

# New possibilities in the Development of three city districts in Stockholm – towards a 2 kW society?



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**People do not use energy!  
People use services and  
functions...  
...that require energy**



Thus: Mapping of future energy use triggered by the activities in the society

Aim: Designing a system that can deliver this amount of services and functions with no more than 2 kW primary energy per capita as a yearly average...

# The 2 kW idéa

Most activities and functions in the society require energy (maintaining indoor climate, transportation, communication, food preservation, illumination etc)

These activities shall not require a larger average outtake of primary energy per unit time than 2 kW.

This will also lead so significant reduction in CO<sub>2</sub> emissions!



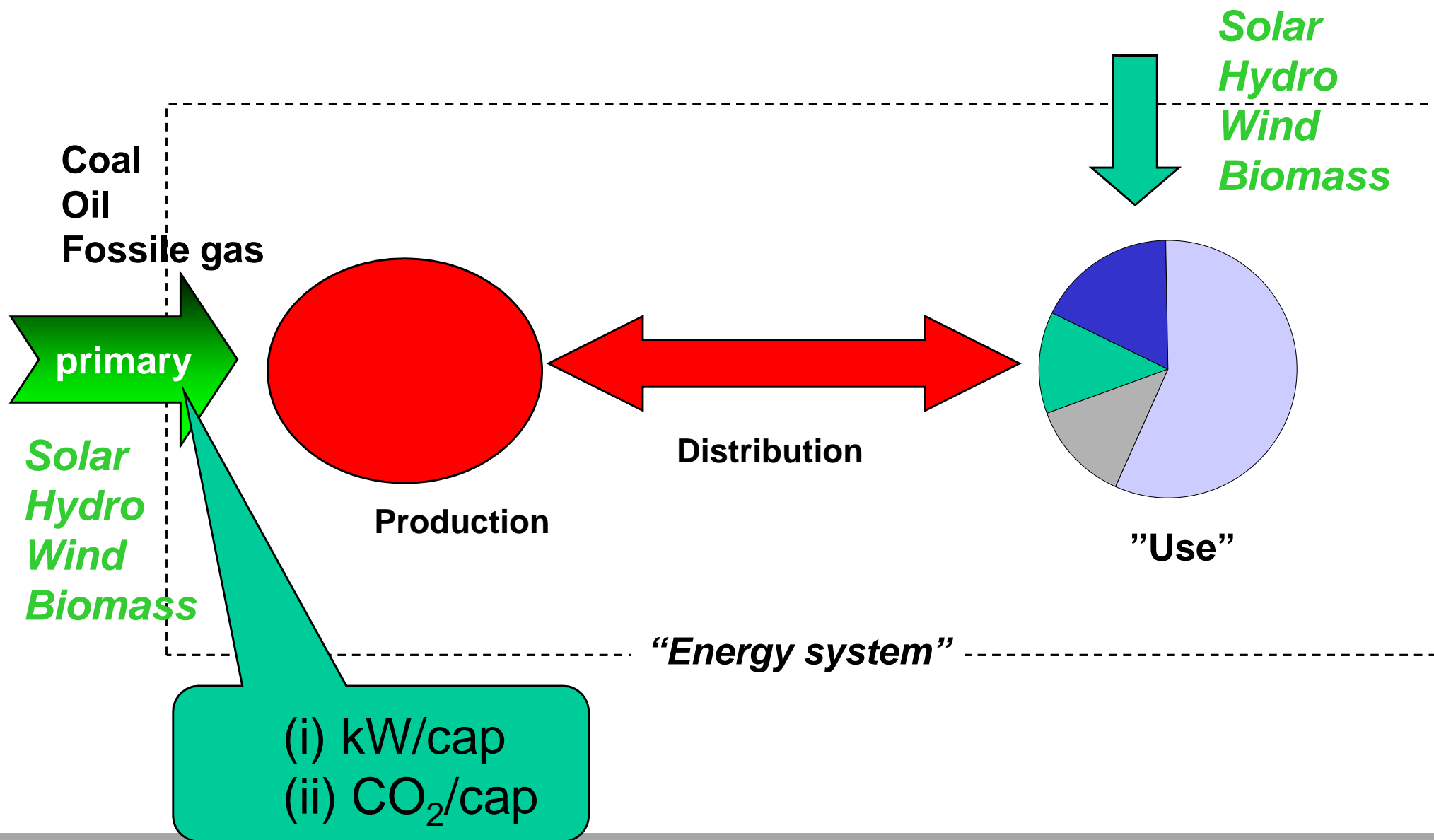
# What is primary energy?

Oil, coal, natural gas, large scale hydro power, large scale biomass outtake, large scale wind power etc.

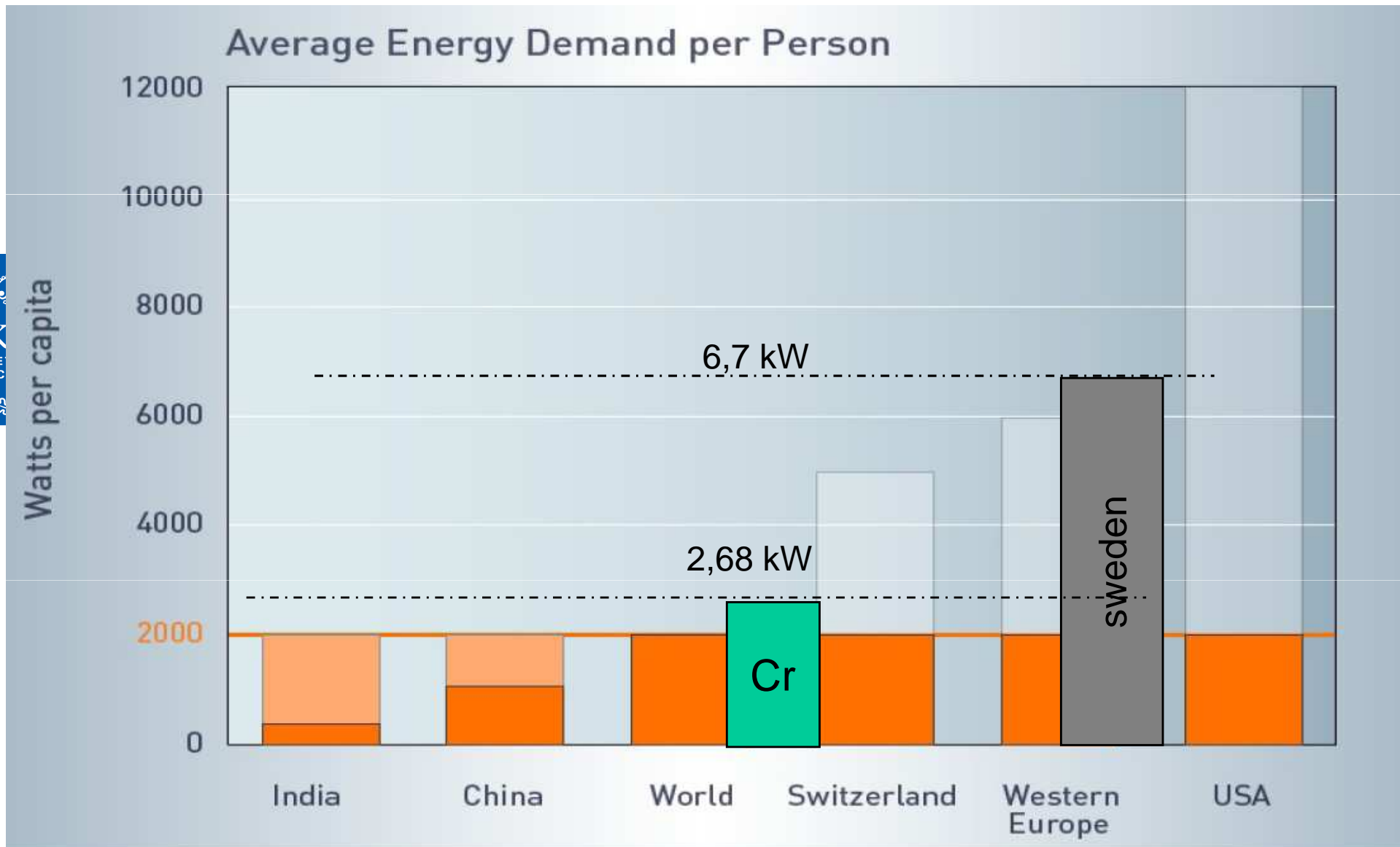


But not: passive solar energy, local wind power, waste heat recovery, etc, i.e energy locally harvested.

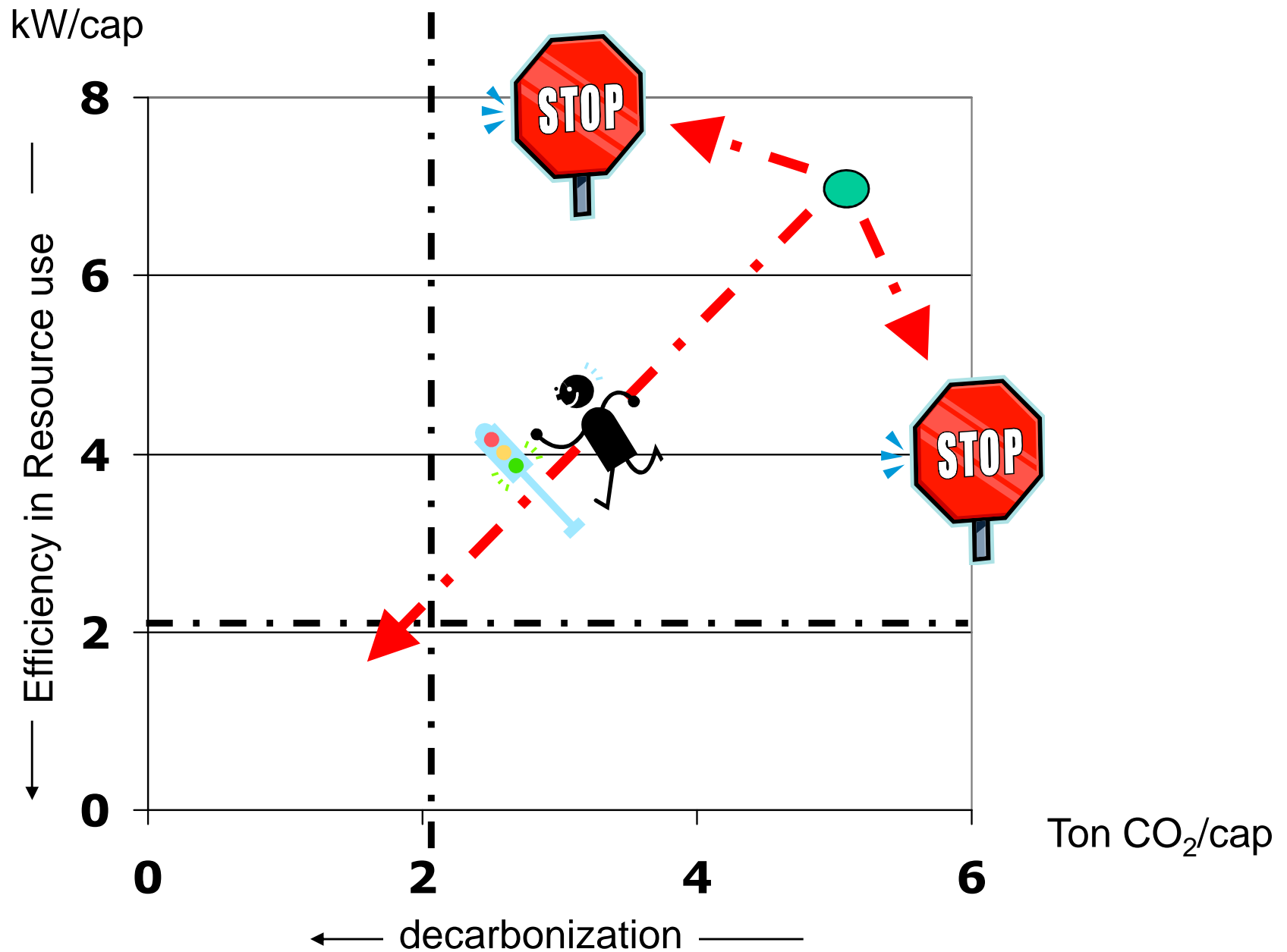
# Primary energy (kW) + CO2 emissions (ton)



# So...where do we stand today?



# Minimize energy use and CO<sub>2</sub> emissions



# SitCit case study areas



**Bromma**

**Rinkeby-Kista**

**Södermalm**

**Local district administration  
within the city**

**– three Stockholm City districts**

# SitCit districts...

	<b><i>Bromma</i></b>	<b><i>Rinkeby-Kista</i></b>	<b><i>Södermalm</i></b>
<b><i>Population</i></b>	<b>61 000</b>	<b>46 000</b>	<b>112 000</b>
<b><i>Area</i></b>	<b>2 460</b>	<b>1 179</b>	<b>800</b>
<b><i>Density</i></b>	<b>Low</b>	<b>Low</b>	<b>High</b>
<b><i>Buildings</i></b>	<b>Detached houses</b>	<b>Multi-family, terraced</b>	<b>City blocks</b>
<b><i>Tenancy</i></b>	<b>Private ownership</b>	<b>Rented, municipal</b>	<b>Co operatives</b>
<b><i>Green areas</i></b>	<b>Private sites</b>	<b>Nature, parks</b>	<b>Parks</b>
<b><i>Roads</i></b>	<b>Through traffic</b>	<b>National highway</b>	<b>Streets</b>
<b><i>Transport</i></b>	<b>Underground, tram</b>	<b>Underground</b>	<b>U-ground, bus</b>
<b><i>Other</i></b>	<b>Airport</b>	<b>Upcoming renewal</b>	<b>No spare land</b>

**...contrasting urban structures.**

# So in order to reach the 2kW goal for each city part: where is the potential?

Where to start? - By scenario work!

Where is the potential? Everywhere...

Is it possible? We dont know!



What can change (in each part of Stockholm)?

Who can initiate change?

When can change happen?

How much can change?

# Scenario techniques

## Scenarios



Predictive

Explorative

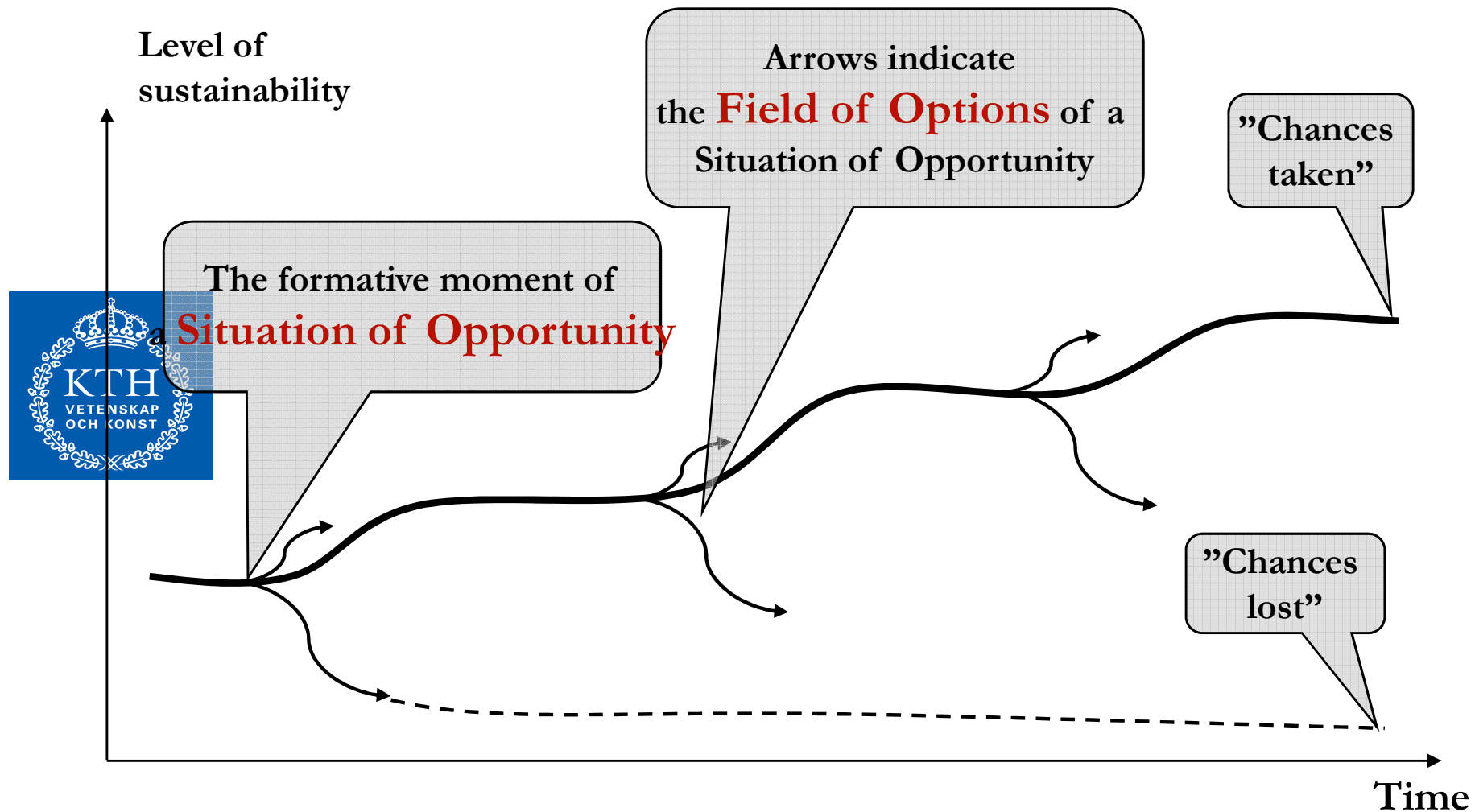
Normative

Prognosis    What if?

External    Strategic

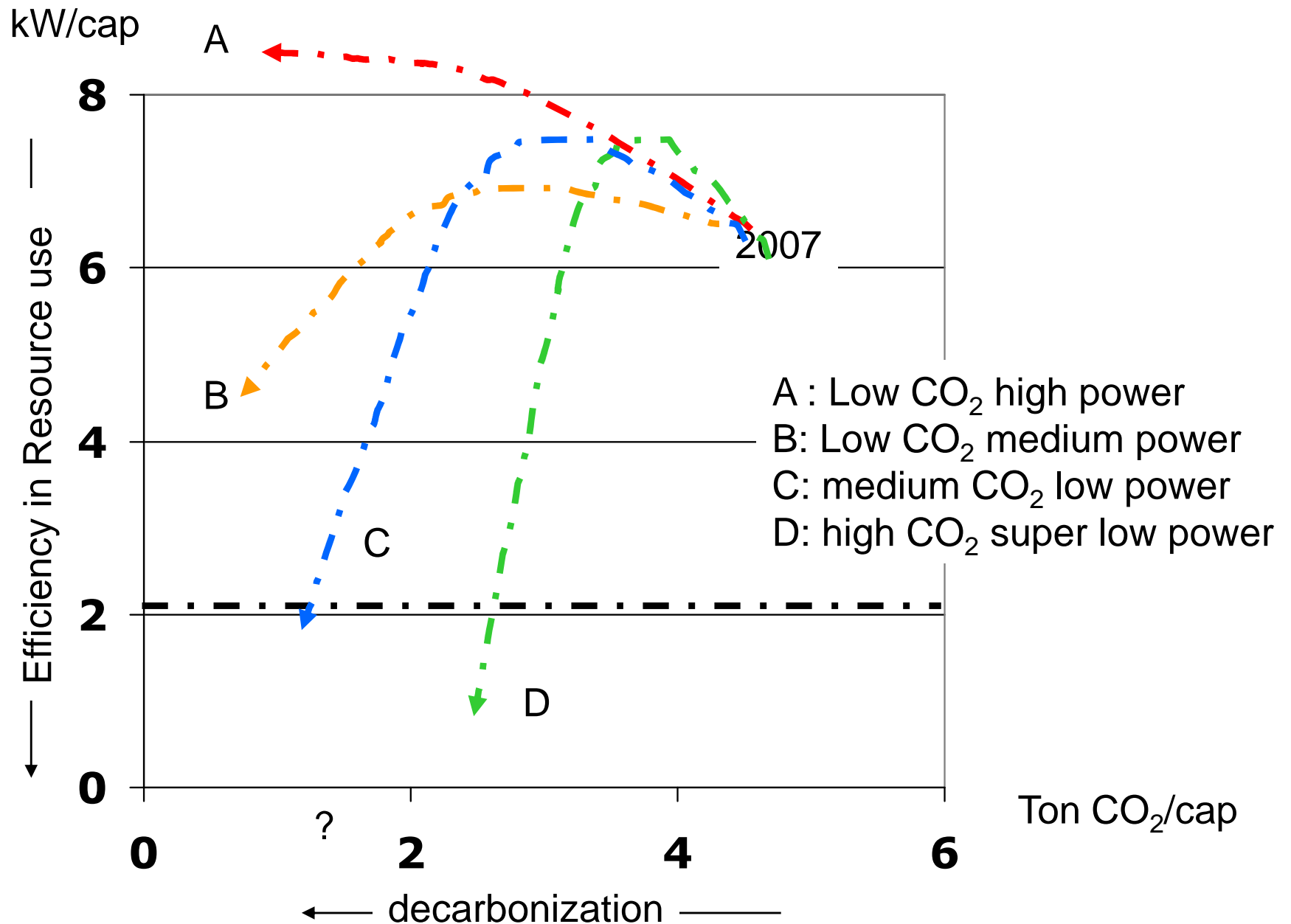
Conserving    Transforming

# Situations of Opportunity in city development

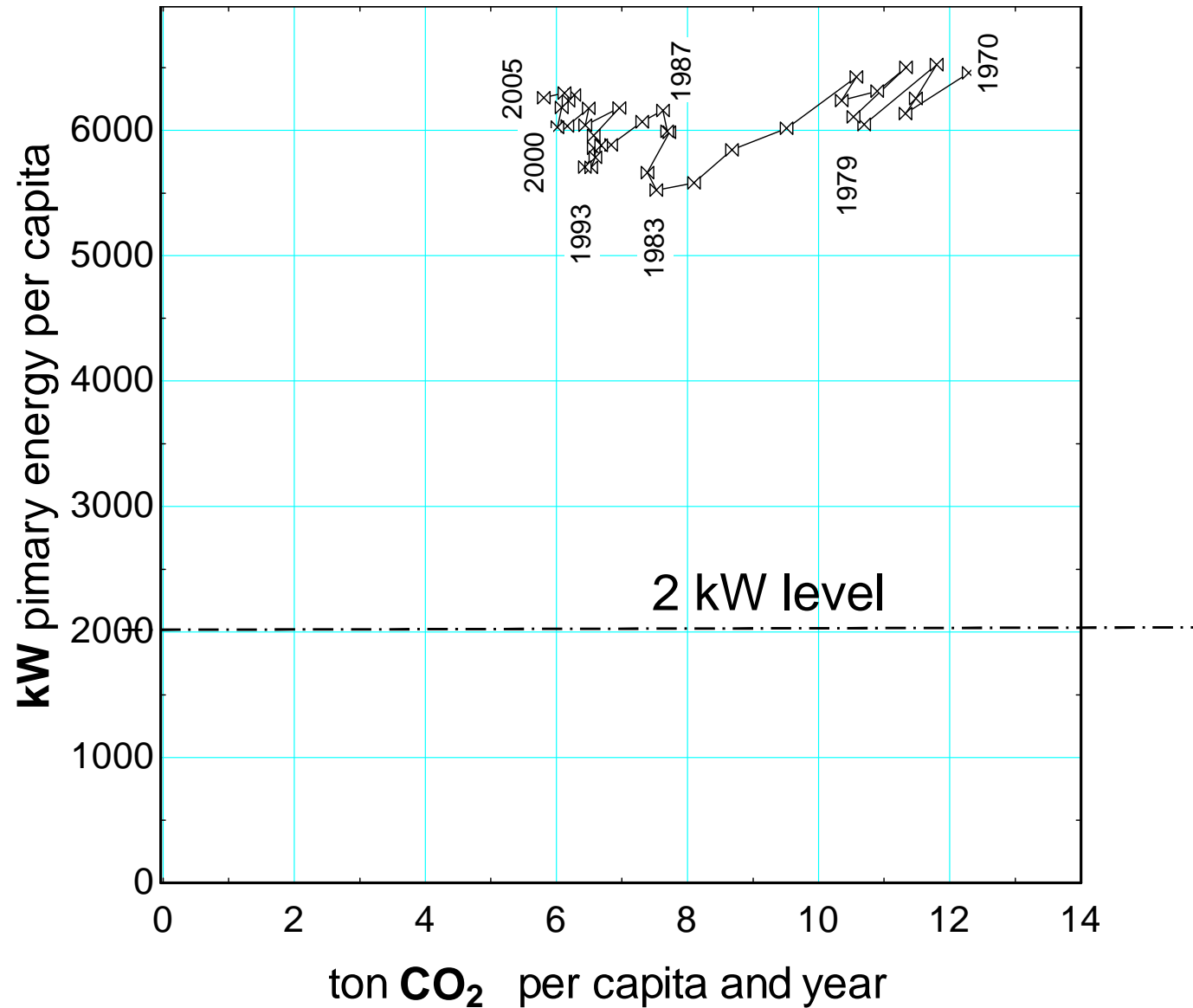


A series of Situations of Opportunity, utilized to contribute to long-term Sustainable Urban Development

# Several possible pathways are possible



# Sweden – one dimensional progress so far...



# Conclusion 1: The right order...

Do things in the right order:

- Minimize energy usage
- Make the transformation and distribution system more efficient
- Use as much “renewables” as much possible as primary energy

Avoid the opposite order if possible...



## Conclusion 2:

We know very little about the future – use normative scenarios (desired) rather than time series prognosis (Historical data)

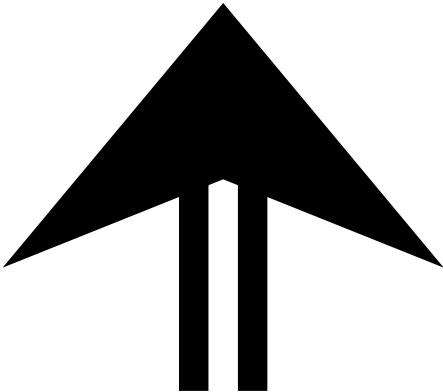


We need a richer energy system conception that starts from usage (triggered by services and functions)

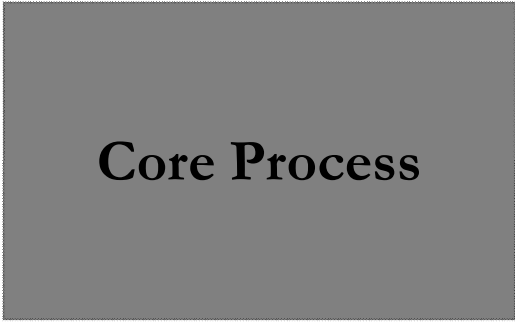
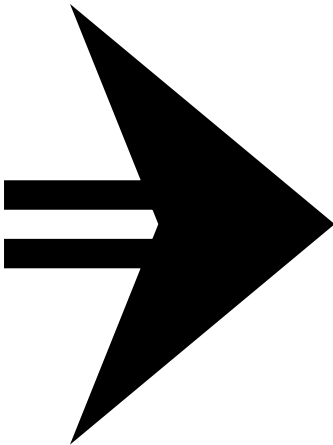
We need to see and understand the actors of the energy system, not only hardware and CO<sub>2</sub> emissions (decision making)

# Maximize service and functions

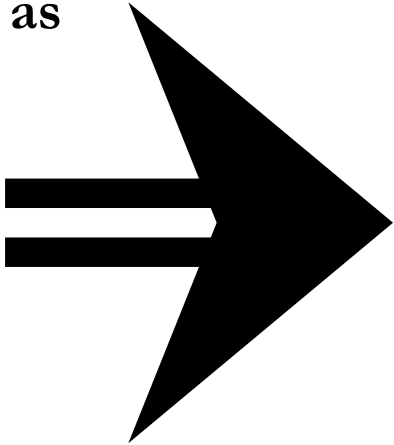
Service,  
Utility



Energy as  
Resource



Energy as  
Waste

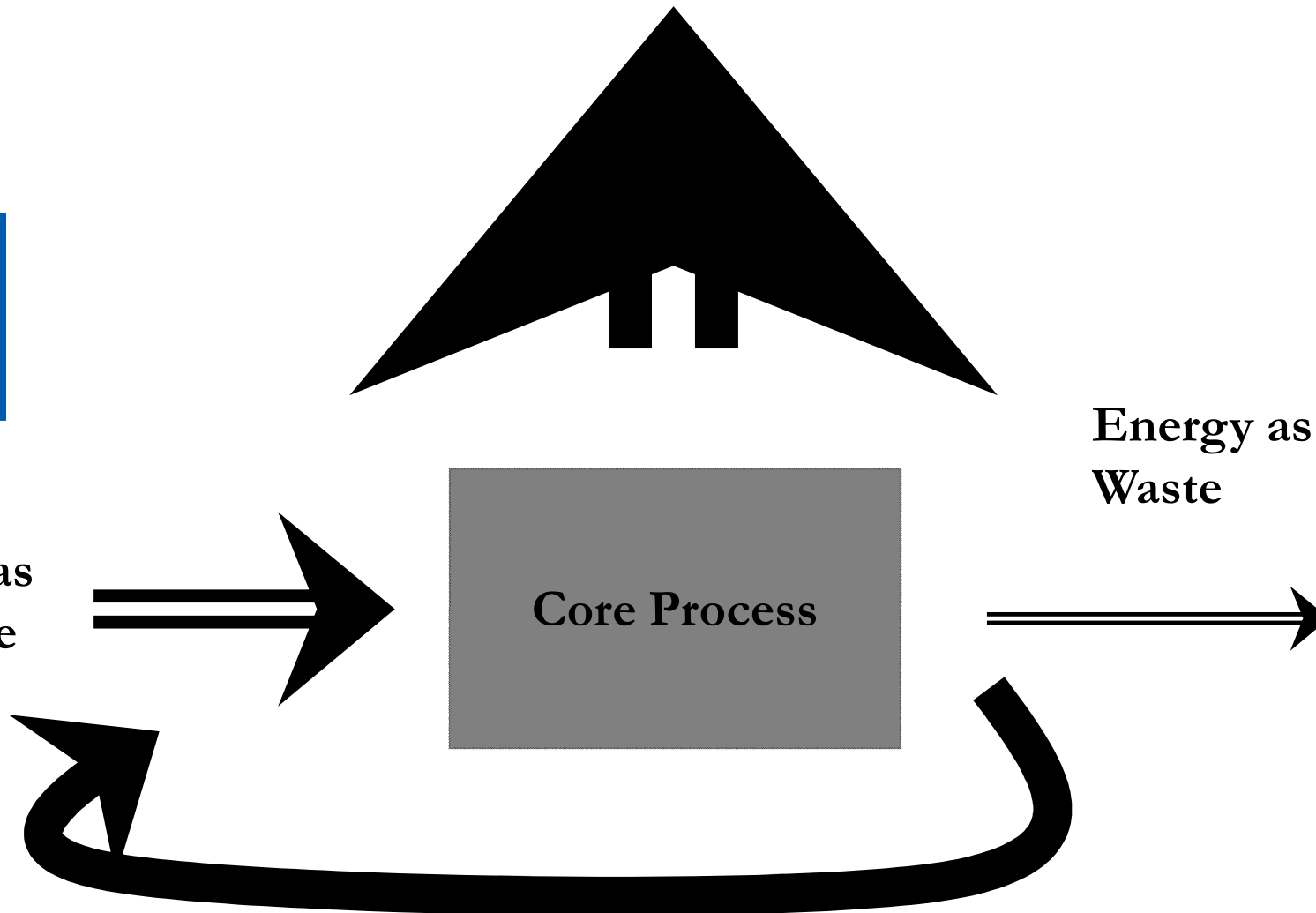


# Minimize energy use...

Service,  
Utility



Energy as  
Resource



Thank you!



Questions?