

Innovative Heat Pump Applications

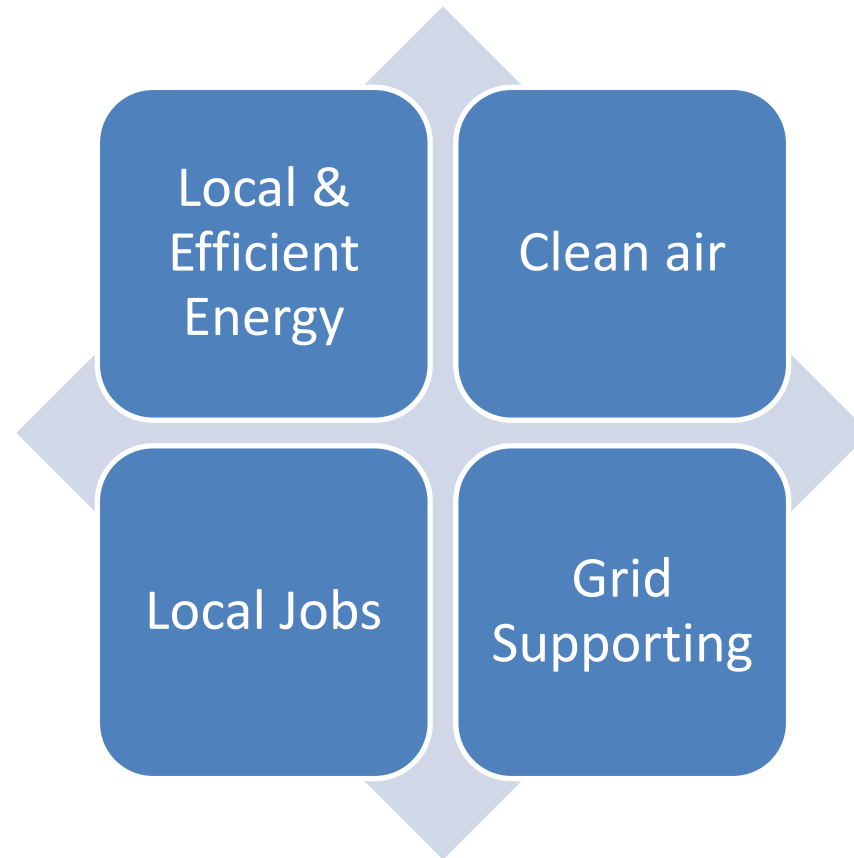
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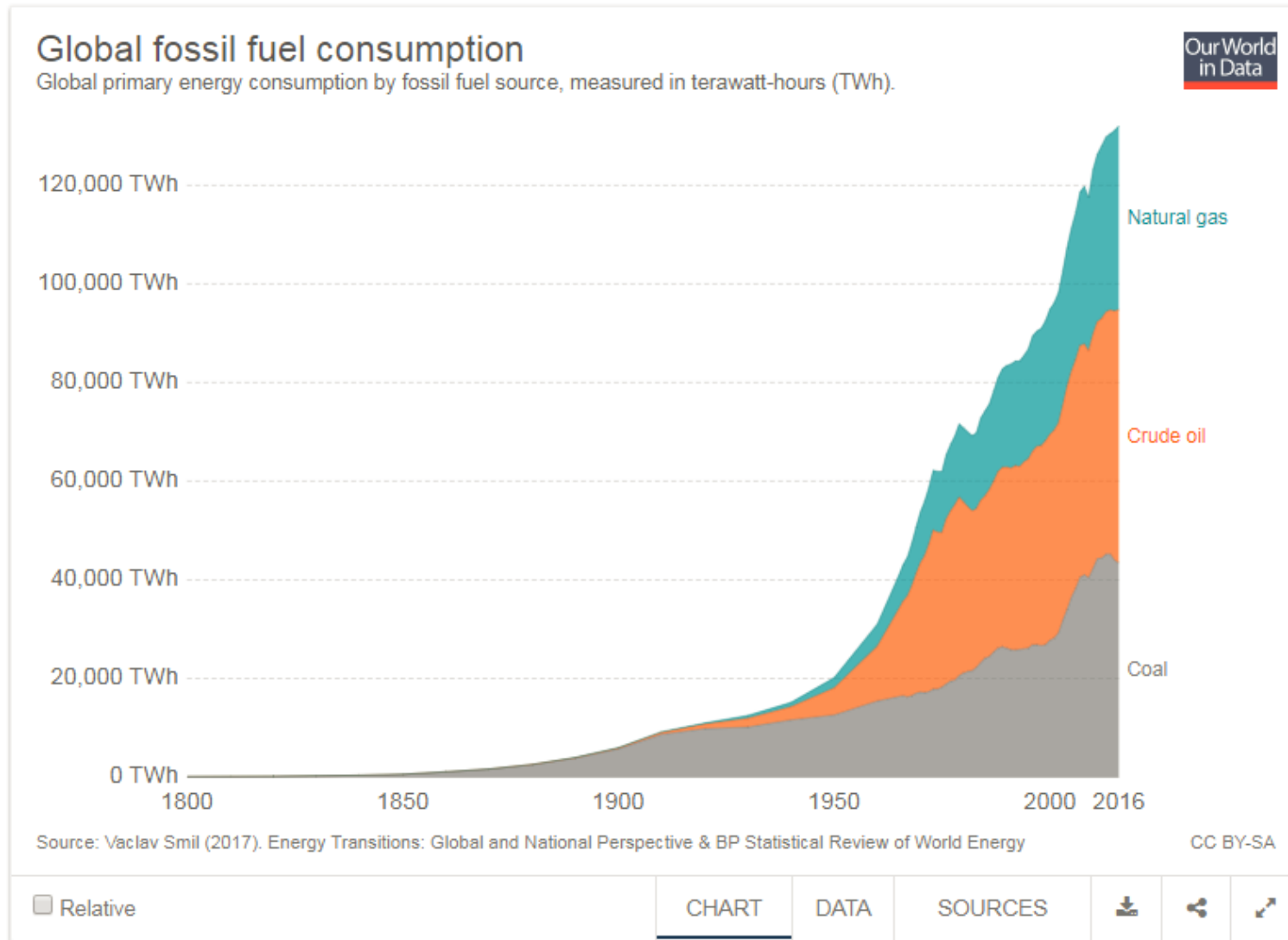
Graz, Austria



So what we do want in 2040?



Gas is not seen as part of the problem?





IT'S
Heat Pumps
LIFE JIM
BUT NOT
AS WE
KNOW IT

Upgrading District Heating with Heat Pumps

Technical Aspects

Various heat sources.....the warmer the better e.g. data centers at 30°C vs rivers

Various techniques.....efficiency should be king.....75% of Life Cost !!

Optimised system design very rewarding to efficiency e.g. 2% per 1K lower flow temp

Opportunities for time of use optimization (run when electricity is cheaper)

Benefits

Temperature lifted to 80°C-90°C **even from a cold fjord**.....lots of suppliers now

Carbon emissions reduction by 75%.....**and no local NOx**

Big savings in terms of yearly fuel usage cooling as a waste product

Example:



Compact heat pump for Zero Energy Homes

Technical aspects

Development of a compact design in a form of kit with all the necessary components for an easy integration and installation in existing buildings:

Heat Pumps, Solar Converter, Sound dampeners, Air separator, Expansion tank etc

Benefits:

- Standard component and controller design to allow easy integration and installation
- Complete of gas and CO₂
- Good return of investment

Example:

Winner of the #NextGenerationHP - Heat Pump City of the Year Award (example available on <http://www.hpcy.ehpa.org/>)

Main obstacles for full market penetration

- 1) **Energy subsidies** that distort the market mechanism need to be cancelled- that applies in particular to those paid for fossil energy/technologies
- 2) **Using carbon is still too cheap** – this should become more expensive either via tightening the cap of the ETS and integrating all sectors in it or by establishing a price on carbon;
- 3) The **cost of the energy transition** need to be distributed equally to all energy sources (not only electricity).Energy taxes and levies need to be applied in relative, not absolute terms
- 4) Gas is touted as solution. No downward pressure on it's use.
We need a Gas phase down obligation