

In the belly of the beast?



Ing. Ruud Brunst

Manager Applications

5-10-2016

remeha.nl

What we hear is, “there will be an shortage of natural gas” is that true?





Occurrences of methane hydrates







A photograph of a lush green field of grass in the foreground, with a clear blue sky and wispy white clouds in the background. The text is centered in the upper half of the image.

Shouldn't we talk
about something
else??

All-electric, District heating, central or decentral heating, fuelcells ?

2050 everything sustainable

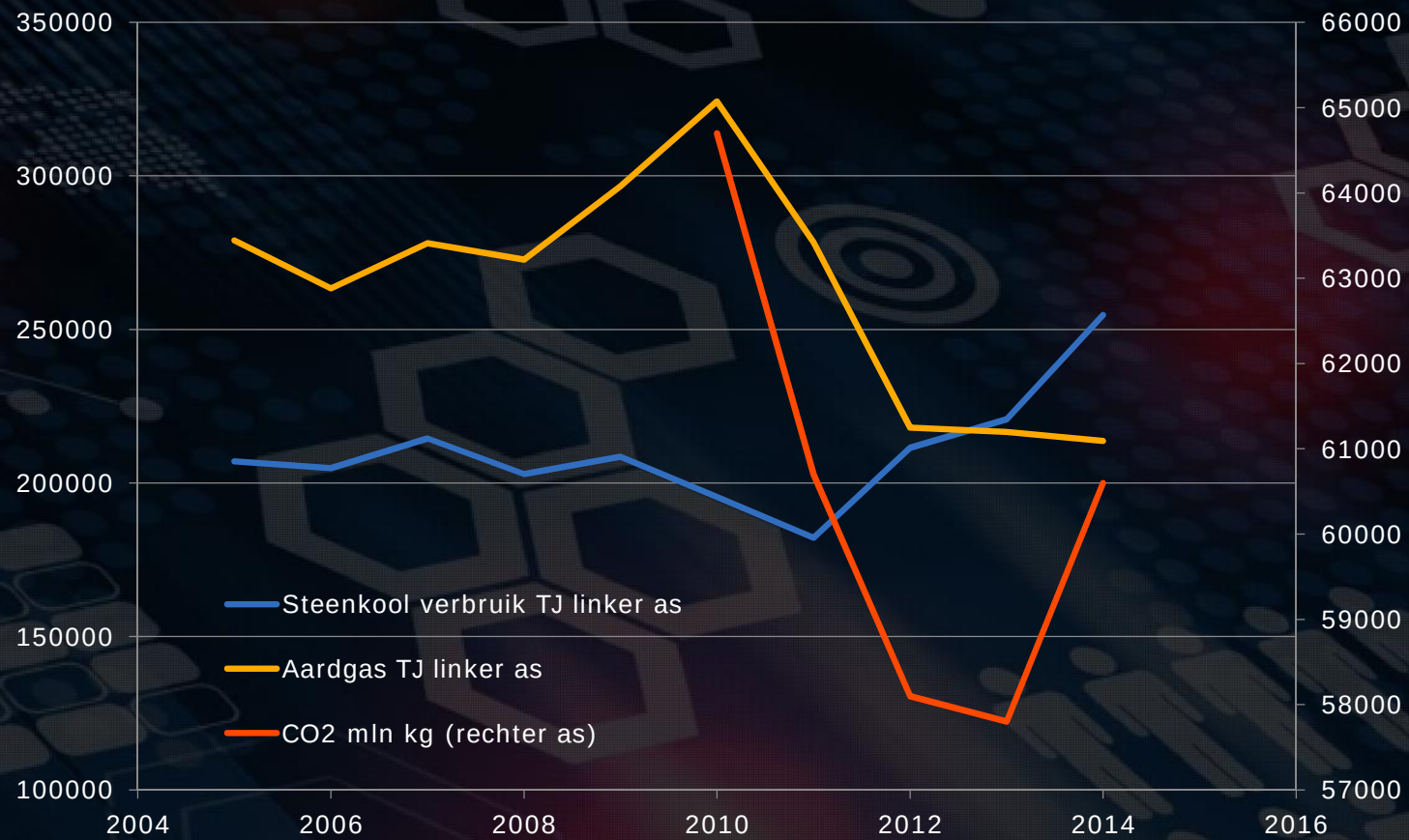


remeha.nl

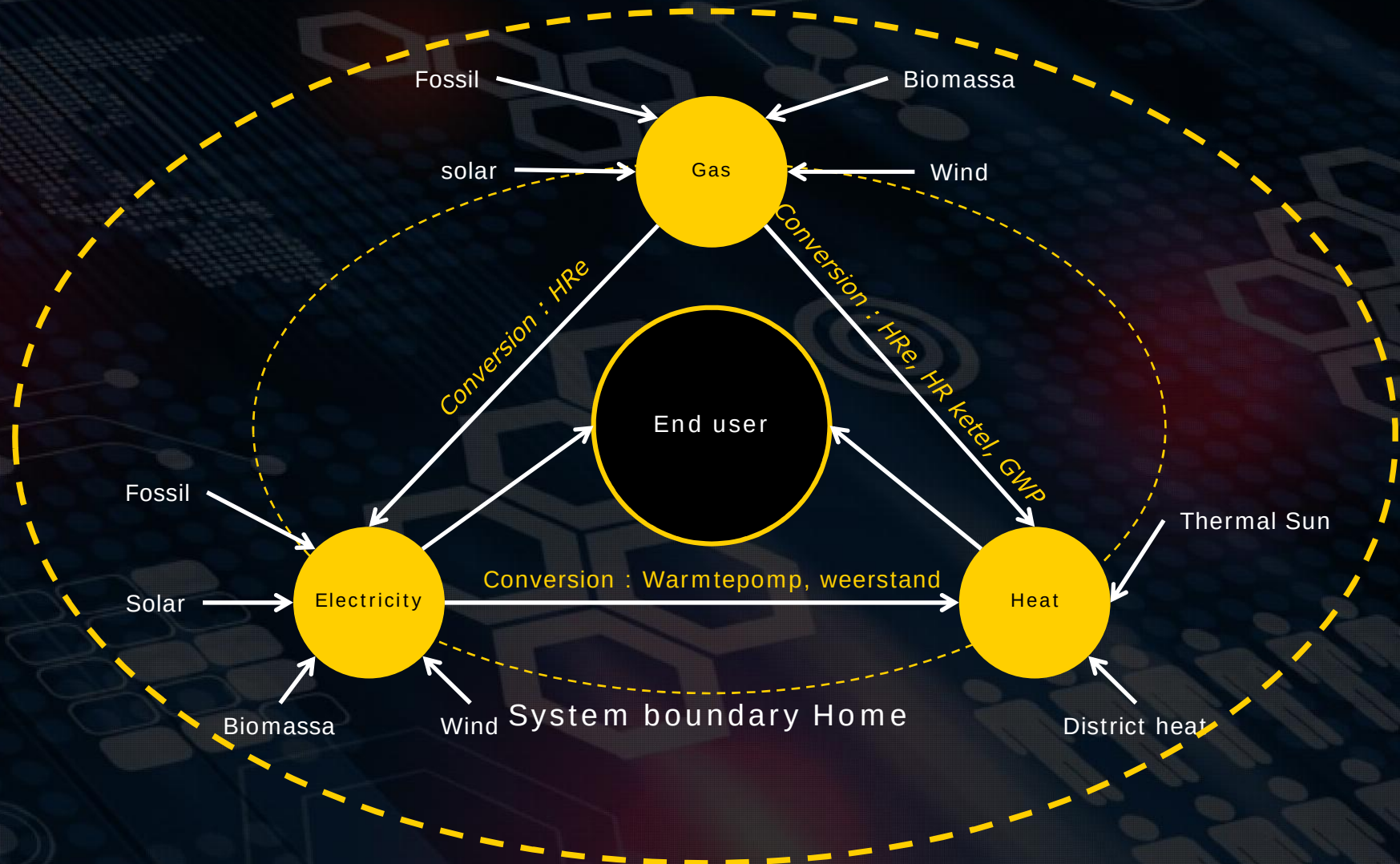




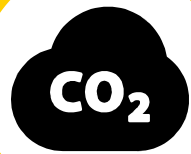
Fossil fuel and CO₂



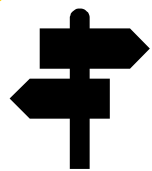
Energiesysteem en conversie

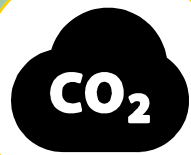


What must we do ... to maintain this on long-term?



Clean from source to user → CO₂ neutral is main goal





Wind

Electricity



Heat pump

in

Heat

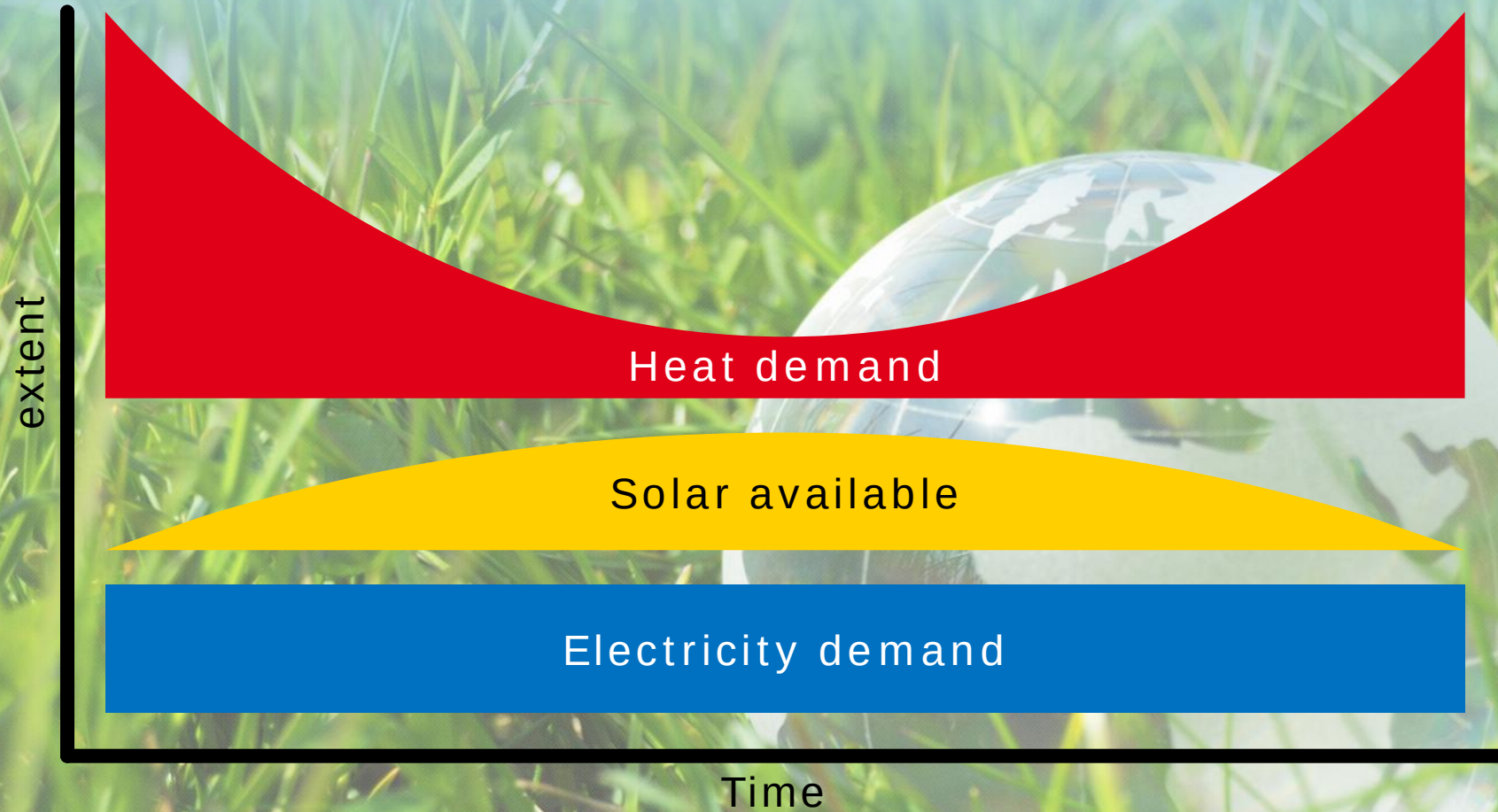
Not the form of energy is important, but the source.

2 issues

1 Cradle to cradle

2 Equality between supply and demand, quantity and time

Availability $\neq$ Demand

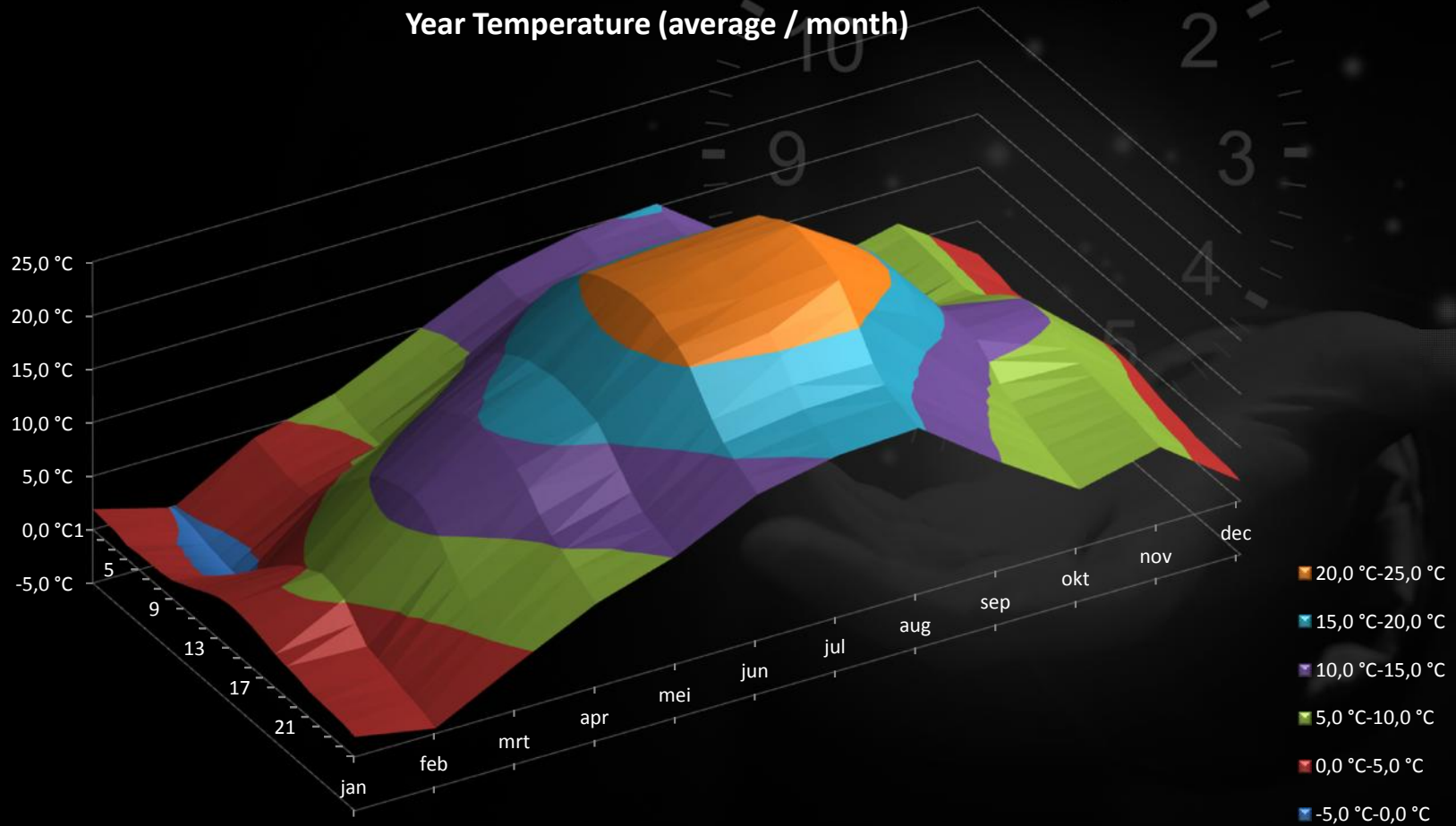


Availability $\neq$ Demand



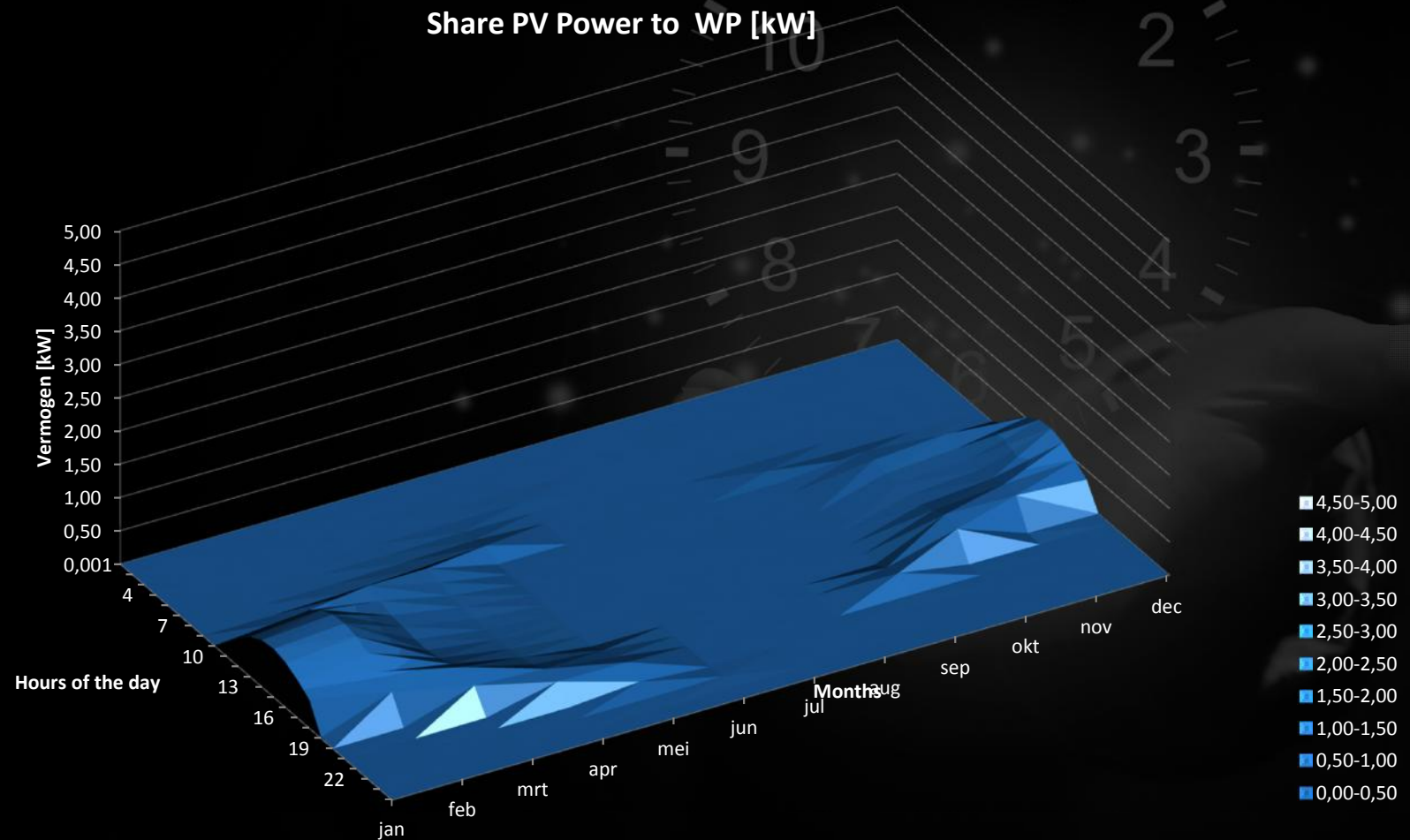
Availability $\neq$ Demand

de “0” on de meter house



Availability $\neq$ Demand

de “0” on de meter house



Availability $\neq$ Demand

de "0" on de meter house

Results in numbers

Less than **20 %** of electricity required For the heat pump comes from PV

CO₂ emissions from electricity? If there is no PV is: **1600 kg**

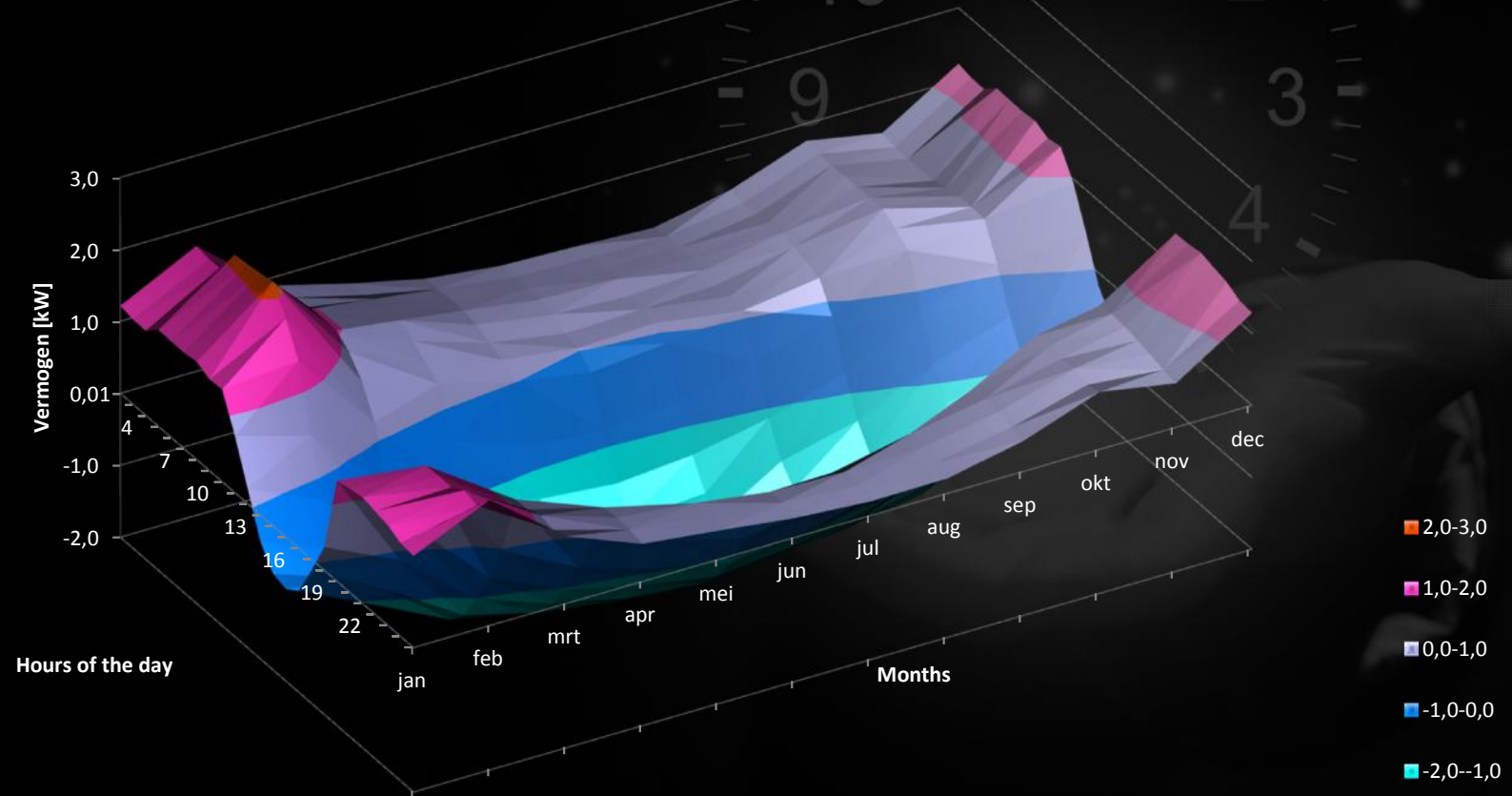
For comparison :

CO₂ emissions in application HR boiler : **1400kg**,
14 panels less need for "compensation Heatpump"

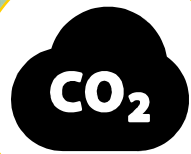
Availability $\neq$ Demand

“0” on the meter $\rightarrow$ Total electricity users in the home

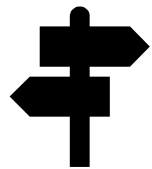
Electricity demand by user(2500kWh max) + (heatpump – production by PV [kW])



What must we do ... to maintain this on long-term?



Economic cost of the entire energy system And infrastructure should be achievable, and stay



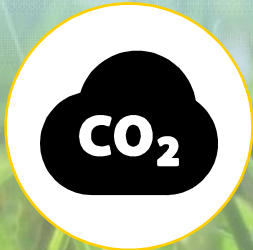
electrical infrastructure ¹⁾

Electrical Infrastructure five times heavier

Net 45% more expensive (regular E- en G-net)



What must we do ...
to maintain this on long-term?



Transition from current situation into the future

90 % of the current buildings in 2050

Energie 350 PJ (actual)

7,2 million homes

