



Cooperation and system perspective for increased sustainability

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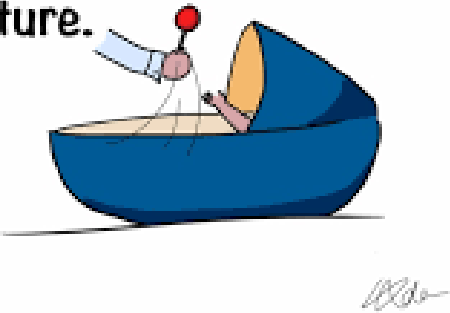
Energy system

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OVERSHOOT DAY – is getting closer and closer

Year	Overshoot day
2017	2 August
2010	21 August
2005	20 October
2000	1 November
1995	21 November
1990	7 December
1987	19 December

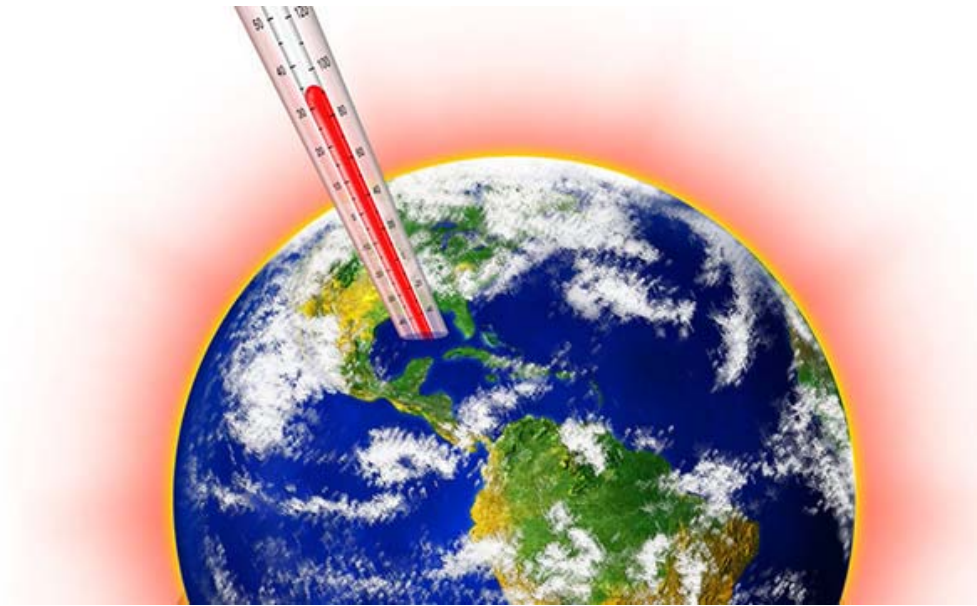
From this week, everything we consume for the rest of the year is **stolen from the future.**

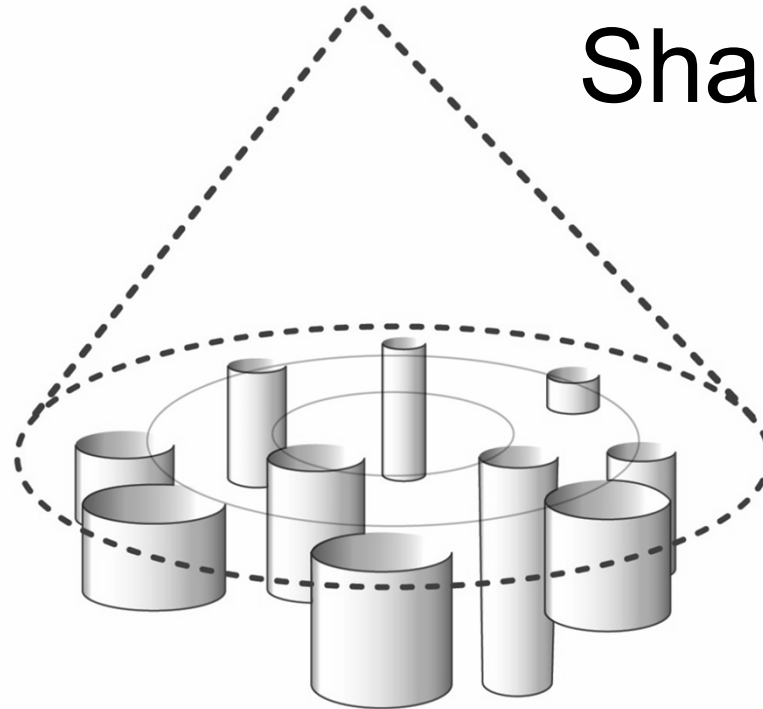


Don't believe this, it just a conspiracy from the scientists!



It we want to fix this...





Back casting Shared vision

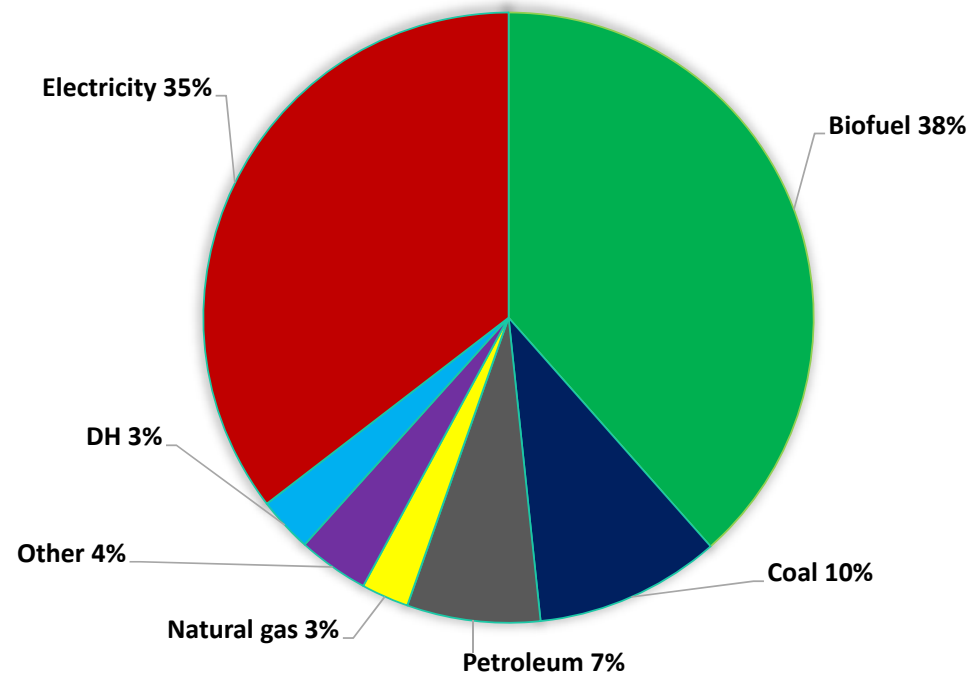


SYSTEM PERSPECTIVE

Supply AND Use

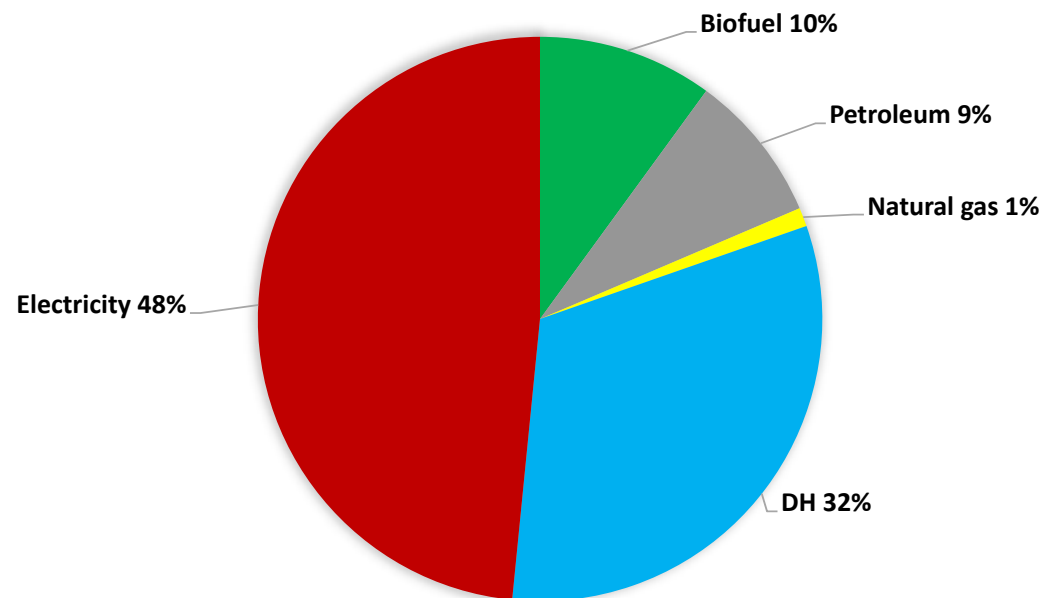


Energy use in industry, Sweden



Source Energimyndigheten

Energy use in buildings, Sweden



Source Energimyndigheten

To meet the target of a long-term and resource-efficient region it is vital to have an interaction between different energy services with regard to the region's total energy needs

No energy service alone can be the sole provider of the total energy demand for a specific region.



We need a stronger focus on combining different energy supply and energy use measures;

- more efficiency use of electricity
- converting to DH
- heat pumps
- storage
- ...





We also need a close cooperation with energy companies, industries and property owners where the total energy system of the region is taken into consideration.

Through increased cooperation with other energy services in the region, a power plant can

- cut peak loads, ie get a square load curve
- disconnect the electricity from the heating / cooling demand
- maximize electricity when electricity prices are high

Electricity use and electricity produktion



- In a European perspective electricity is still a climate issue and linked to fossil fuels – when the use of electricity is changed it will affect the marginal production of electricity
- We will always need electricity, but can we afford to use it when we have other renewable energy alternatives?



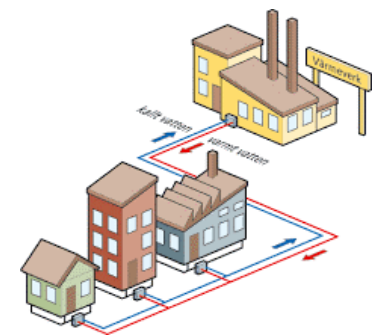
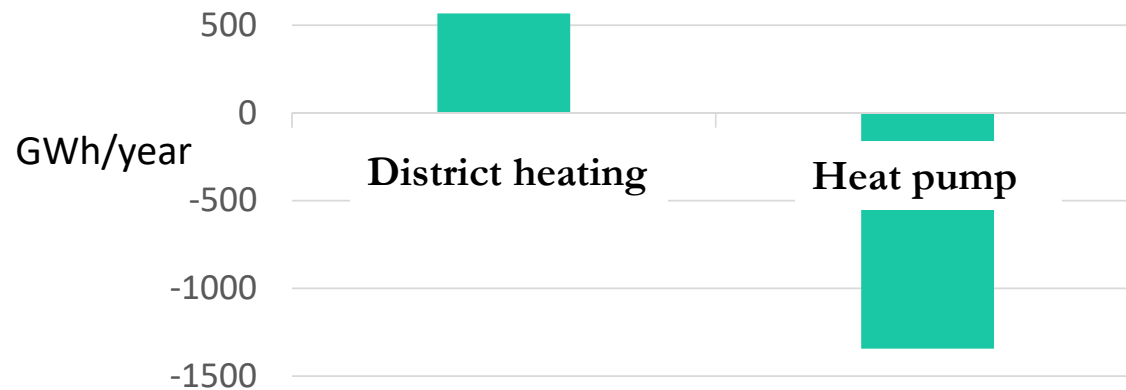
About 7 000 MW electricity for heating purposes in buildings in Sweden



Consequences for the energy system when using electricity for heating purposes



- 100 000 houses **supplied by DH** equals **extra production** of about 500 GWh electricity per year
- 100 000 houses **supplied by heat pumps** equals **extra use** of electricity with about 1500 GWh per year



But district heating is not the sole answer to all heating demand in the region

We need more and new cooperations



- Architects– materials physicist
- Energi companies - customers – construction industry
- Industries – energy utilities
- DH - other energy services in the region
-
-





Energy efficiency and conversion is a management issue



Ongoing project

Sustainable region

2 energy companies

5 larger real estate companies

Some of the research questions for the project Sustainable region



- Business models for district heating
- Future heat demand in the region
- Excess heat
- Energy efficient measures in buildings with district heating – how will it affect the total energy system of the region
-

Despite Trump...

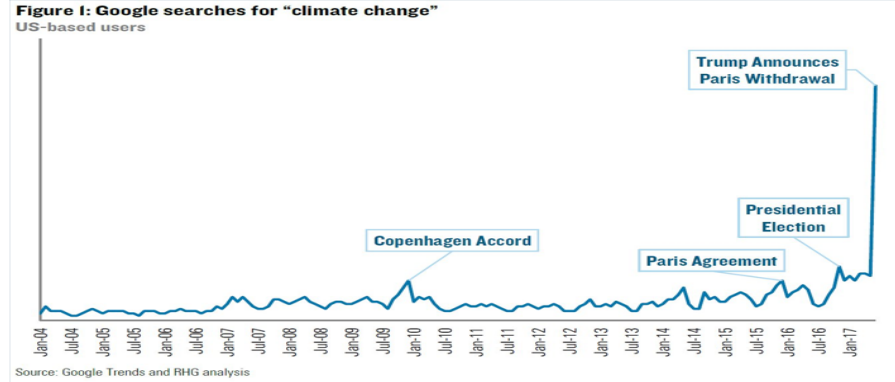




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In the US, climate change has never experienced the level of media attention or public interest it received over the past week.

🌐 Översatt från engelska



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Svara Trevor Houser



Conclusions



- To meet the target of a long-term and resource-efficient region it is vital to have an interaction between different energy services
- No energy service alone can be the sole provider of the total energy demand for a specific region
- Focus on supply AND use
- We need to increase cooperation between different sectors, and to have a system perspective with regard to a region's total energy demand – we need to work together
- Communication is a key stone

....but above all; what is our shared vision?

