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CURRENT EXPERIENCE IN AUSTRIA

TOWARDS CLEAN, RENEWABLE AND EFFICIENT ENERGY USE

ENVIRONMENT AGENCY AUSTRIA umweltbundesamt

MOST IMPORTANT ACHIEVEMENTS

Austria

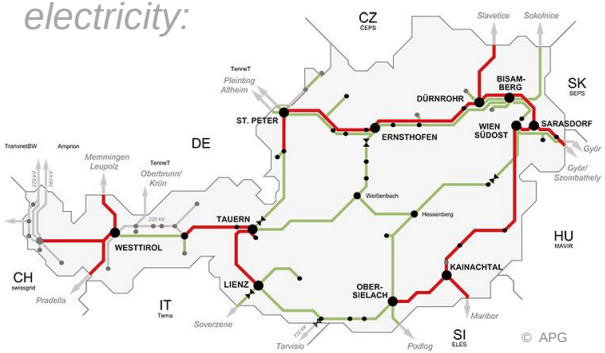
MOST IMPORTANT ACHIEVEMENTS – 1

- High **connectivity** of the Austrian energy market within European **energy markets** (gas, electricity), plus highly functional gas + electricity storage capacities inside Austria (deep cavities storing gas, and high-altitude mountain lakes & barriers).

gas:

© OIES, https://www.oxfordenergy.org/publication-category/gas/

electricity:



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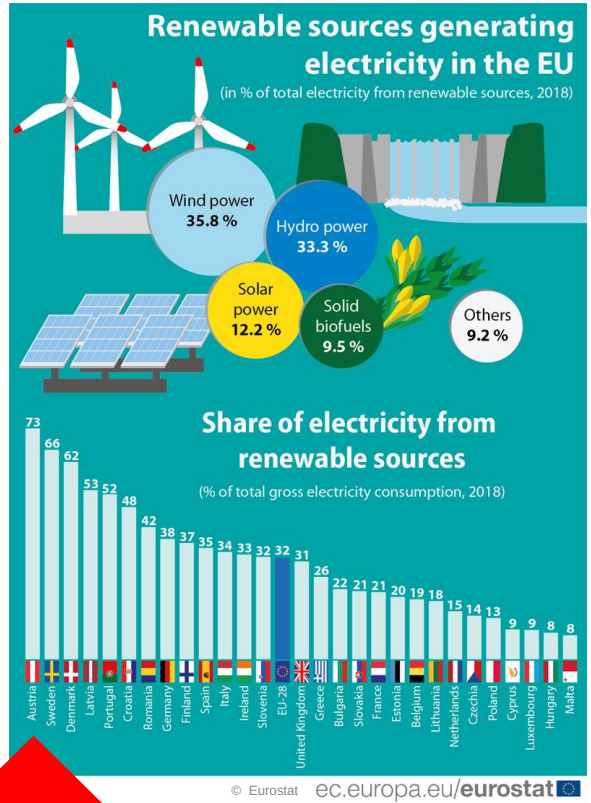
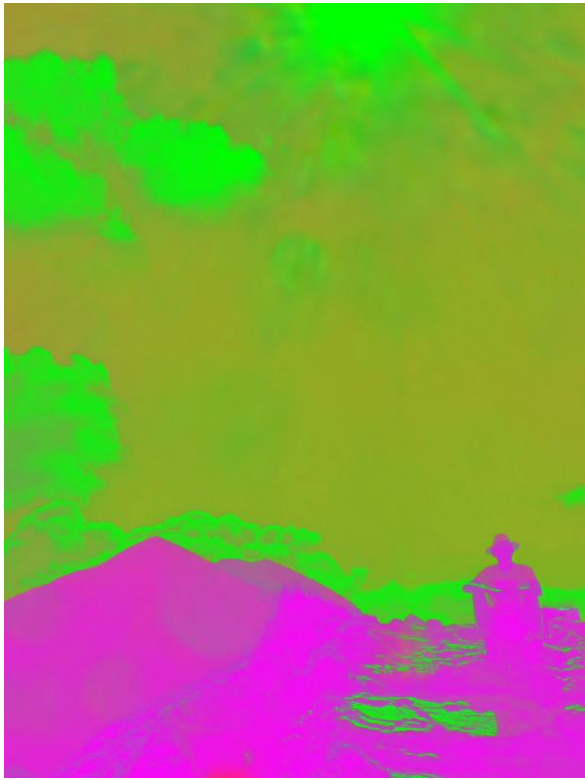
MOST IMPORTANT ACHIEVEMENTS – 2

- High **renewable energy share**, based on our geomorphological advantages (hydro energy) plus achievements in renewables (wind, solar-thermal, PV) encouraged by entrepreneurial action among energy utilities





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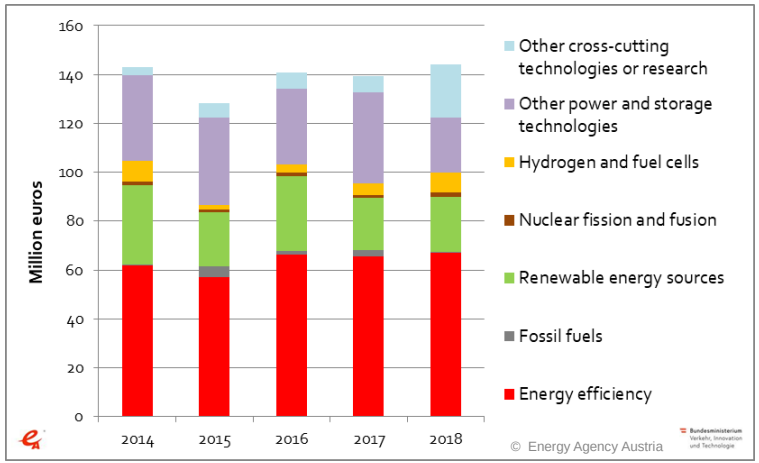
MOST IMPORTANT ACHIEVEMENTS – 3

- High degree of **efficiency** of energy end use, based on self-enhancing optimisation of industry triggered by broad understanding of climate protection among CEOs of national energy-related companies

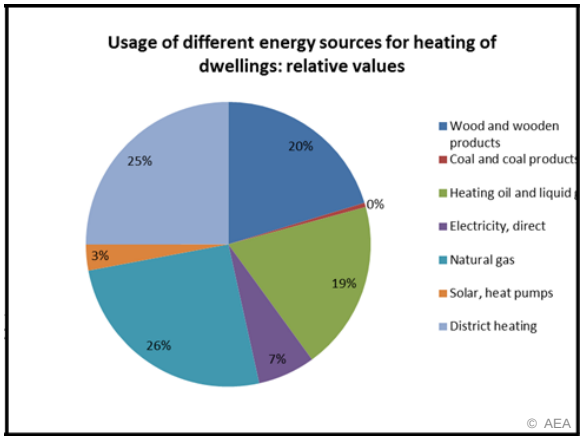


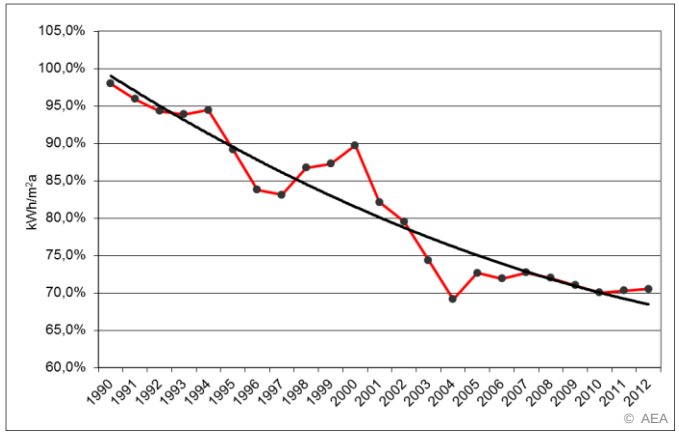
MOST IMPORTANT DEVELOPMENT AREAS

Austria

MOST IMPORTANT DEVELOPMENT AREAS – 1

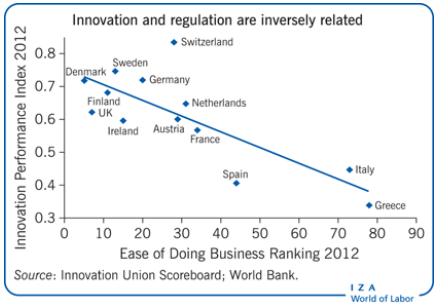
- Among **households**: encourage a decisive shift away from fossil oil/coal towards renewable-energy heating systems through a bundle of legal + financial advantages

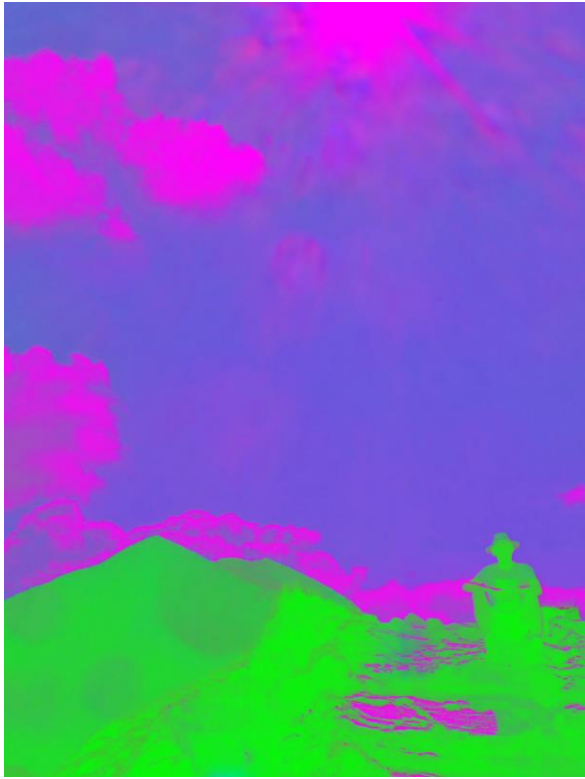




MOST IMPORTANT DEVELOPMENT AREAS – 2

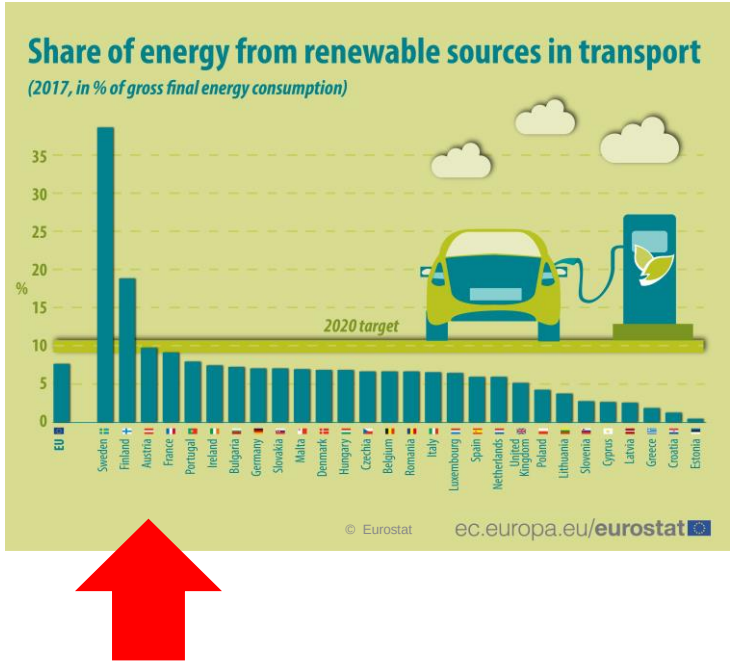
- Still higher degree of **entrepreneurialism** of Austrian firms towards energy solutions (PV, wind, solar) and energy efficiency, with encouragement to step into global markets (e.g. programs supported by economic chamber or the state) in successful internationalisation: development of blue chip companies in the energy domain, also as market leaders at the international level





MOST IMPORTANT DEVELOPMENT AREAS – 3

- Within the **transport** sector: more targeted (financial and organisational) encouragement of households through a bundle of legal and financial advantages for non-fossil cars parking slots, & city access)



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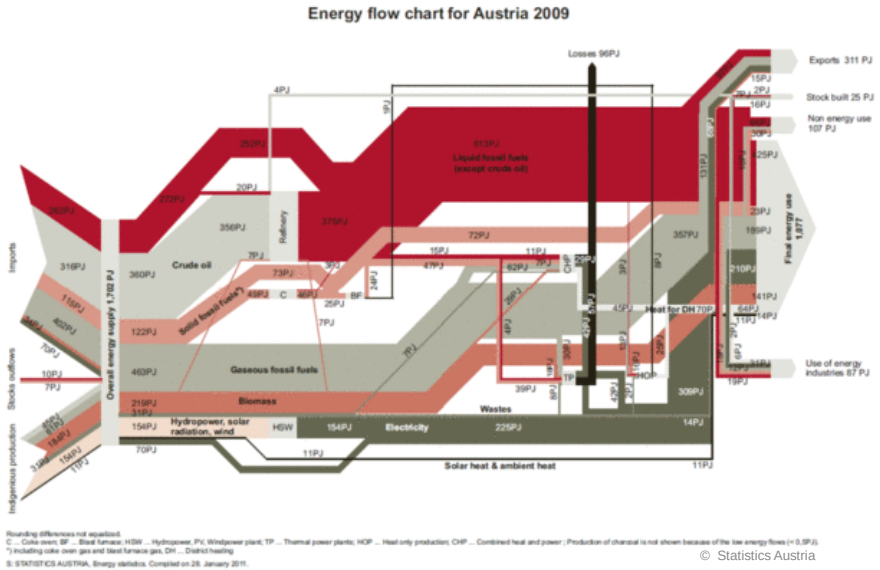
MOST URGENT ACTIONS AND PROCESSES

Austria

MOST URGENT ACTIONS AND PROCESSES – 1

- **Finance / Fund**
  the switch from fossil fuels to renewables for households and SMEs
  (= Austrian small-structured economy), e.g. subsidising exchange of oil burners



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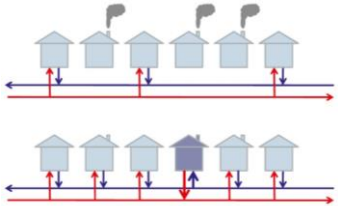
MOST URGENT ACTIONS AND PROCESSES – 2

- Exempt E-mobility schemes from restricting traffic **regulations** (inner city traffic bans etc.)

MOST URGENT ACTIONS AND PROCESSES – 3

- **Educate** from youngest levels towards better entrepreneurial spirit, facilitating plus-energy houses: every household = an energy entrepreneur, and has something to GIVE to society instead of only something to TAKE from society = consume – therefore an upgrade of **a citizen's self-concept** as a **prosumer**, no more consumer), merging social/societal and technological **co-evolution**



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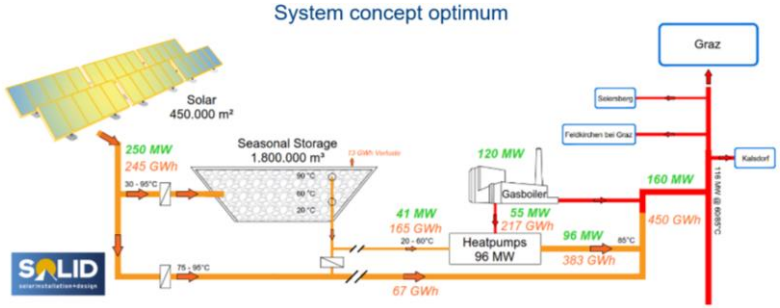
HISTORY OF ENVIRONMENTAL TECHNOLOGY IN GRAZ

- A progressive student city (300,000 inhabitants)
- An innovative University of Technology
- University curricula on environmental protection & environmental systems sciences
- Foundational city for “Climate Alliance”, environmental and energy technologies
- Pilot project: “Big Solar”:



- 25% of city’s district heating supply by solar
- Collector field : 450,000 m²,
- Total capital expenditures: ~200 Mio. EUR
- Feasibility study 2015
- Heat Price compareable to Natural Gas

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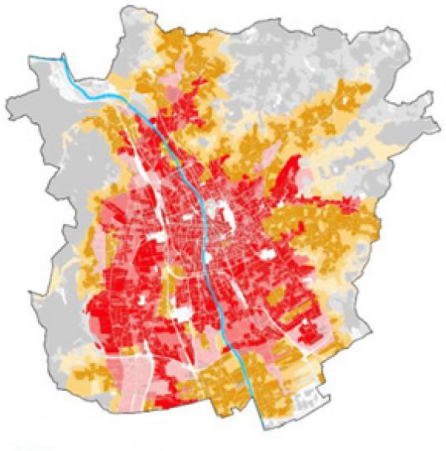
“BIG SOLAR” GRAZ

- Solid undertook a feasibility study in 1996 (Chr. Holter et al.)



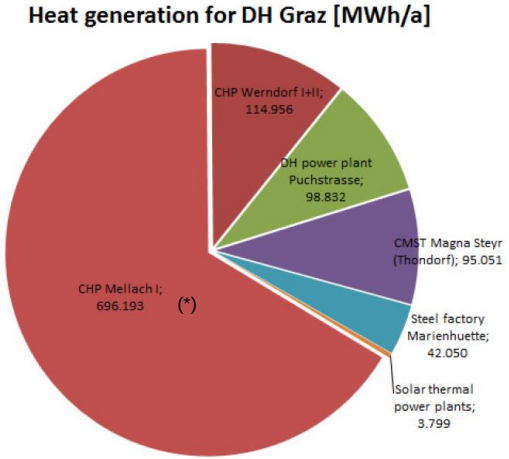


Fig. 1. District heating network in Graz; heat generation for DH in Graz. © SOLID

(*) In 2014, it was decided to close this combined heat and power plant.

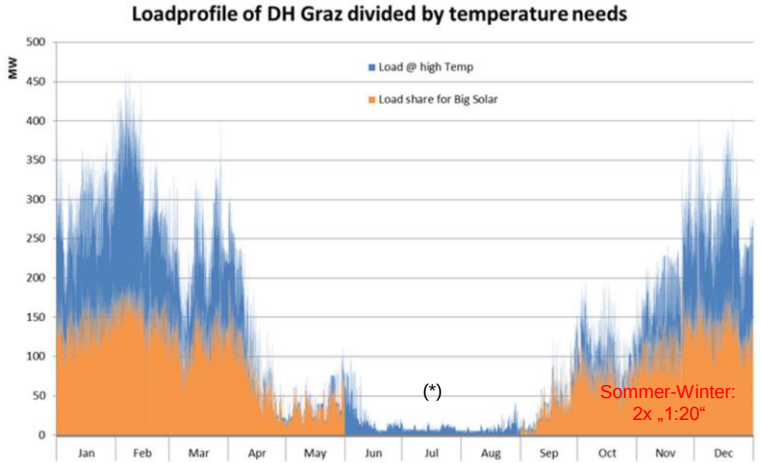


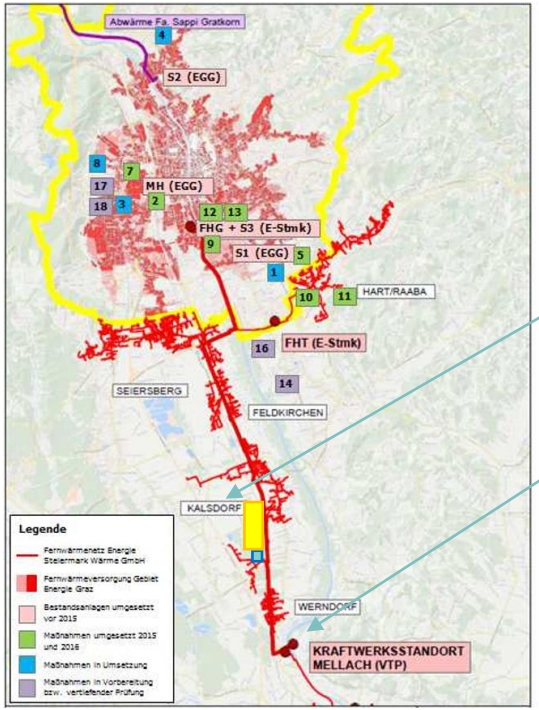
Fig. 3. Load profile of DH in Graz divided by temperature needs. © SOLID

(*) During summer, this network is cut off from the network.

Sources: Solid; see my report on energy transition in Austria

BIG SOLAR GRAZ: LOCALISATION

Resumé: according to initial planning, 50%, but presently only **20-25%** of annual heat demand for the entire city are generated and stored here.



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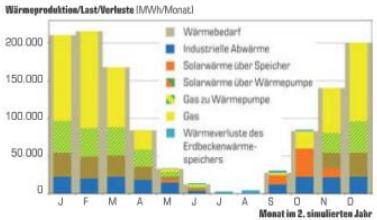
- Kalsdorf: Big Solar
- Mellach: power plants: for coal, hydro, gas



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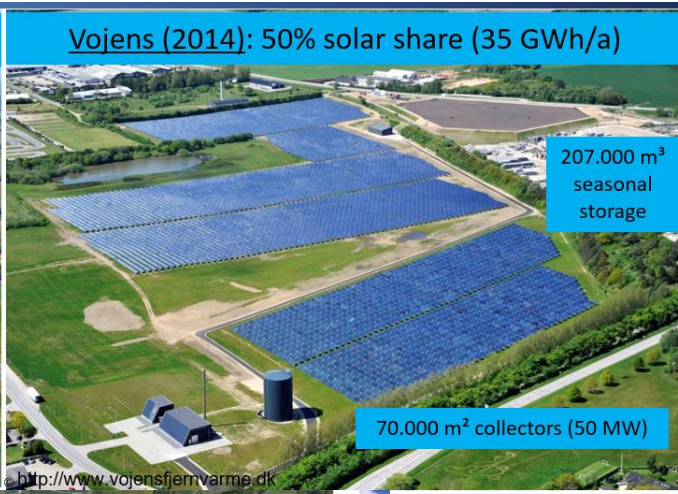
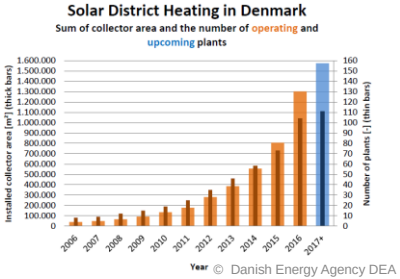
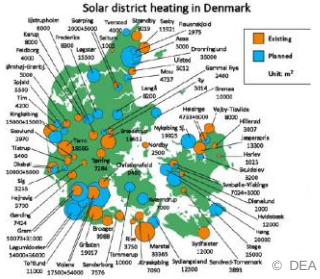
“BIG SOLAR” GRAZ

- In comparison with three Danish solar plants







EXAMPLE: SMALL-SIZED PV MODULES

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KEY PRINCIPLES OF SUCCESS FOR **OUR TRANSITIONS**

- **SHIFT!** from consumer to **prosumer,**
- promote a **co-evolution of societal & energy-related structures,**
- develop **smart grids** (as the *technological vehicle*) facilitating storage and mutual exchange,
- prioritise the **"Green Deal"** in each state's *rule-setting power* and institutional structure – such as a **Ministry of Sustainability** (including responsibility for energy).

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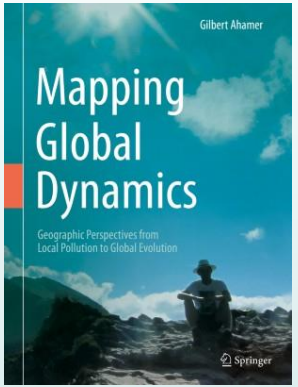

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Towards clean, renewable and efficient energy use

UNDA project webinar ● 23 February 2021