



Sustainable Development against Energy Poverty

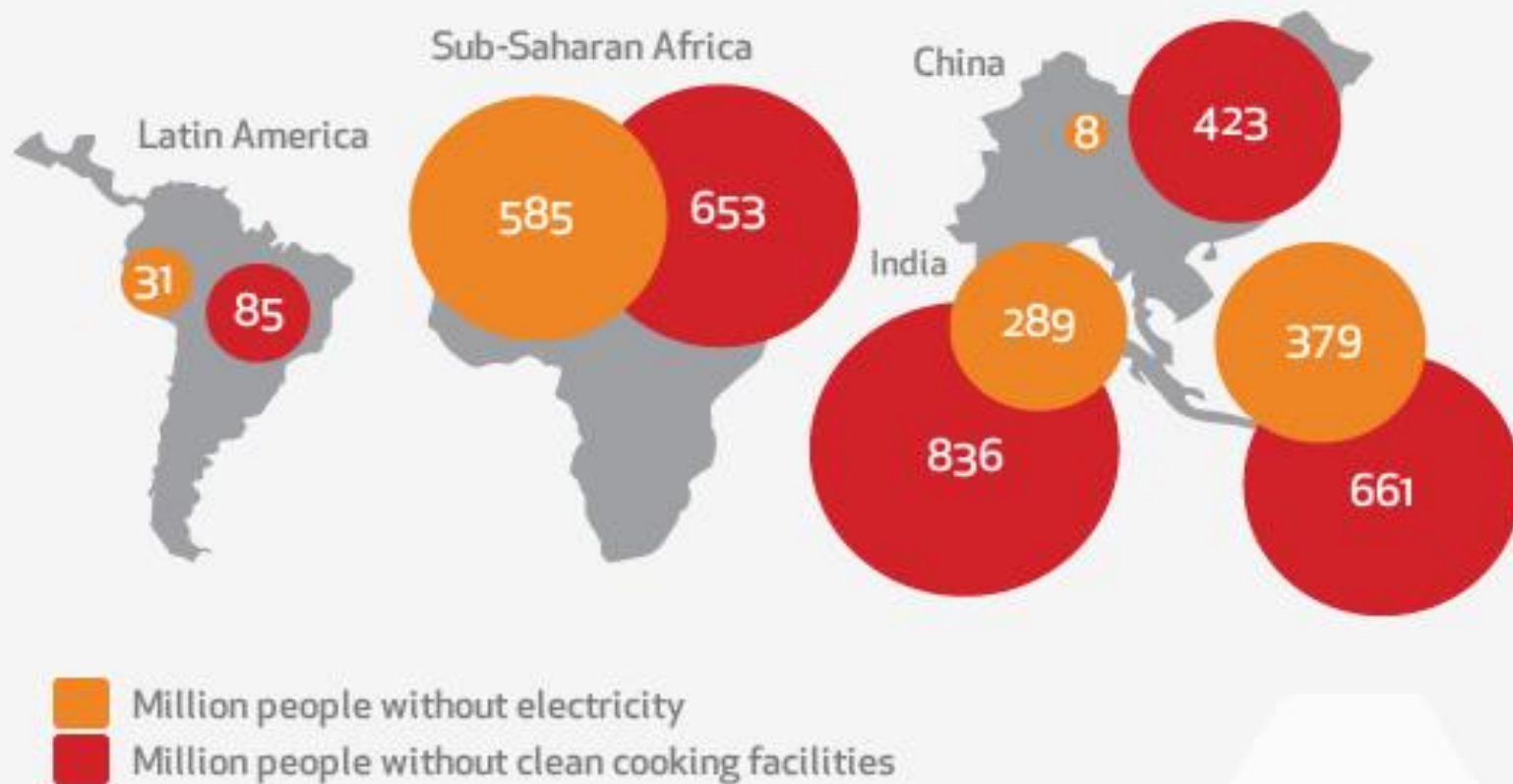
Athens 10/10/2018

11th International Conference on Energy and Climate Change -
3rd Green Energy Investments Forum

What is energy poverty?

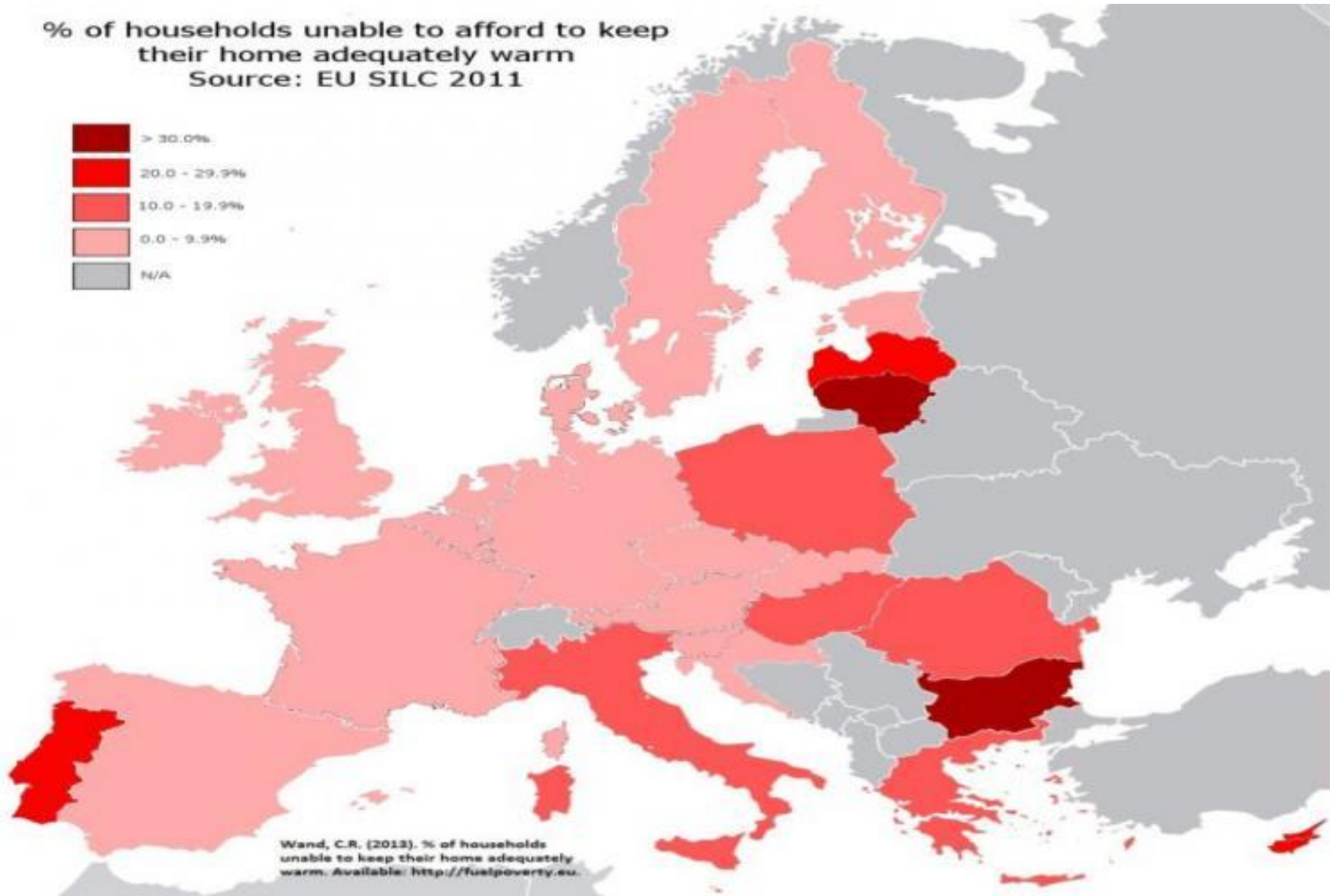
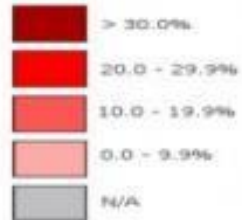


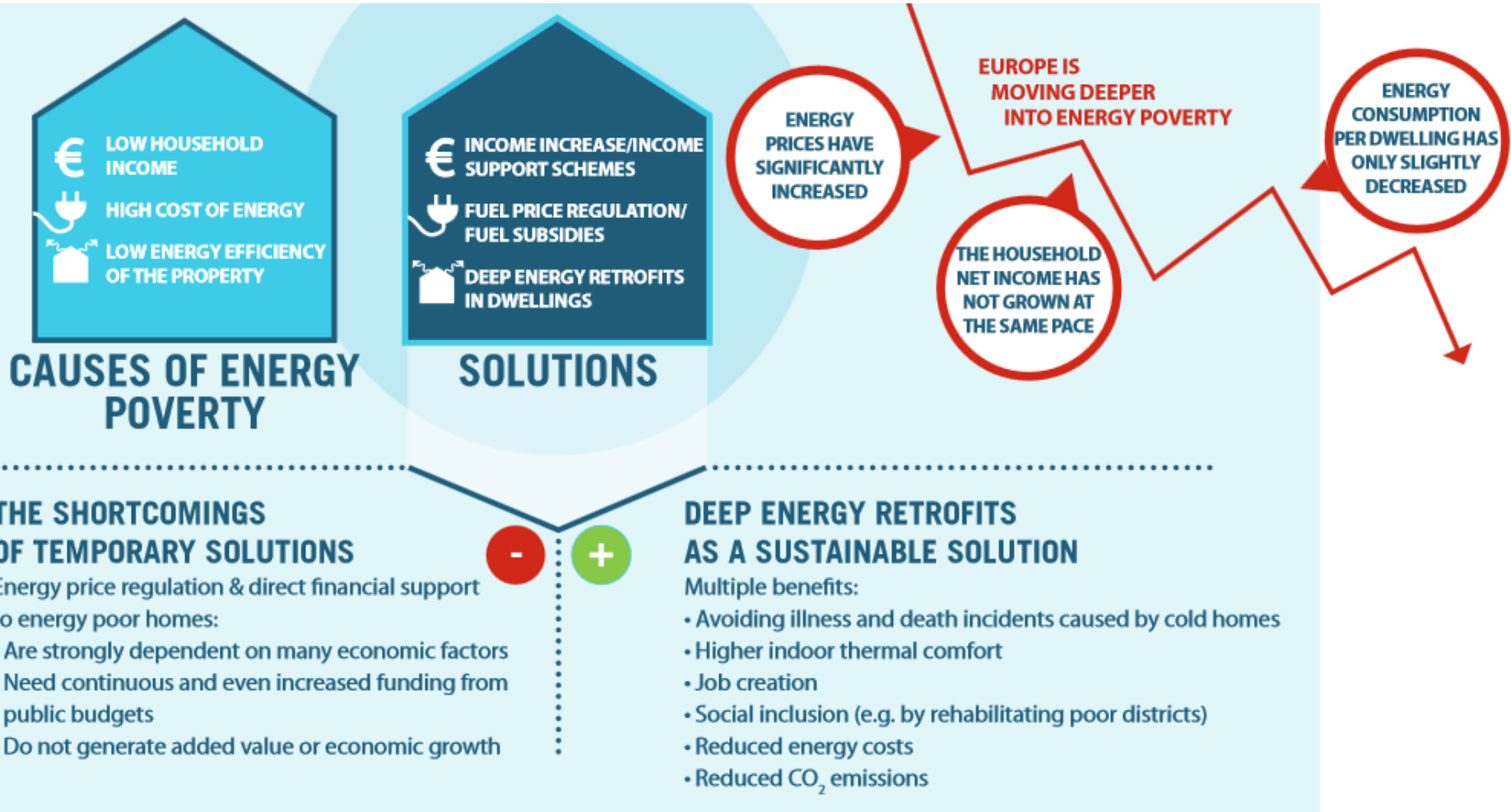
Global energy poverty



Source: International Energy Agency, World Energy Outlook 2011

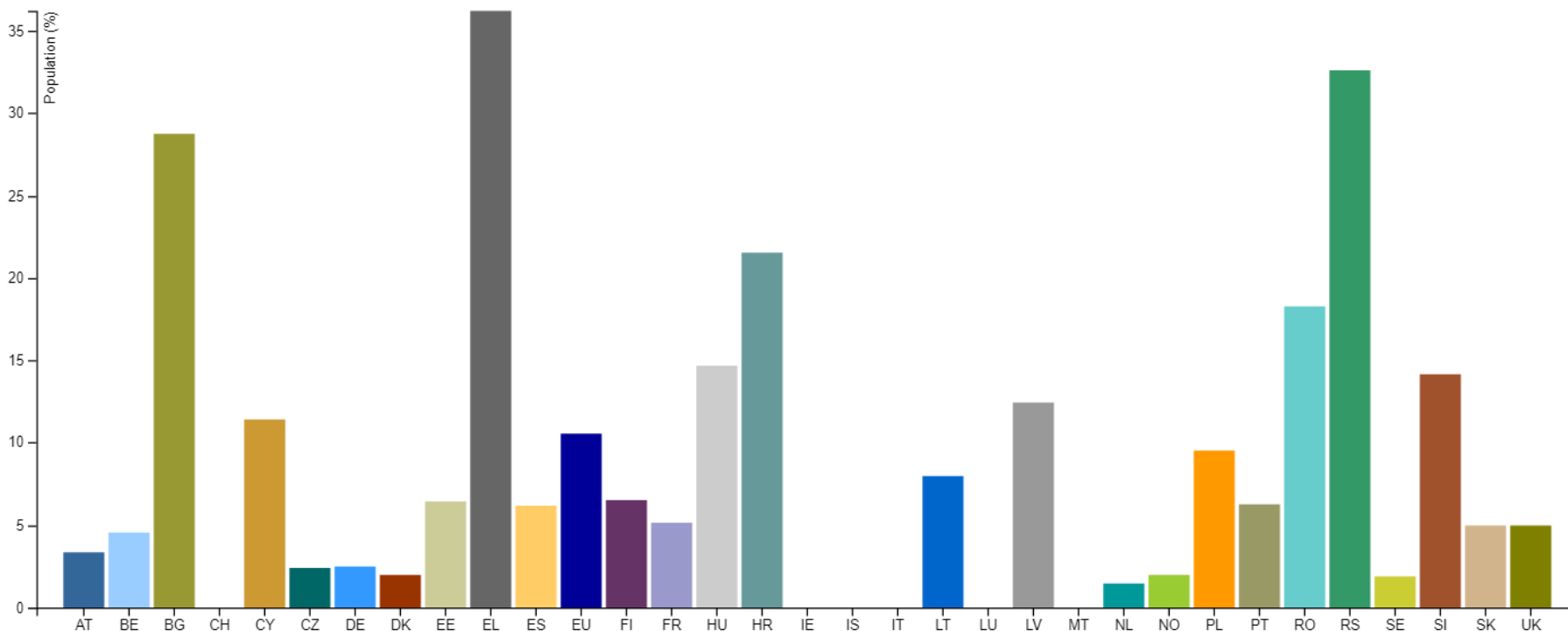
**% of households unable to afford to keep
their home adequately warm**
Source: EU SILC 2011





PRIMARY INDICATORS

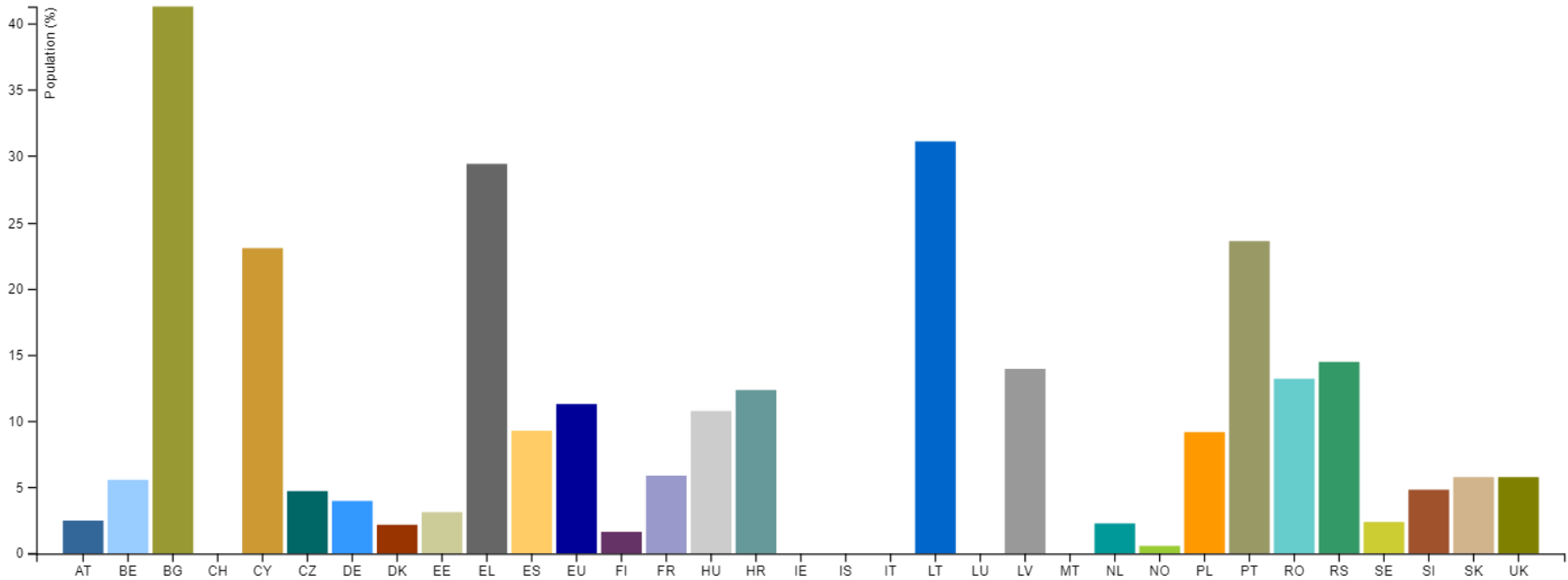
ARREARS ON UTILITY BILLS | 2016



Arrears on utility bills

PRIMARY INDICATORS

INABILITY TO KEEP HOME ADEQUATELY WARM | 2016

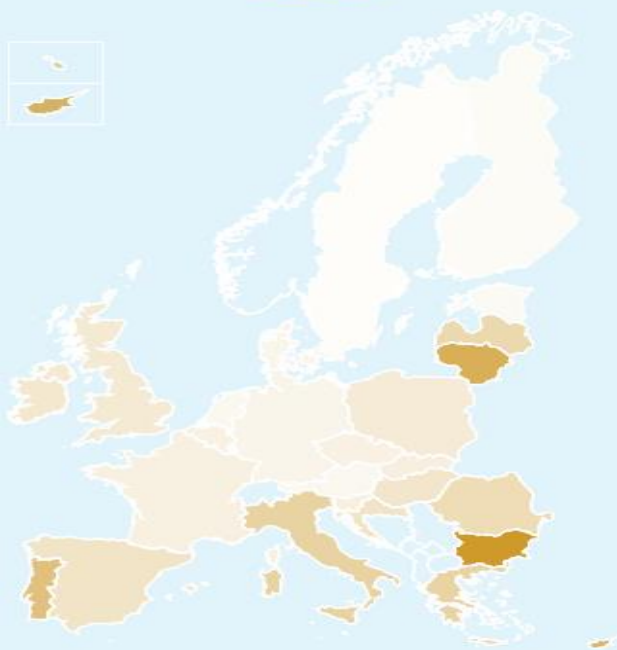


Inability to keep home adequately warm

SECONDARY INDICATORS

- Fuel oil , Biomass , Coal prices
- Household electricity, gas and District heating prices
- Dwellings comfortably cool during summer and winter time
- Dwellings in densely or intermediately populated areas
- Dwellings with energy label A
- Number of rooms per person, owners, renters or total
- Poverty risk
- Consumption expenditure for electricity, gas and other fuels as a share of income
- Share of dwellings equipped with heating and cooling systems
- Excess winter/summer mortality/deaths
- Presence of leak, damp, rot

INABILITY TO KEEP HOME ADEQUATELY WARM



Bulgaria, Lithuania, Greece and Cyprus (>28%)

EU average: 9.4%

Sweden, Luxembourg, Finland (<1.8%)

0.9%

39.2%

ARREARS ON UTILITY BILLS



Greece, Bulgaria, Croatia (>28.5%)

EU average: 9.1%

Luxembourg, Sweden, the Netherlands (<2.8%)

2.4%

42%

PEOPLE LIVING IN A DWELLING WITH A LEAKING ROOF, DAMP WALLS, FLOORS OR FOUNDATION



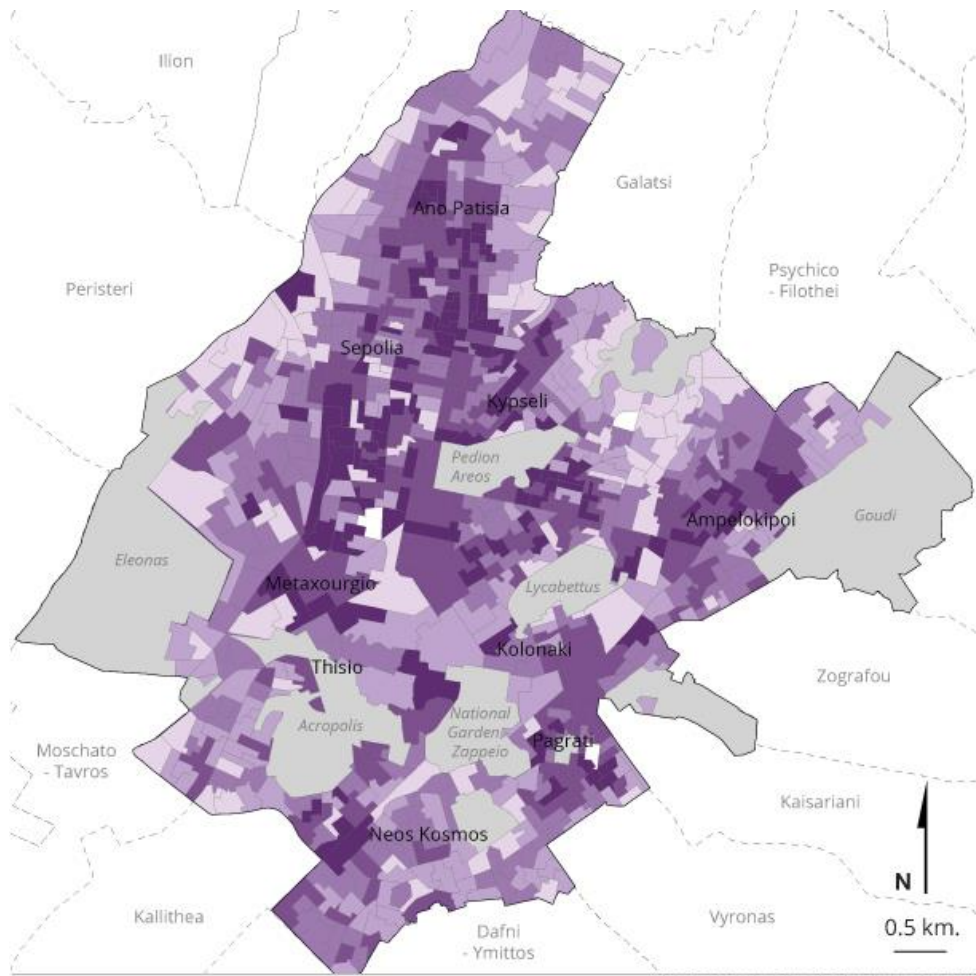
Portugal, Cyprus, Slovenia (>26.6%)

EU average: 15.2%

Finland, Slovakia, Sweden (<7.6%)

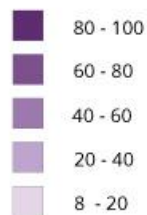
4.4%

28.1%



www.athenssocialatlas.gr

Residences without insulation (%)*

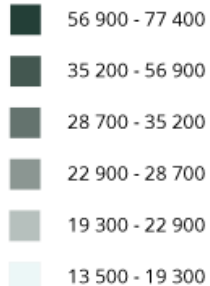



*Source: ELSTAT 2011 census



www.athenssocialatlas.gr

Average family income (euro) *



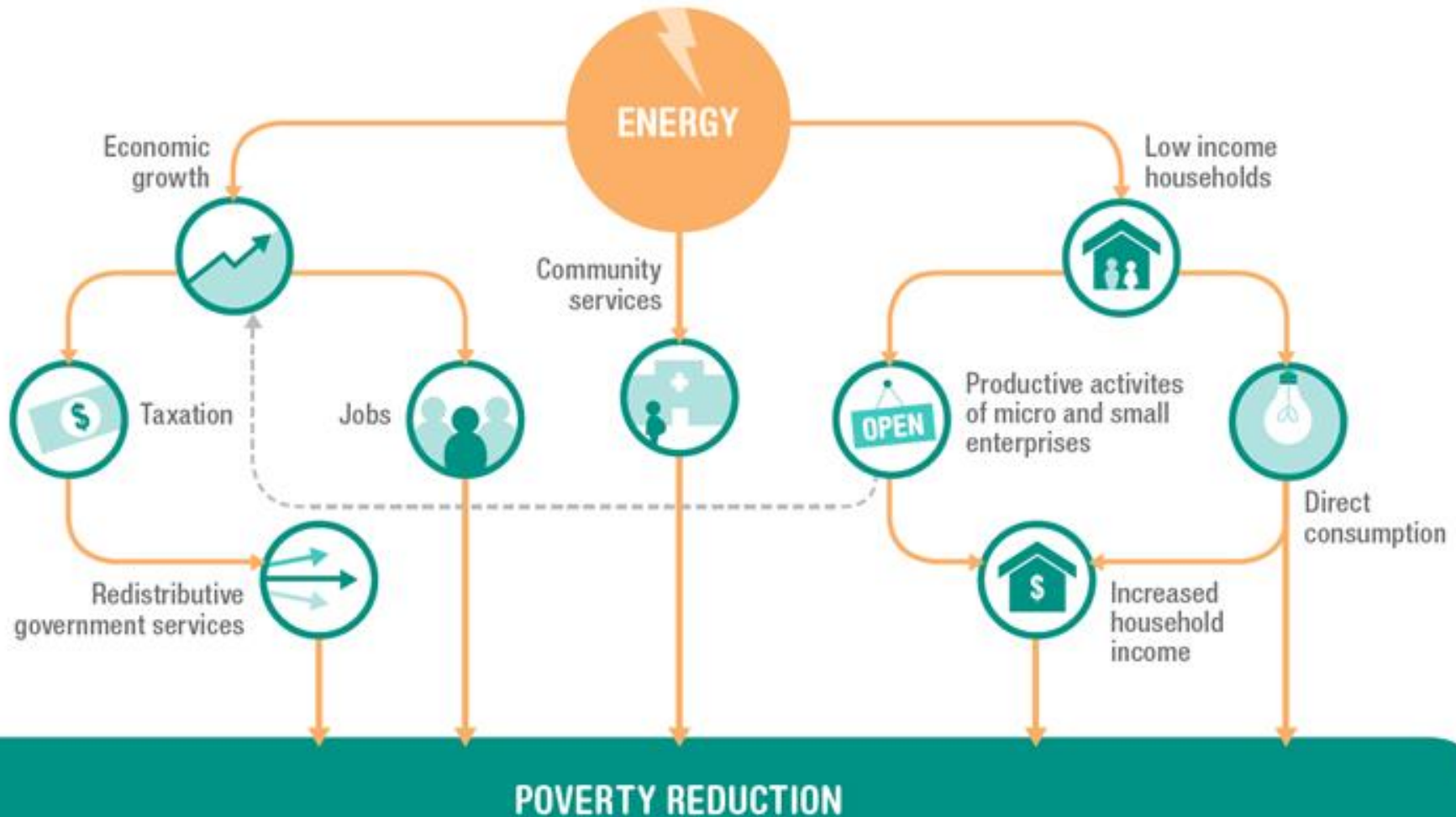
 Green spaces, Archeological sites, Special land use zones

 Postal codes limits

 Neighbouring municipalities

Athens Social Atlas | © F. Vatavali, E. Chatzikonstantinou (2016)

*Source: GSES, Ministry of Finance



TRANSITION EVERYWHERE

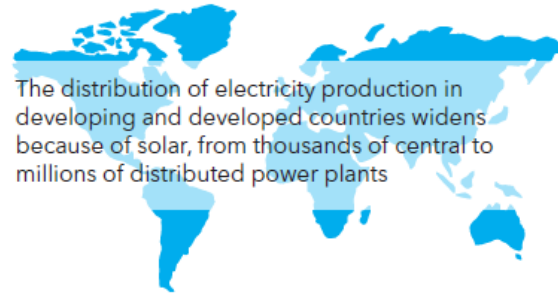
Access to mobile and solar technology is expanding rapidly everywhere, in developed and developing countries, in cities, towns and rural locations



Mobile and social media is commonly powered by rooftop electricity displacing overhead telephone and electricity cables



FROM GLOBAL TO LOCAL, CONSUMER TO PROSUMER



The distribution of electricity production in developing and developed countries widens because of solar, from thousands of central to millions of distributed power plants

Consumers and local communities increasingly have the means to choose resources such as solar, wind, ground heat and energy efficiency for power systems they own and operate



Technology is dissolving barriers between industries and creating new possibilities

By the 2020s, most of us will be prosumers



With the new energy model, there will be more scope to switch between adjusting demand and stored energy to ensure smooth supply despite the ups and downs of variable solar and wind

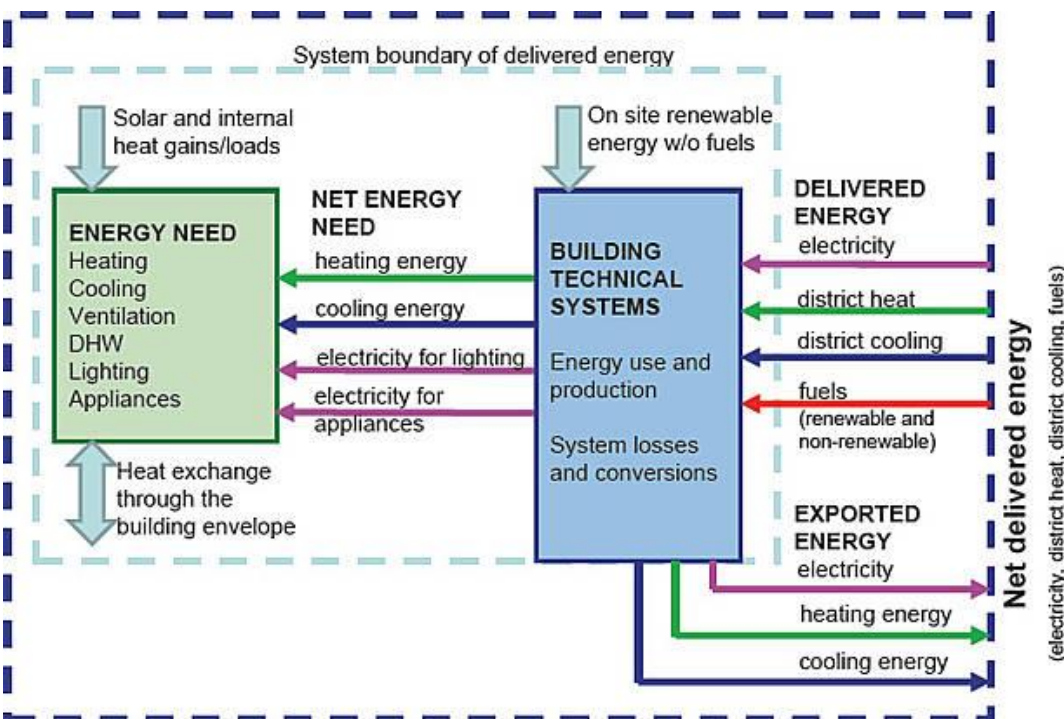
TECHNOLOGY PULL VS. POLICY PUSH

Transition to the new model is gathering momentum because of a technology pull. Technology is mass-produced rapidly at falling cost



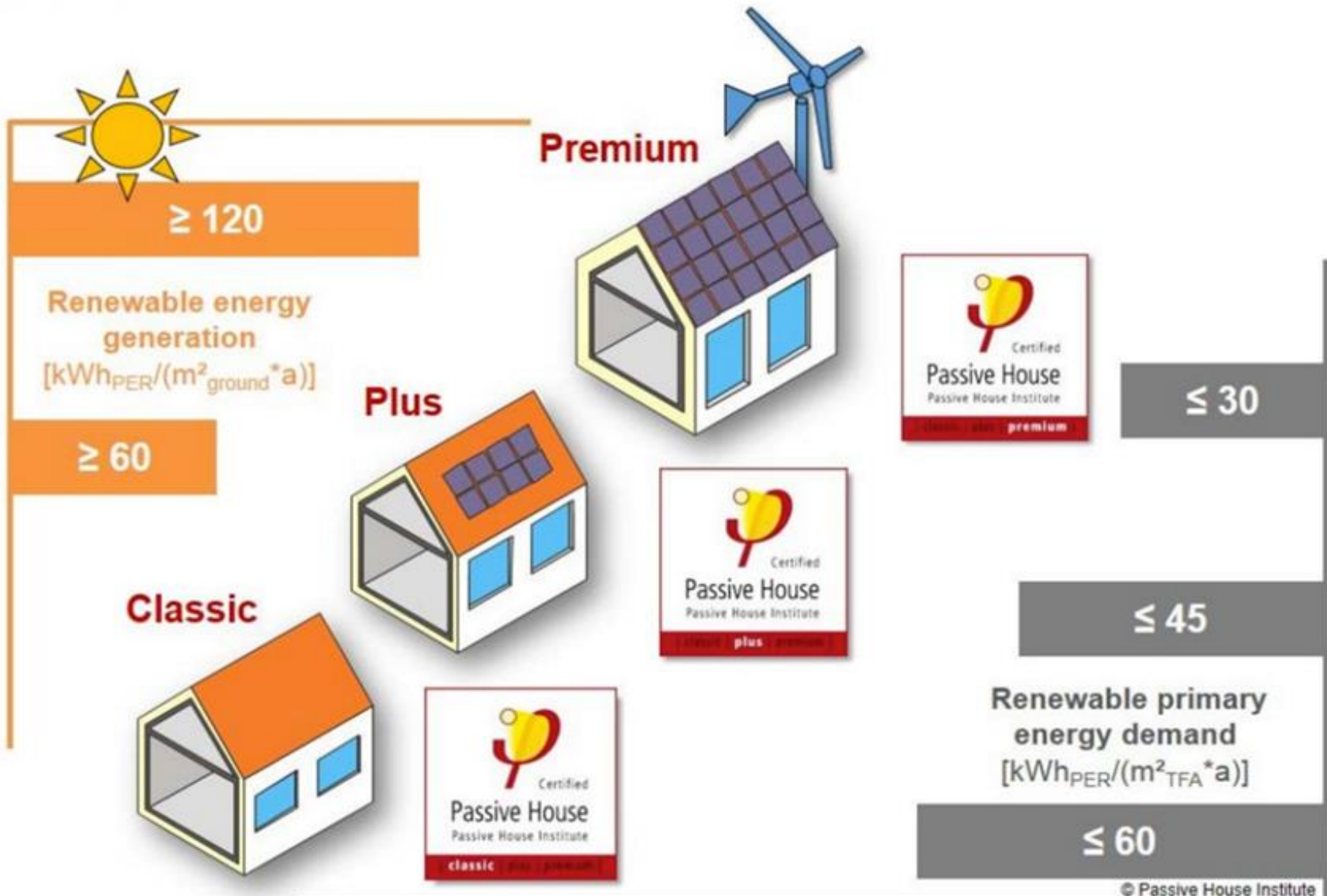
The push for policy, driven by rising pollution harming health and disrupting the climate, is to decarbonize energy use. This will intensify over coming decades and the move to new technologies and greater energy efficiency will continue





The smart nZEB building:

- efficiency first
- minimum primary energy consumption
- use of renewables
- RES production on site
- optimum cost effectiveness in terms of LCA



© Passive House Institute

Energy Performance of Buildings Directive

Main legislative instrument aiming to promote the improvement of the energy performance of buildings in Europe

2002 – First Directive

- Introduced energy performance certificates of buildings

2010 – Recast Directive

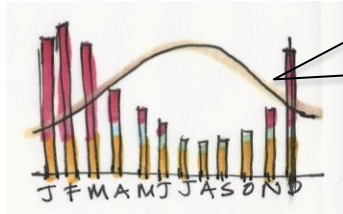
- Energy performance certificates shall be stated in the advertisements
- All public building to be nearly zero energy buildings after 31 December 2018
- All new buildings shall be nearly zero energy buildings by 31 December 2020

Now - Revised EPBD contains:

- Long Term National Renovation Strategies
- Smartness Indicator
- Financing Measures
- Electro-mobility



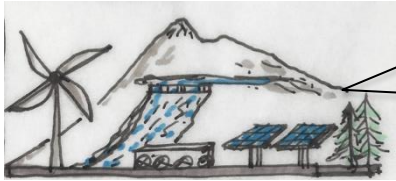
EPBD



Accounts for:

- Local renewable availability
- Building size vs roof area
- Supply vs Demand balance
- Viable short- vs long-term storage

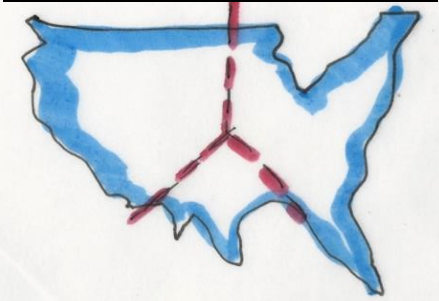
4. Building Site & Size



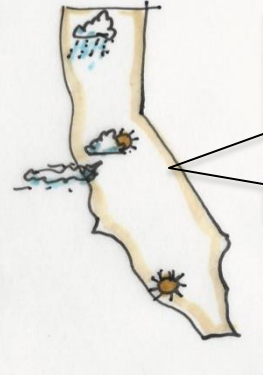
Account for:

- Wind
- Solar PV
- Hydro
- ~ Biomass
- ~ District Heat

3. Regional Grid Renewable Supply

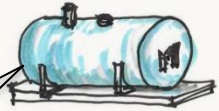


5. Regional Peak Load



Incentivize Load shifting according to:

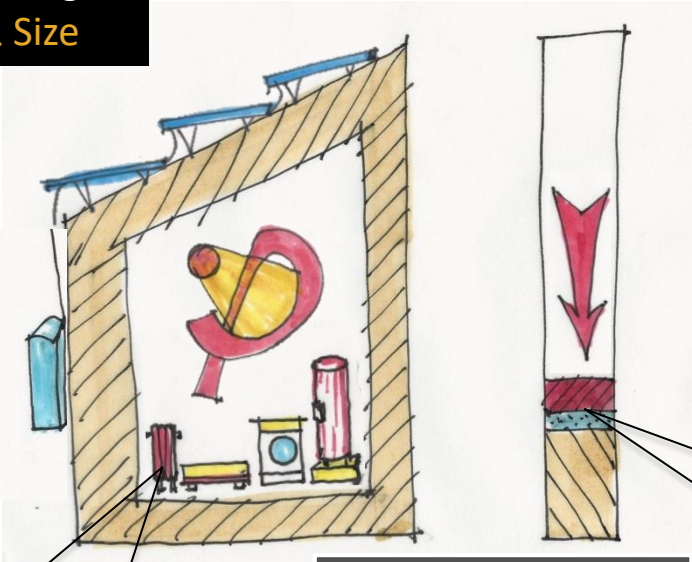
- Demand Type
- Daily Peak Use
- Seasonal Peak



kWh of:

- Short-term &
- Long-term energy

6. Renewable Storage



Incentivizes fuel switching to electric heat pumps

7. Appliance Energy Source

1. Total Demand Reduction

Allocated by:

- Electricity
- Hot Water
- Heating
- Cooling
- Dehumidification

2. Seasonal Energy Demand

- 
- identify energy poor consumers
 - group these households
 - aggregate them in energy communities
 - develop alternative solutions
 - inform these consumers





Energy Performance	Energy Efficient Technologies	Rating techniques	Advanced Materials
Indoor Air Quality	Thermal Comfort	Ventilation & Daylighting	Passive Cooling
Solar Energy Systems	IT technologies applied to buildings	Staff, components and building certification	Innovative training schemes





**NO ONE SHOULD
EVER HAVE TO
CHOOSE BETWEEN
EATING OR HEATING**

Thank you
www.eipak.org
info@eipak.org