

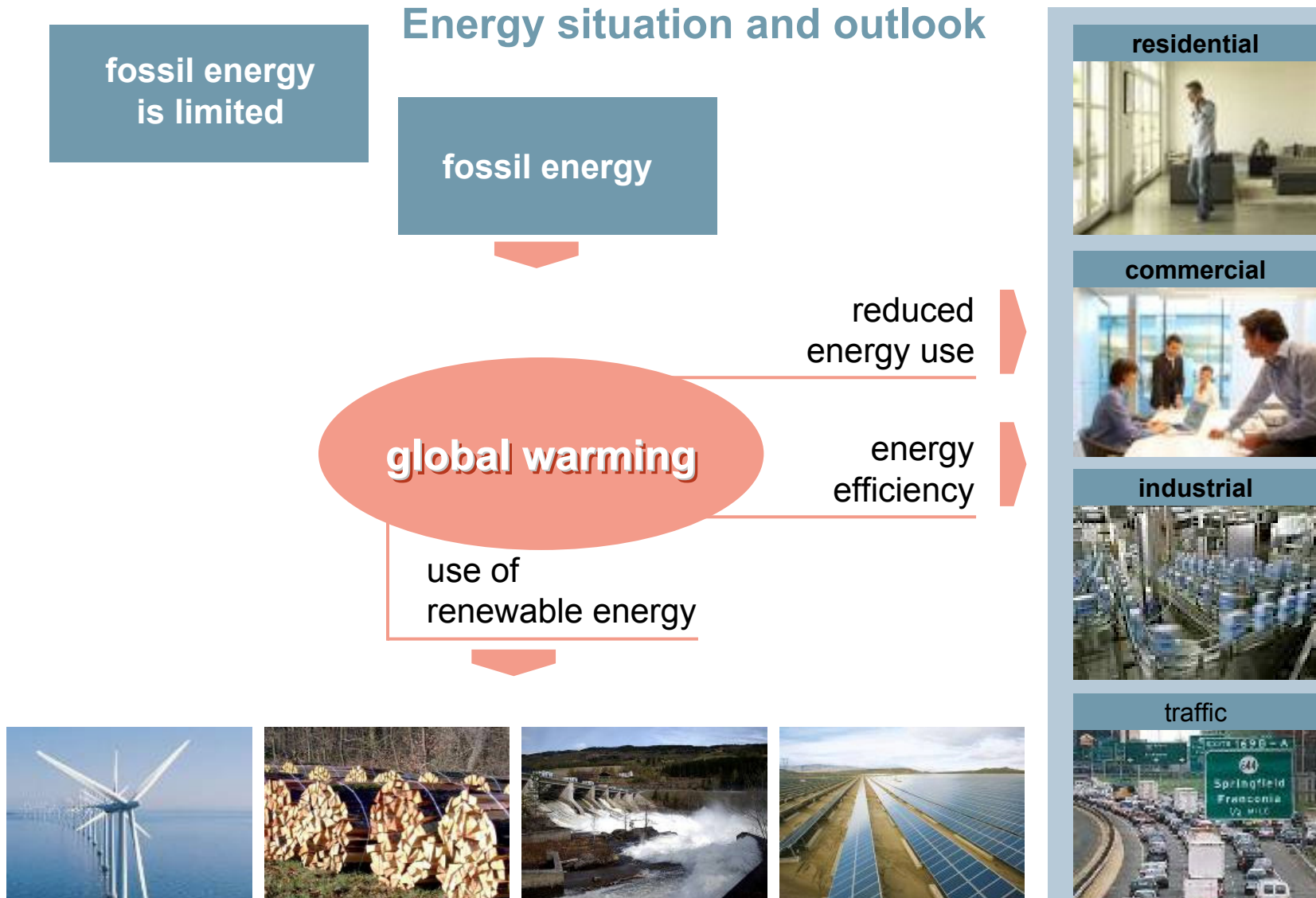
Some aspects for future challenges of the heat pumping technology

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Some aspects for future challenges



Transformation of the energy systems

→ turnaround

cut of nuclear energy!

global warming

safety

prices

independence

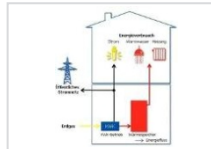
energy turnaround

local power
production + use

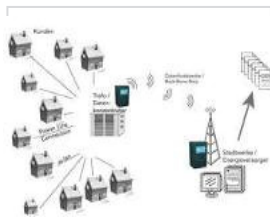
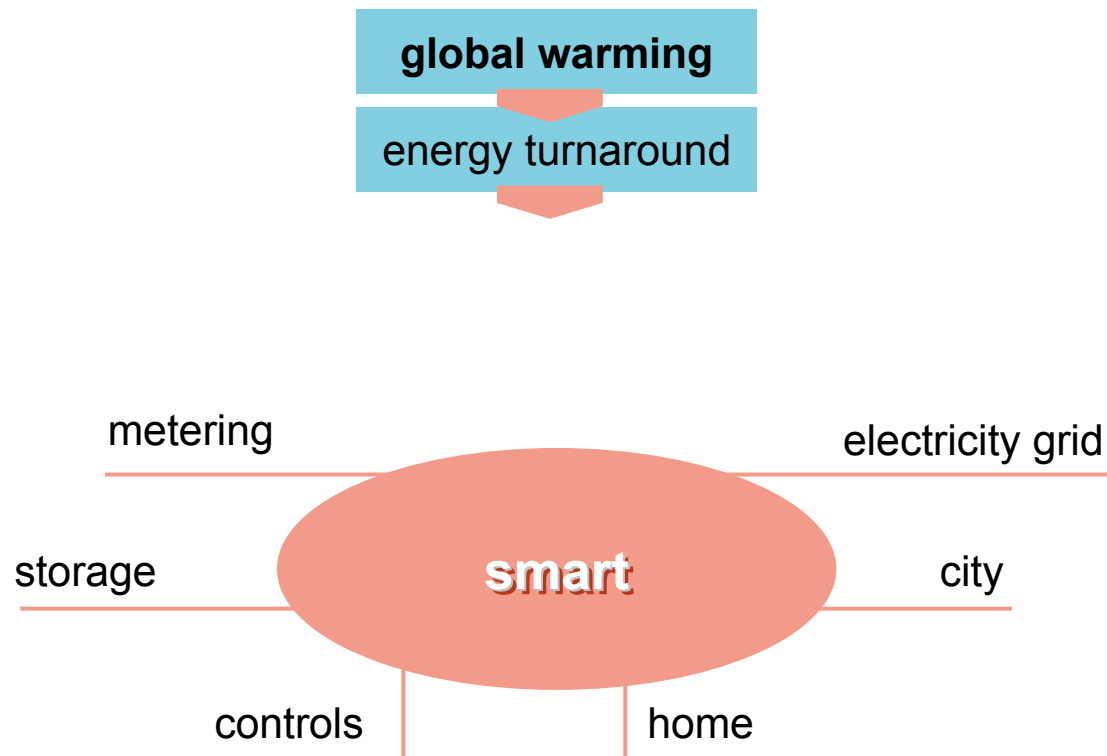
central



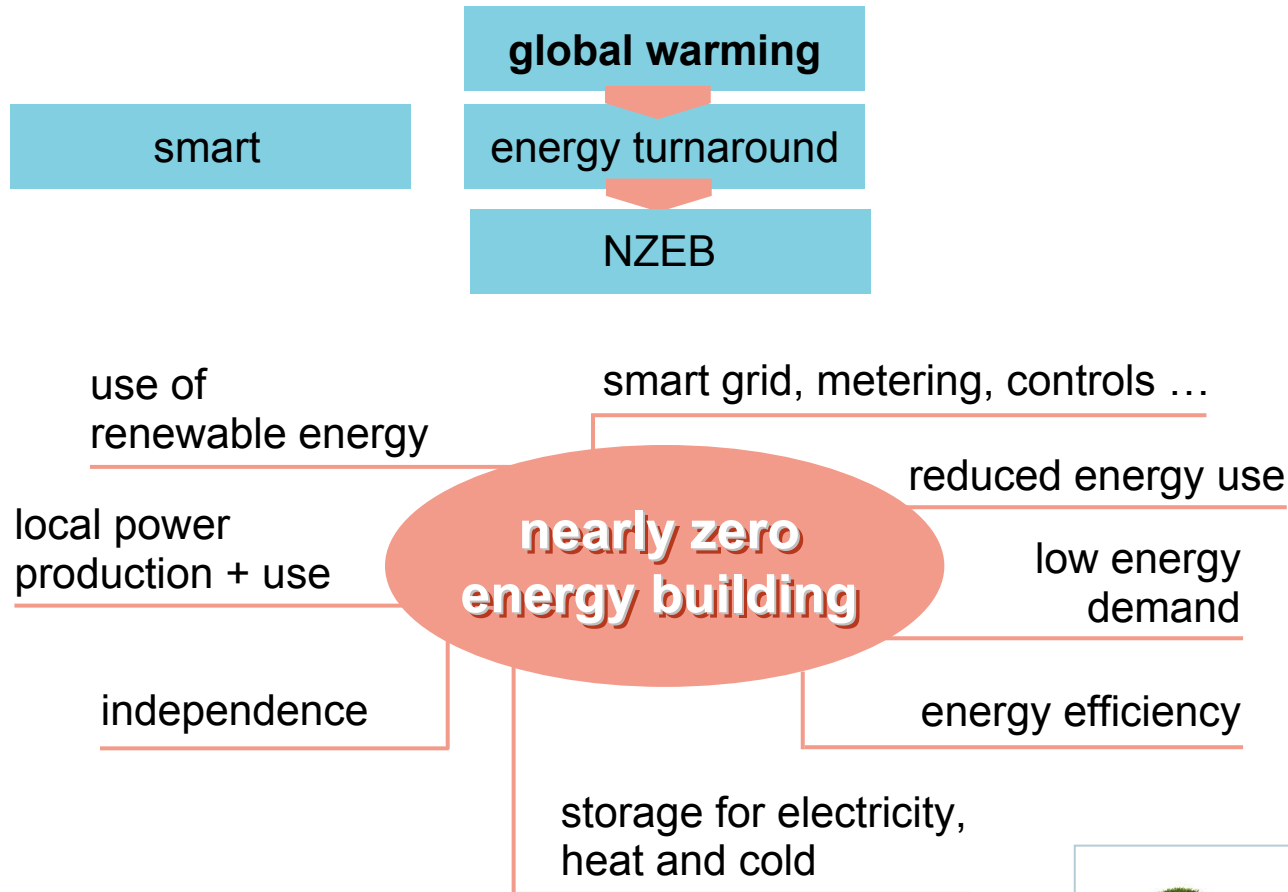
decentral



Transformation of the energy systems → turnaround



Transformation of the energy systems → turnaround



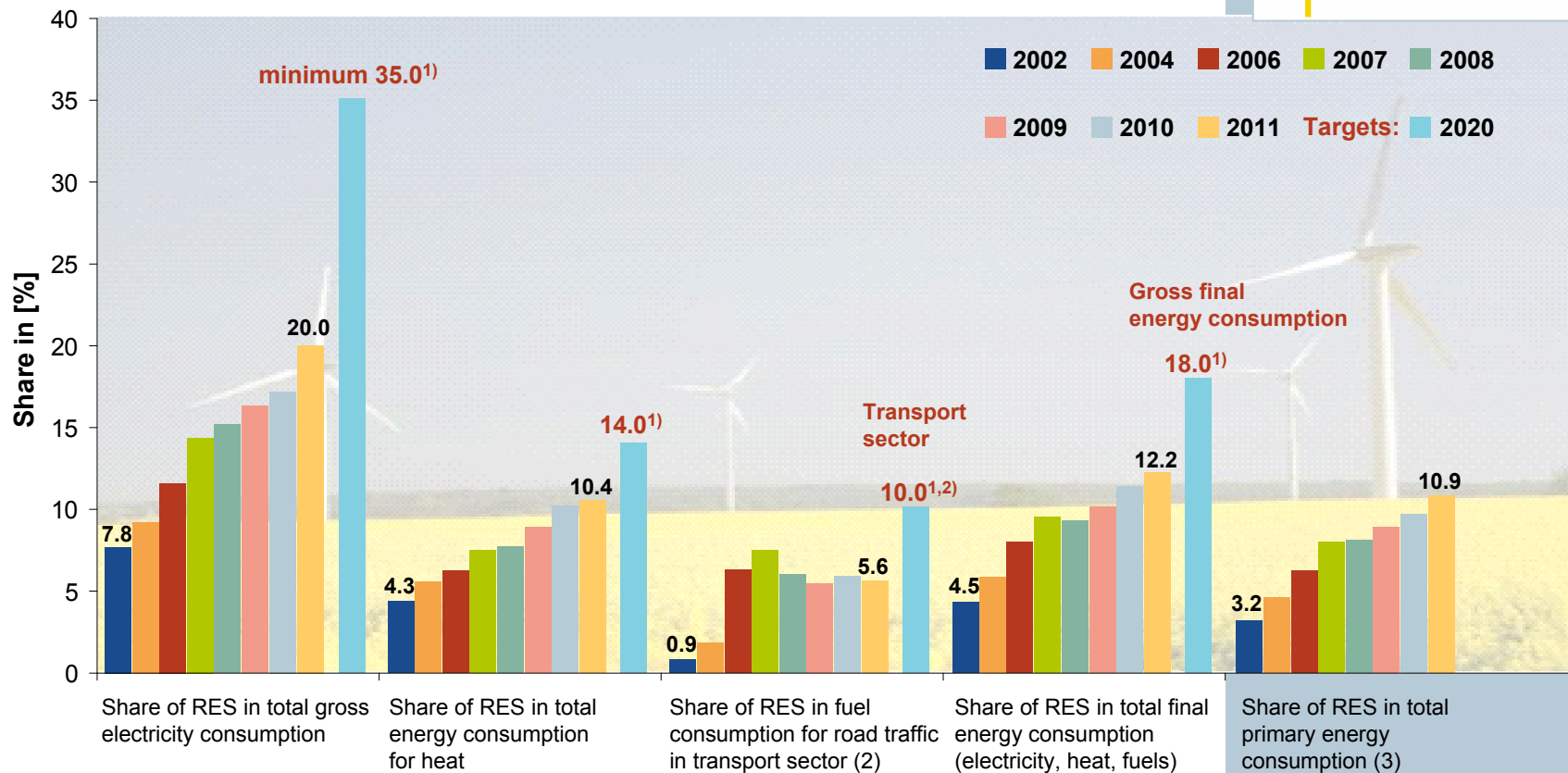
Germany 2011

Renewable energy sources as a share of energy supply in Germany

Source:



Federal Ministry for the Environment, Nature Conservation and Nuclear Safety



1) Sources: Targets of the German Government, Renewable Energy Sources Act (EEG); Renewable Energy Sources Heat Act (EEWärmeG), EU-Directive 2009/28/EC;

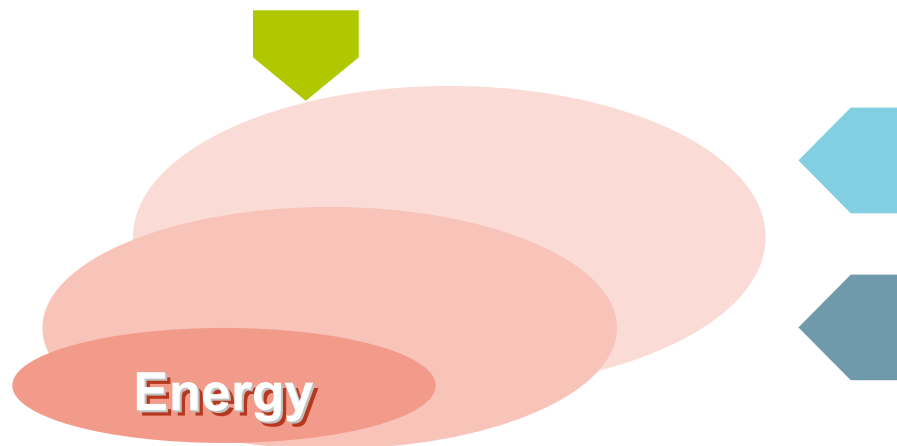
2) total consumption of engine fuels, excluding fuel in air traffic; 3) calculated using efficiency method; source: Working Group on Energy Balances e.V. (AGEB); RES: Renewable Energy Sources; source: BMU-KI III 1 according to Working Group on Renewable Energy-Statistics (AGEE-Stat); image: BMU / Brigitte Hiss; as at: March 2012; all figures provisional

Drivers for using less energy ...

EU policies

global warming

20 % less CO₂
equiv. by 2020



Economy

20 % less
primary energy use
by 2020

Security of supply

20 % share of
renewable energy
sources by 2020

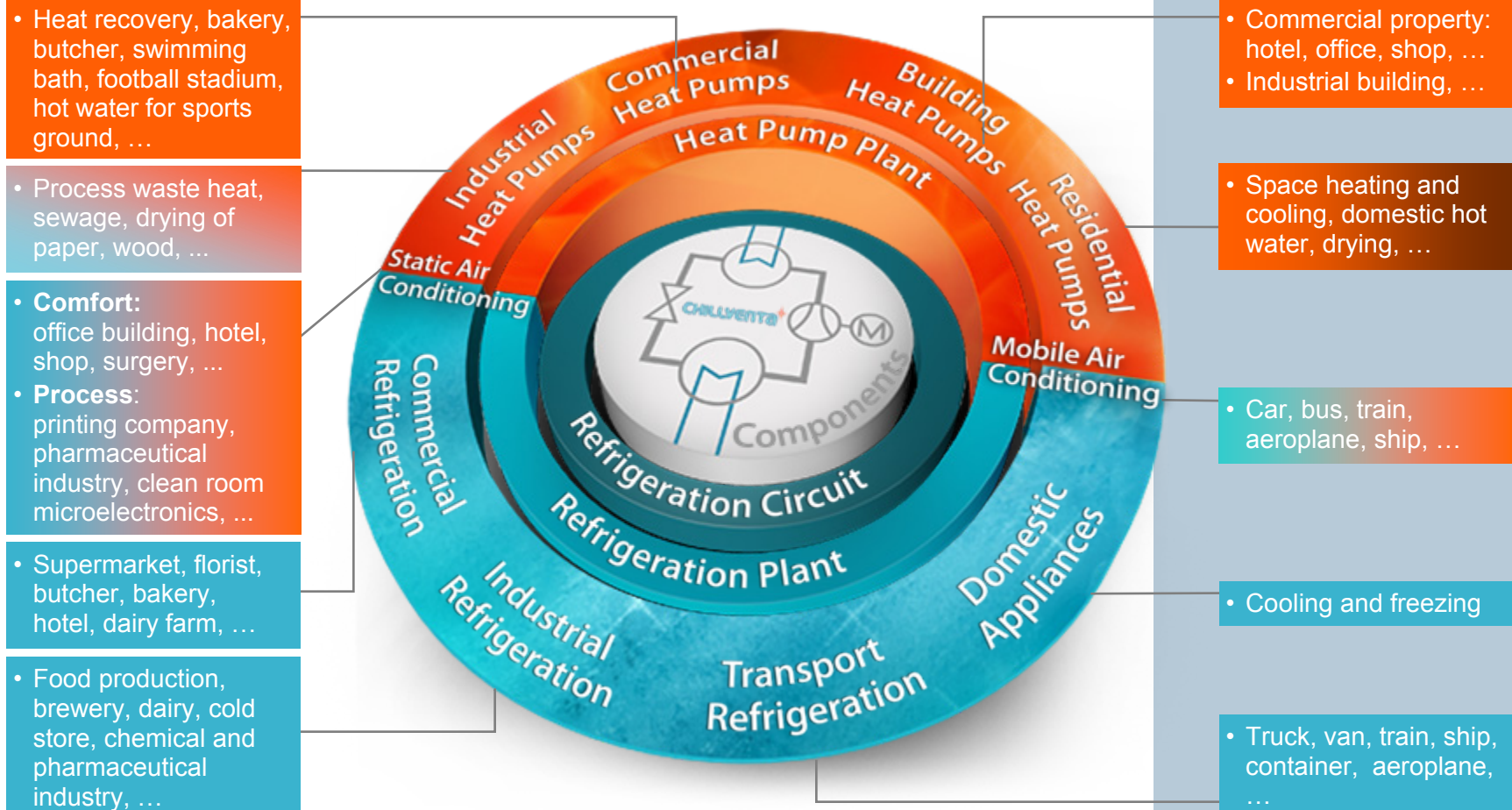
Political tools

- Energy performance of buildings directive
- Directive on the promotion of use of energy from renewable energy sources
- Energy using products directive
- F-gas regulation and its revision
- Labelling

Wide applications

... of Refrigeration, Air Conditioning and Heat Pumps could help as “intermediate energy storages”

Source: Chillventa



Wide applications ...

... of Refrigeration, Air Conditioning and Heat Pumps could help as “intermediate energy storages”

Source: JRAIA
<http://www.jraia.or.jp>



How the world react ...

global warming

energy turnaround

smart

nearly zero
energy building

- information 24h around the globe
- fast reaction on occurrences
- uncertain political decisions
- internet world with smart devices
- drive for safety and independence
- professionally and privately mobile
- low cost products and services
- 0 – environmental impact



safety risk
energy cost increase
environmental impact
dependency on energy
suppliers from abroad

Quo vadis?

global warming

energy turnaround

smart

nearly zero
energy building

Fossil fuels “must” be replaced.

Air Conditioning demand is increasing

The future of refrigeration lies in “hybrid” applications of refrigeration, air conditioning and heating.

This combination is unbeatable in energy terms.

NZEBs need heating, cooling, air conditioning and ventilation. The “refrigeration” sector could cover all these requirements.

“Load-controlled production of refrigeration utilizing storage capacity can also contribute to the integration of fluctuating renewable energy into the system.”

State Secretary Jürgen Becker BMU 20.3.12

The global demand for food can only be secured by the use of refrigeration.

Thank you for your attention

Heat Pump M I S S I O N is

LOW

or

N O E M I S S I O N