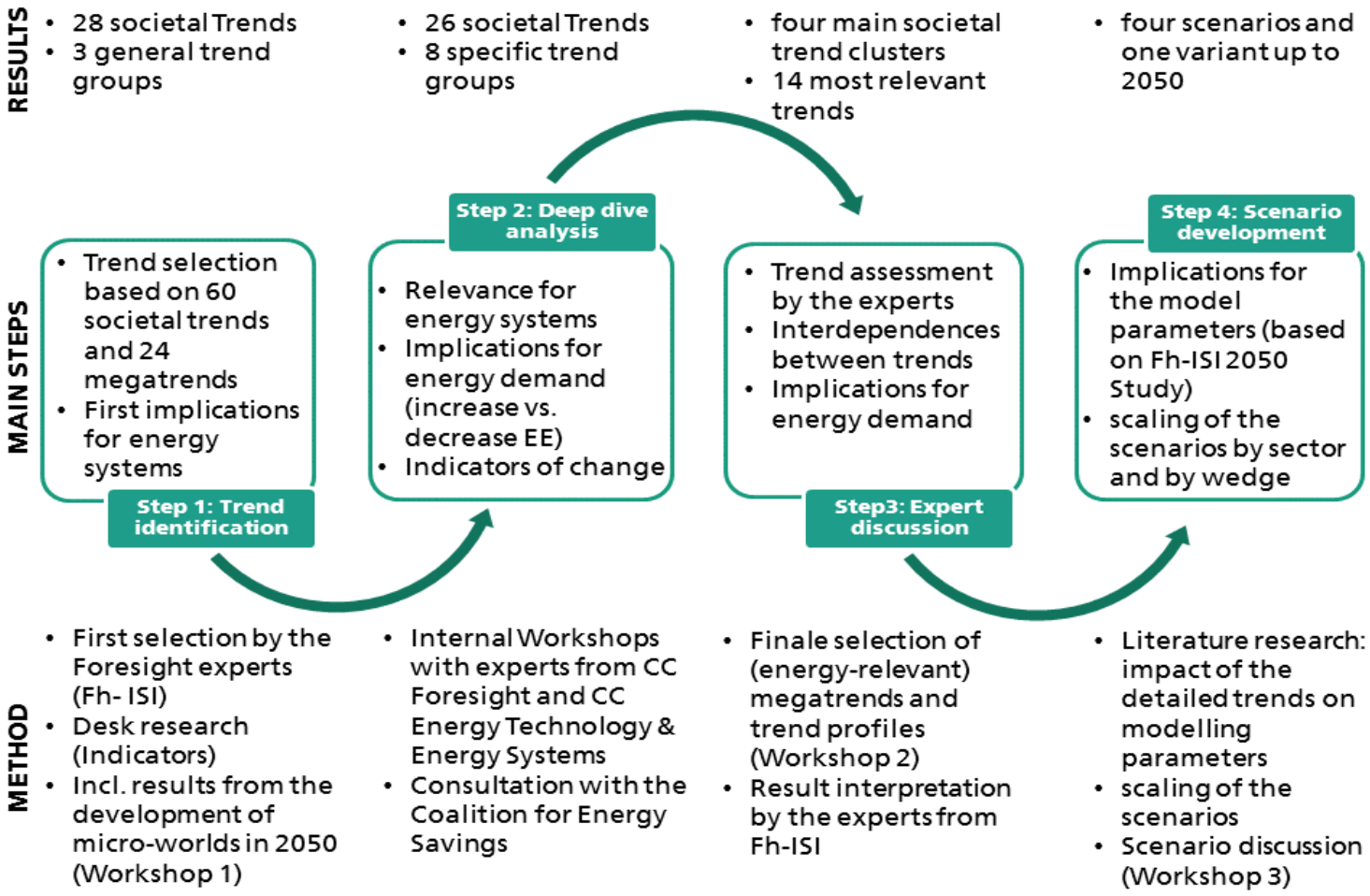
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Trend Selection and Scenario Development



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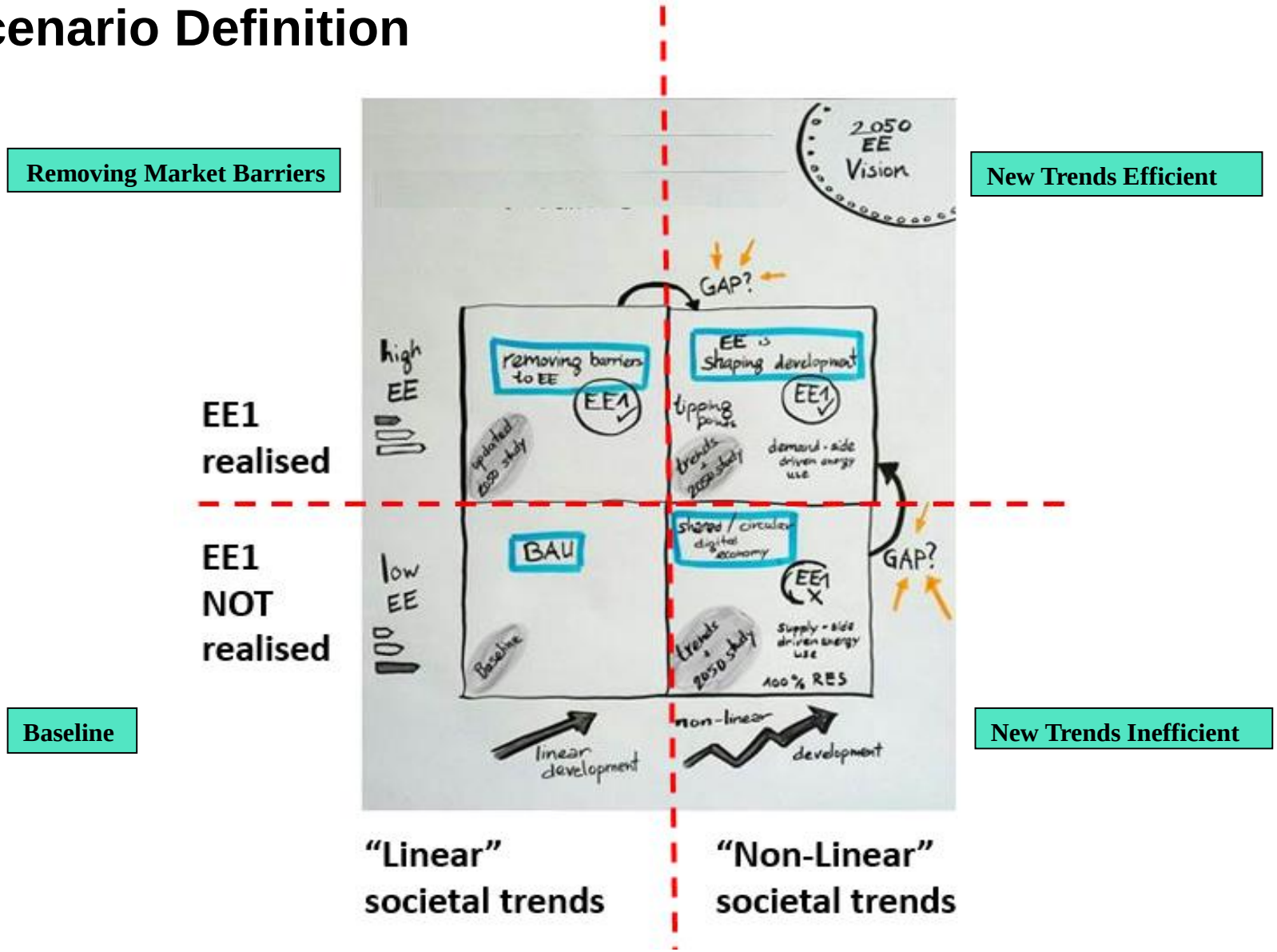
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Definition of Societal Trend Clusters & Detailed Trends

Cluster	Trend
Digitalisation of Life	Human Machine / Shift towards smart products and services
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
Industrial Transformation	Reindustrialisation
	Circular Economy - new requirements for material flows for consumer goods
	Decarbonization of the Industry
Quality of Life	Increasing importance of health (e.g. air quality, noise, heat)
	Regionalisation - Urban governance solving global challenges locally in cities
	Urbanisation - Global trend towards larger shares of the population living in cities

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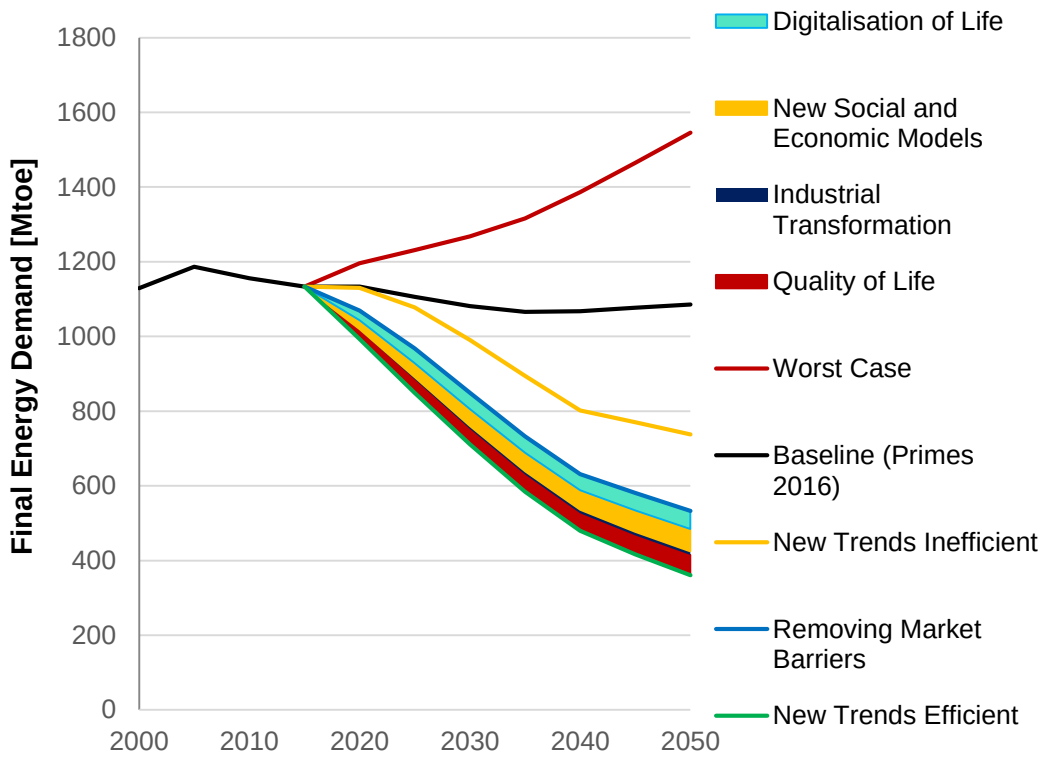
Scenario Definition



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Overall Final Energy Demand (EU28)



Reduction potentials:

- 51% in the Removing Market Barriers Scenario
- 32% in the New Trends Inefficient Scenario
- 67% in the New Trends Efficient Scenario
- Up to 42% increase in the Worst Case Scenario

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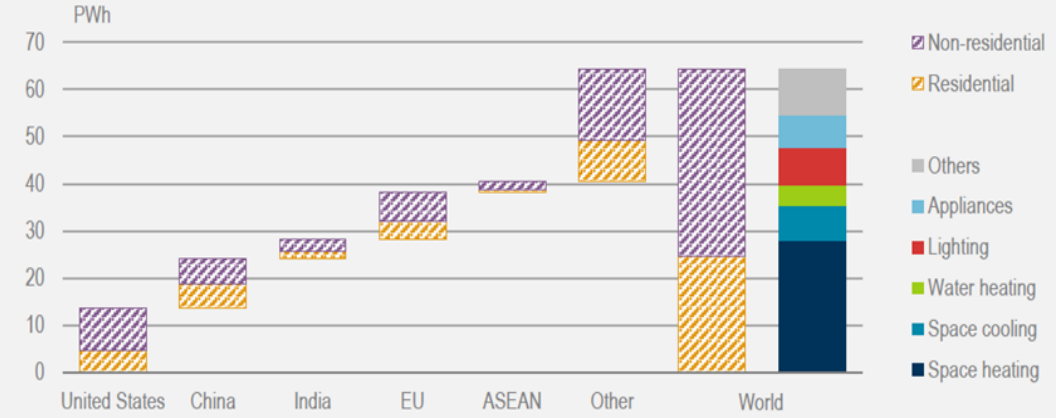
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Assumptions on Main Impacts in the Household Sector

- 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.

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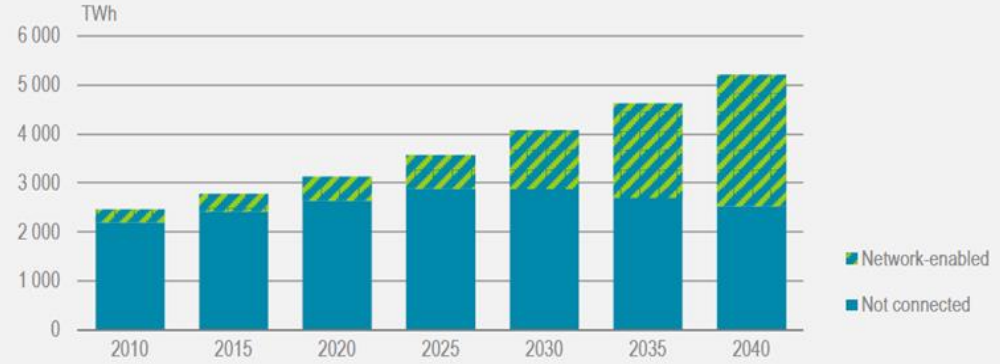
Figure 2.4 Cumulative energy savings in buildings from widespread digitalization



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.

IEA, 2017

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



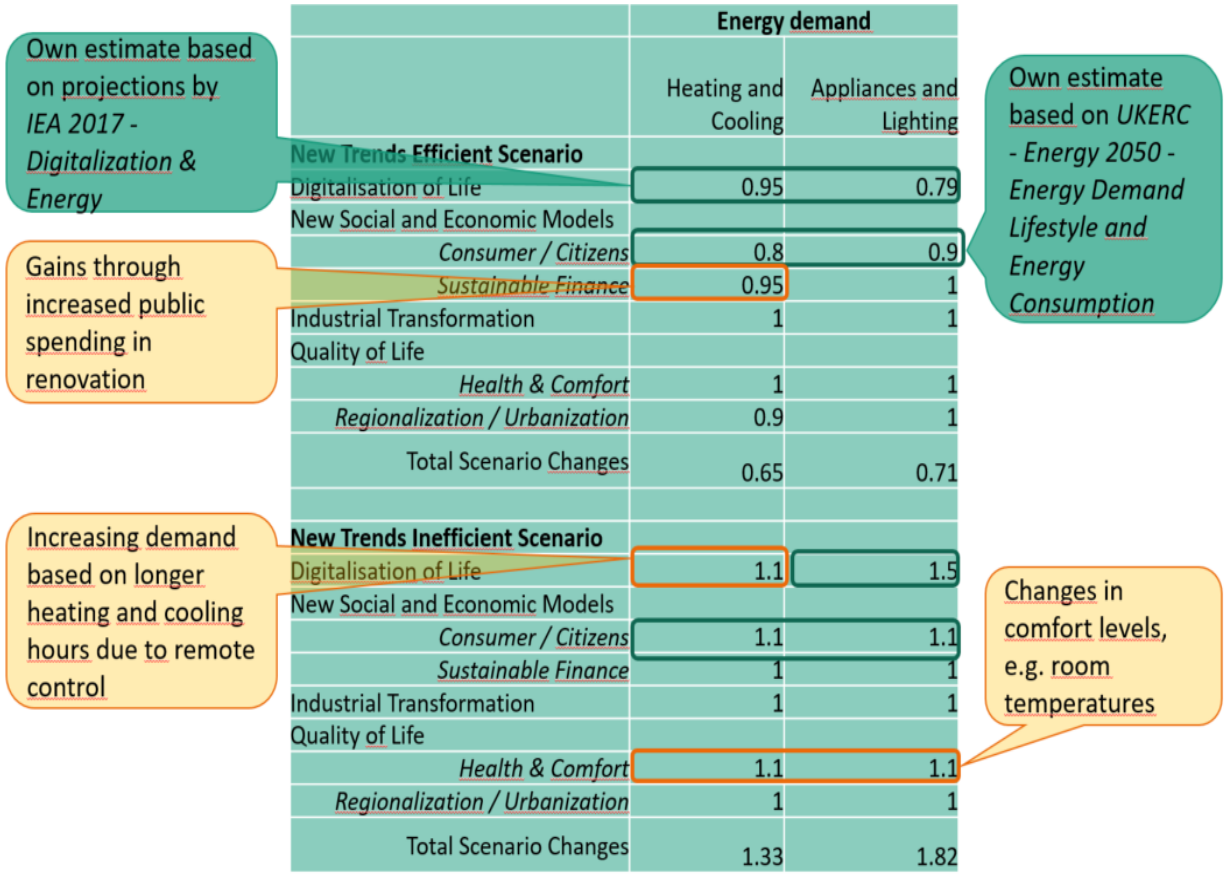
Key message: The share of connected "network-enabled" appliances in total household electricity consumption is set to grow rapidly, presenting opportunities for smart demand response but also increasing the need for standby power consumption.

IEA, 2017

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Quantification Approach

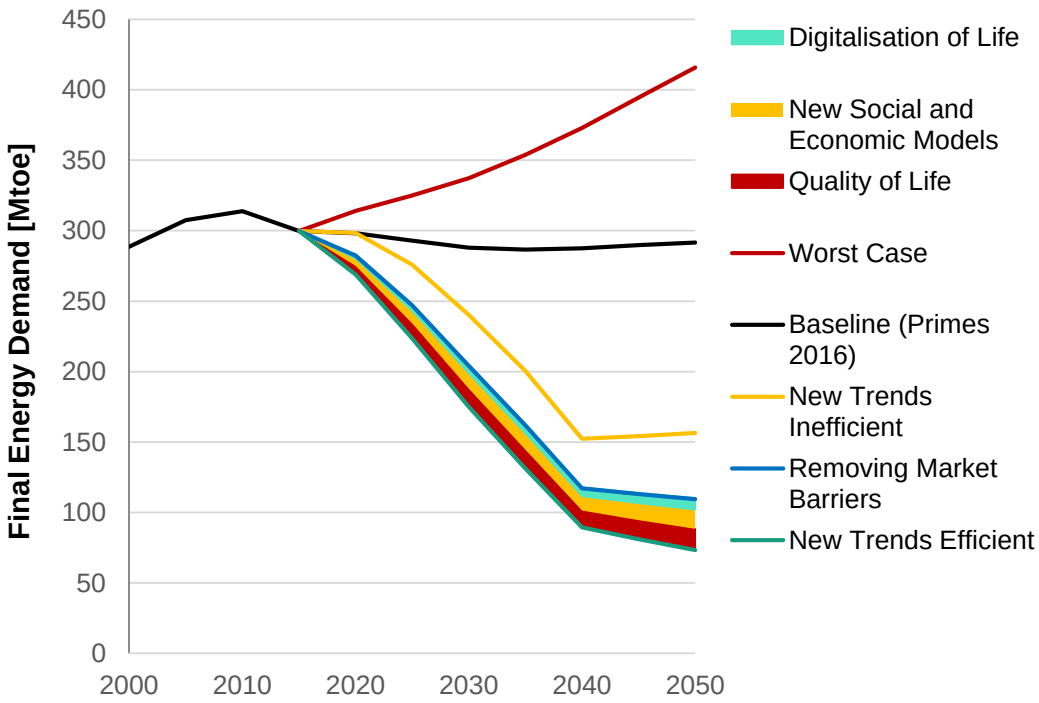


	Energy demand	
	Heating and Cooling	Appliances and Lighting
New Trends Efficient Scenario		
Digitalisation of Life	0.95	0.79
New Social and Economic Models		
Consumer / Citizens	0.8	0.9
Sustainable Finance	0.95	1
Industrial Transformation	1	1
Quality of Life		
Health & Comfort	1	1
Regionalization / Urbanization	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

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Final Energy Demand in the Household Sector (EU28)



Reduction potentials:

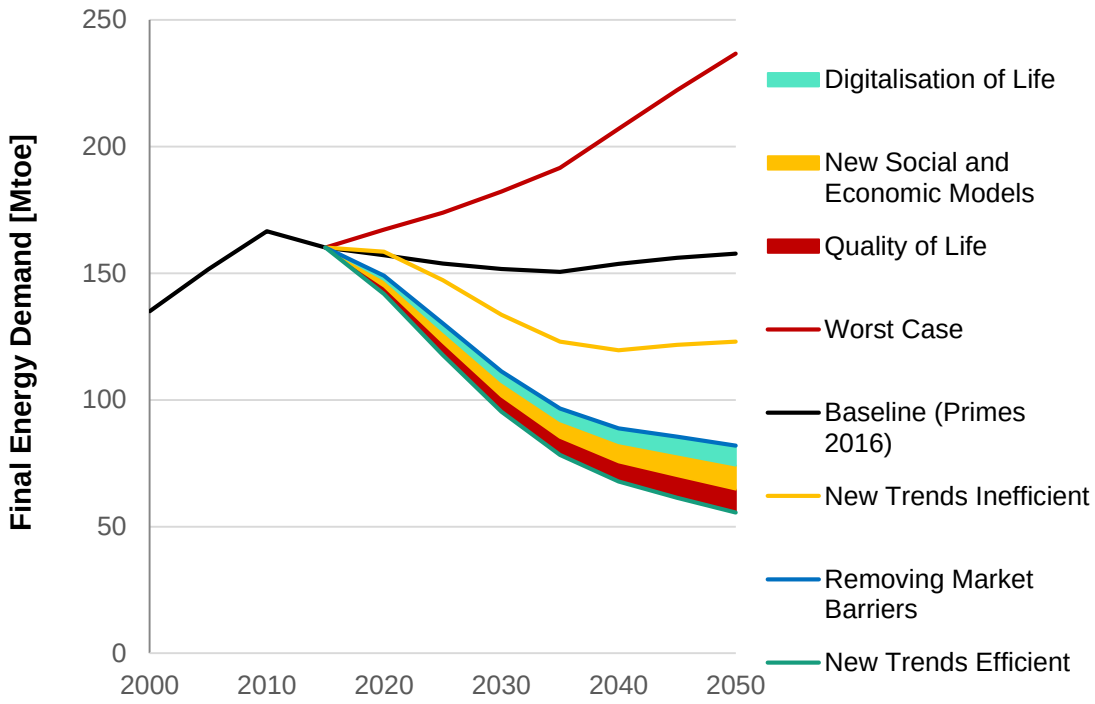
- 62% in the Removing Market Barriers Scenario
- 46% in the New Trends Inefficient Scenario
- 75% in the New Trends Efficient Scenario

- Up to 43% increase in the Worst Case Scenario

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Final Energy Demand in the Tertiary Sector (EU28)



Reduction potentials:

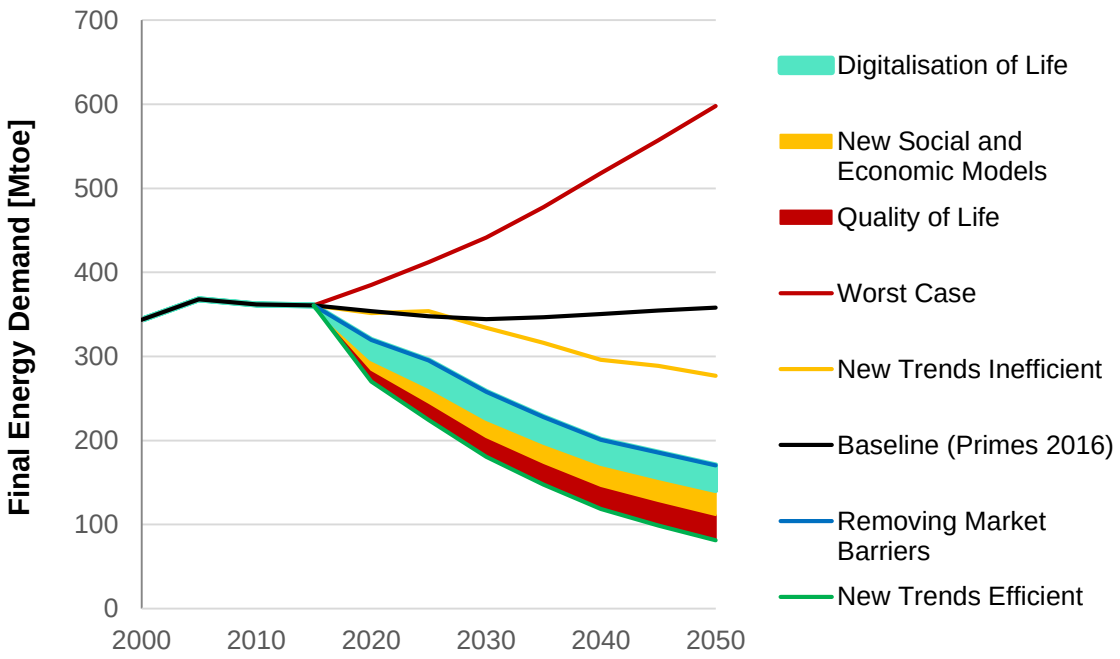
- 48% in the Removing Market Barriers Scenario
- 22% in the New Trends Inefficient Scenario
- 65% in the New Trends Efficient Scenario

- Up to 50% increase in the Worst Case Scenario

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Final Energy Demand in the Transport Sector (EU28)



Reduction potentials:

- 52% in the Removing Market Barriers Scenario
- 23% in the New Trends Inefficient Scenario
- 77% in the New Trends Efficient Scenario

- Up to 67% increase in the Worst Case Scenario

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- Study on Energy Savings Scenarios 2050

  https://www.isi.fraunhofer.de/de/competence-center/energiepolitik-energiemaerkte/projekte/energy-saving-scenarios-2050.html

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