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Training for Renovated Energy Efficient Social housing

Intelligent Energy -Europe programme, contract n° EIE/05/110/SI2.420021

Intelligent Energy  Europe

Section 2.5 Local Community Planning

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Main issues

The objective of energy in community planning from a sustainability point of view is

- ▶ To minimize the energy demand through appropriate planning and building design and
- ▶ To minimize the environmental impact of energy consumption by utilizing renewable energy, waste energy sources, and clean technologies

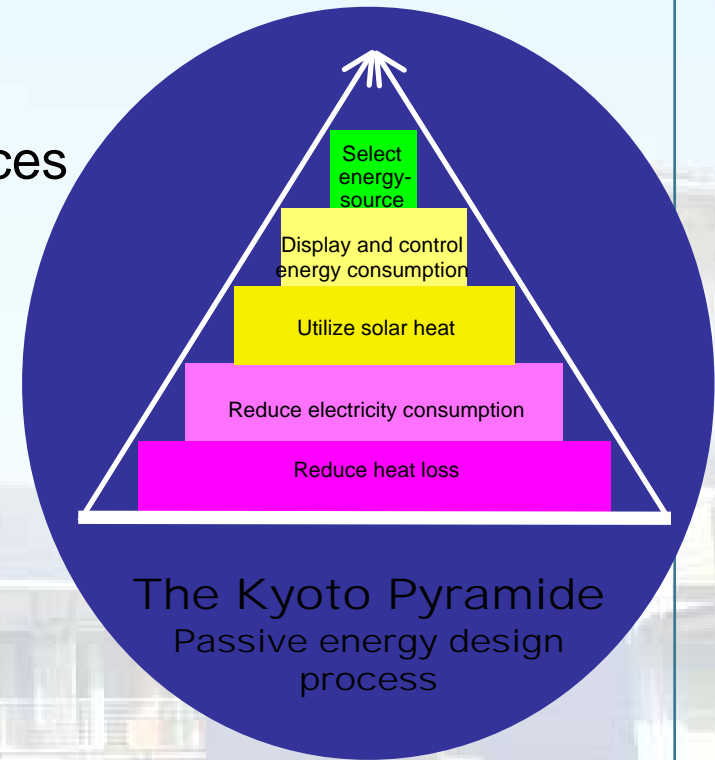


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Recommendations

- ▶ Energy demand reduction
- ▶ On site low environmental impact sources
- ▶ On site renewable
- ▶ Energy storage systems
- ▶ Off site energy source/renewable
- ▶ Efficient energy use
- ▶ The kyoto pyramide, guiding principle



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Examples

▶ Energy demand reduction

- Insulation, heat recovery

▶ On site low environmental impact sources

- Ground pump, Small Combined heat power

▶ On/off site renewable

- Biomass, PV, wind, hydro, geothermal

▶ Energy storage systems

- Seasonal heat cold storage in aquifers

▶ Efficient energy use

- Condensing gas boiler



Example Kruitberg Amsterdam



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- ▶ **Decision strategy**
- ▶ **Project targets and ambitions**
- ▶ **Examples**

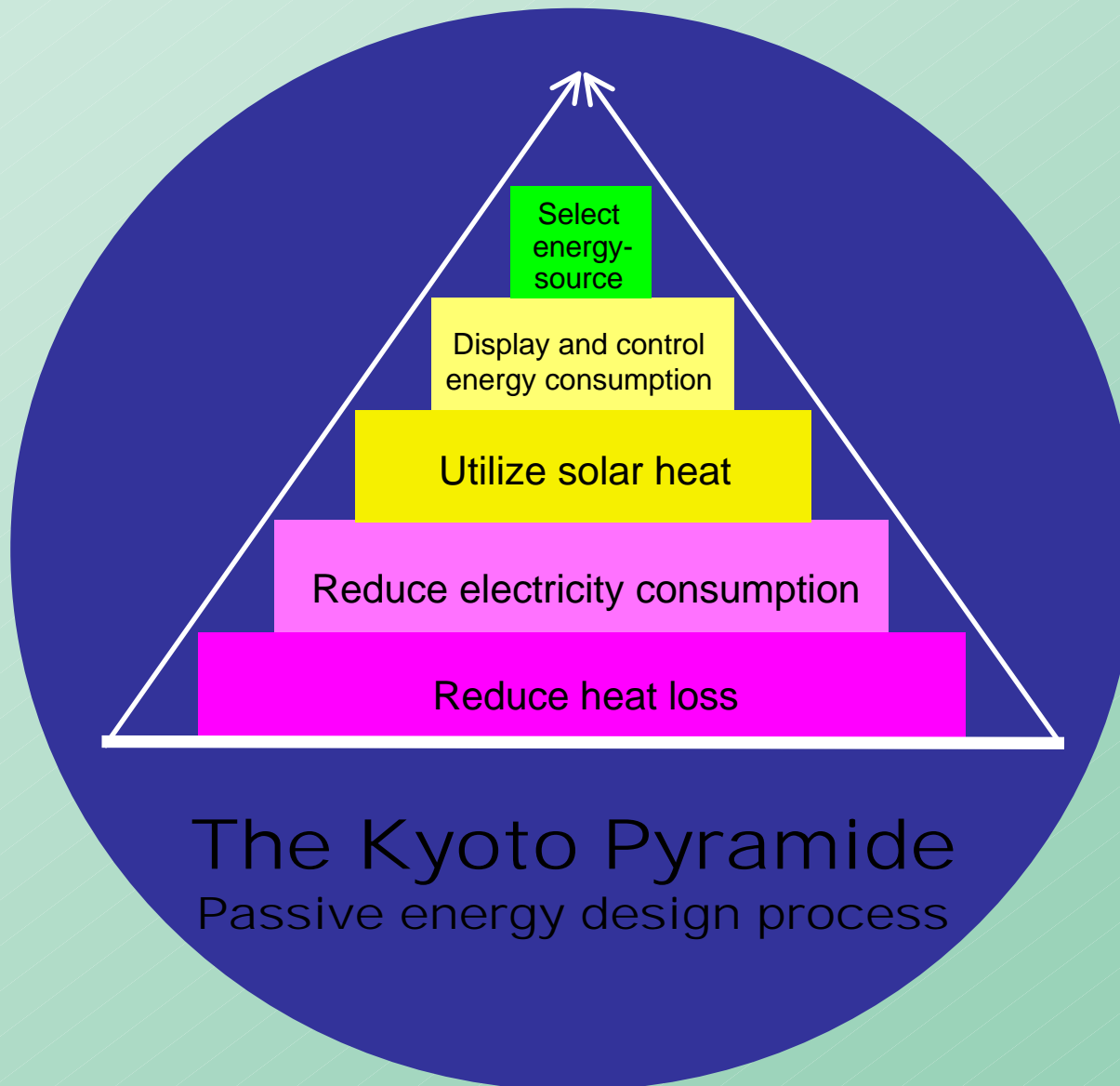
Energy and Community Planning

The objective of energy in community planning from a sustainability point of view is

- ▶ **To minimize the energy demand through appropriate planning and building design and**
- ▶ **To minimize the environmental impact of energy consumption by utilizing renewable energy, waste energy sources, and clean technologies**



The Kyoto Pyramide – guiding principle

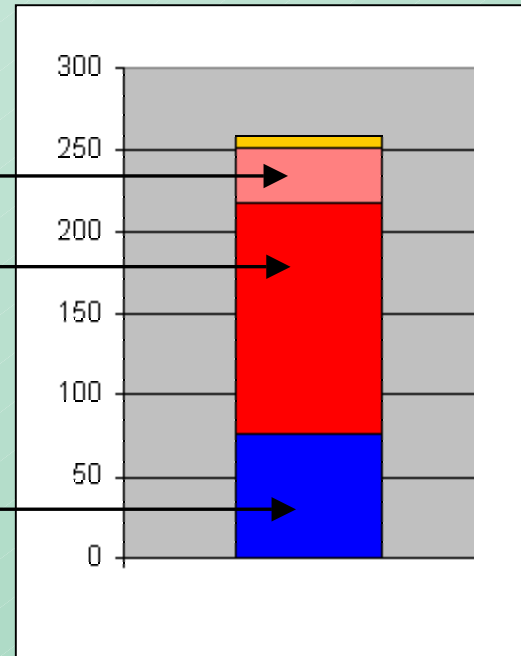


Energy usage

domestic hot water

space heating

electricity



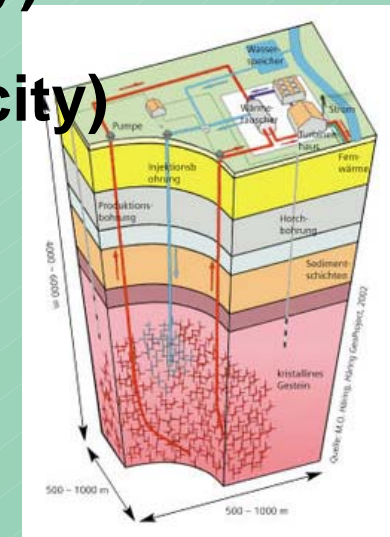
On site energy sources

- ▶ **On site renewables**
- ▶ **Storage systems**
- ▶ **On site low environmental impact sources**
- ▶ **High efficiency back-up sources**



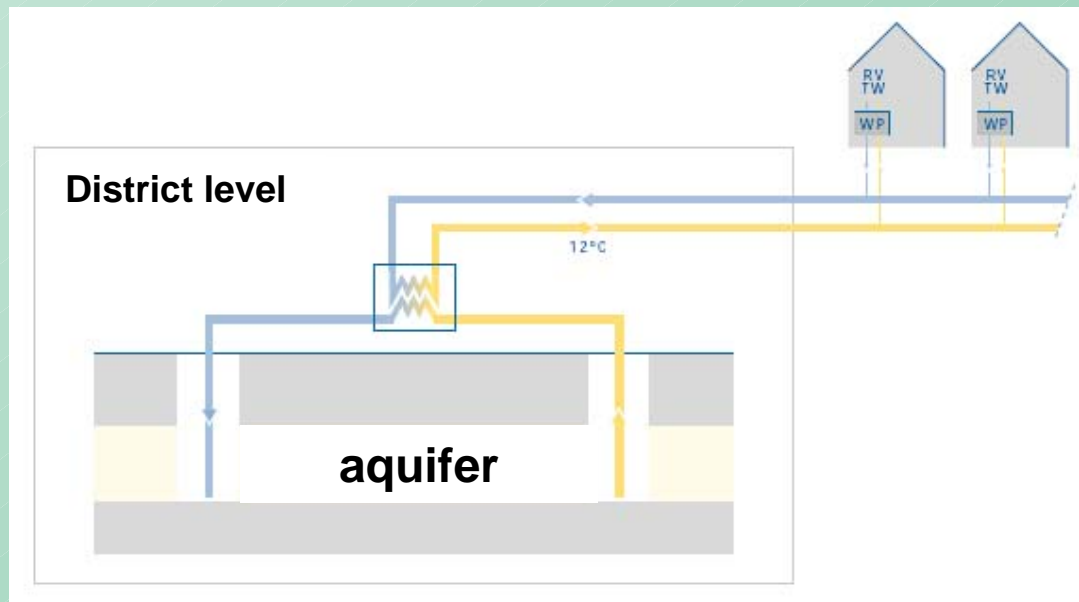
On site renewables

- ▶ Biomass (space heat, DHW, electricity)
- ▶ solar thermal (space heat, DHW)
- ▶ solar PV (electricity)
- ▶ urban wind (electricity)
- ▶ geothermal (space heat, DHW, electricity)
- ▶ hydro from river or local stream (electricity)



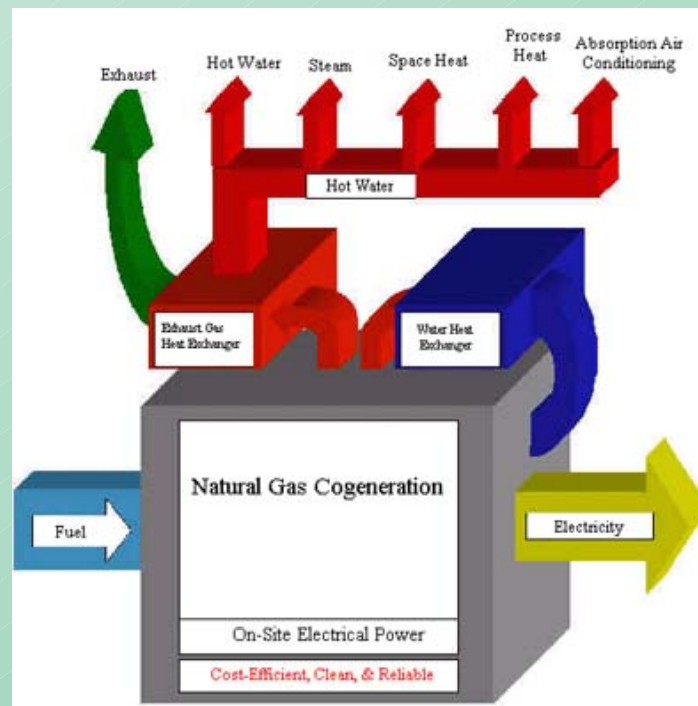
Storage systems

- ▶ storage boilers for daily or weekly storage (space heating, DHW)
- ▶ Seasonal storage in aquifers (space heating and cooling)



On site low environmental impact sources

- ▶ ground coupled heat pump (space heat)
- ▶ micro and small combined heat and power generation (electricity)



Source: tabacco.blog-city.com



High efficiency back-up sources

- ▶ **condensing gas boilers (space heat, DHW)**



Off site energy sources

- ▶ Off site renewables
- ▶ Off site low environmental impact sources
- ▶ High efficiency back-up sources

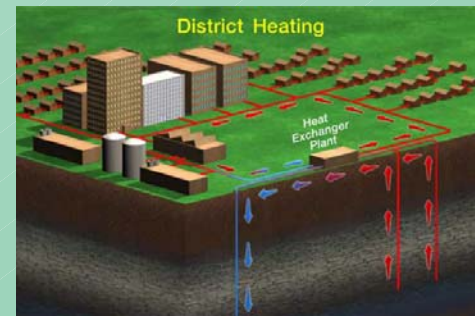


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Off site renewables

- ▶ Biomass (district heating, electricity)
- ▶ Wind energy (electricity)
- ▶ Large scale solar thermal (district heating)
- ▶ Geothermal (district heating, electricity)
- ▶ Tidal electricity generation
- ▶ Hydropower for electricity generation



Off site low environmental impact sources

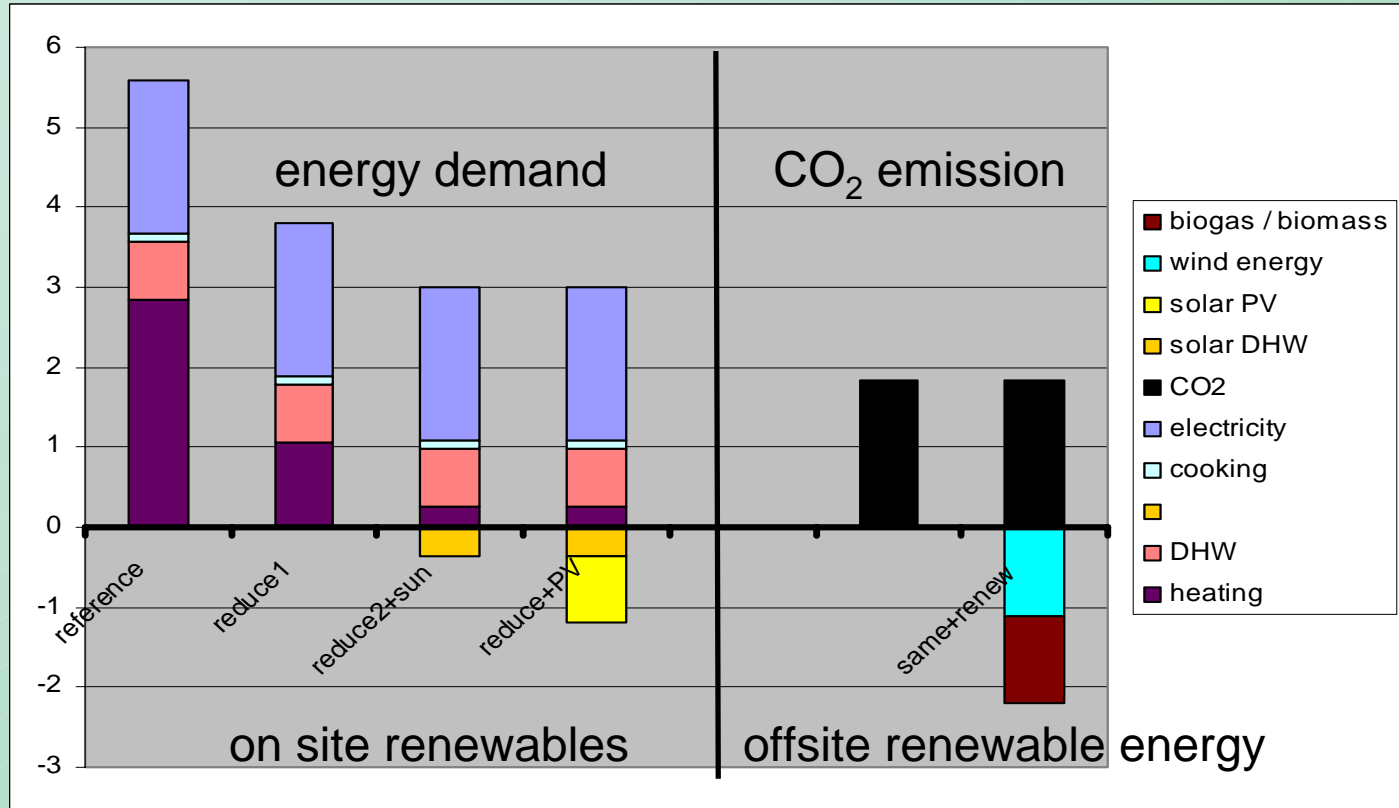
- ▶ **Waste heat from waste incineration (district heating)**
- ▶ **Waste heat from electricity production (district heating)**
- ▶ **Waste heat from industrial or other processes (district heating)**



High efficiency back-up sources

- ▶ **coal and gas based electricity generation (electricity)**
- ▶ **condensing gas boilers (space heat, DHW)**

Decision strategy (1)



Decision strategy (2)

- ▶ **Step 1- energy demand reduction**
- ▶ **Step 2- use on site renewables**
- ▶ **Step 3- resulting CO2 emission**
- ▶ **Step 4- external CO2 compensation**



Project targets and ambitions

- ▶ **Energy management over life cycle. Investment, roles, management, maintenance**
- ▶ **Scale optimization**

Examples

- ▶ **Kruitberg Amsterdam (the Netherlands)**
- ▶ **Poptahof Delft (the Netherlands)**

