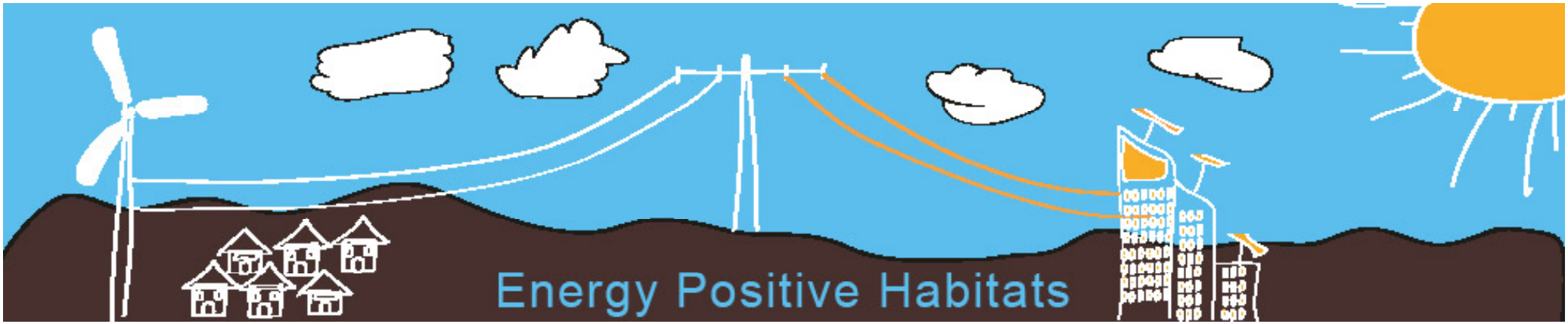
Auroville Green Practices

A Hands-on-Workshop
30 Aug to 1 Sept, 2012
Auroville (near Pondicherry)



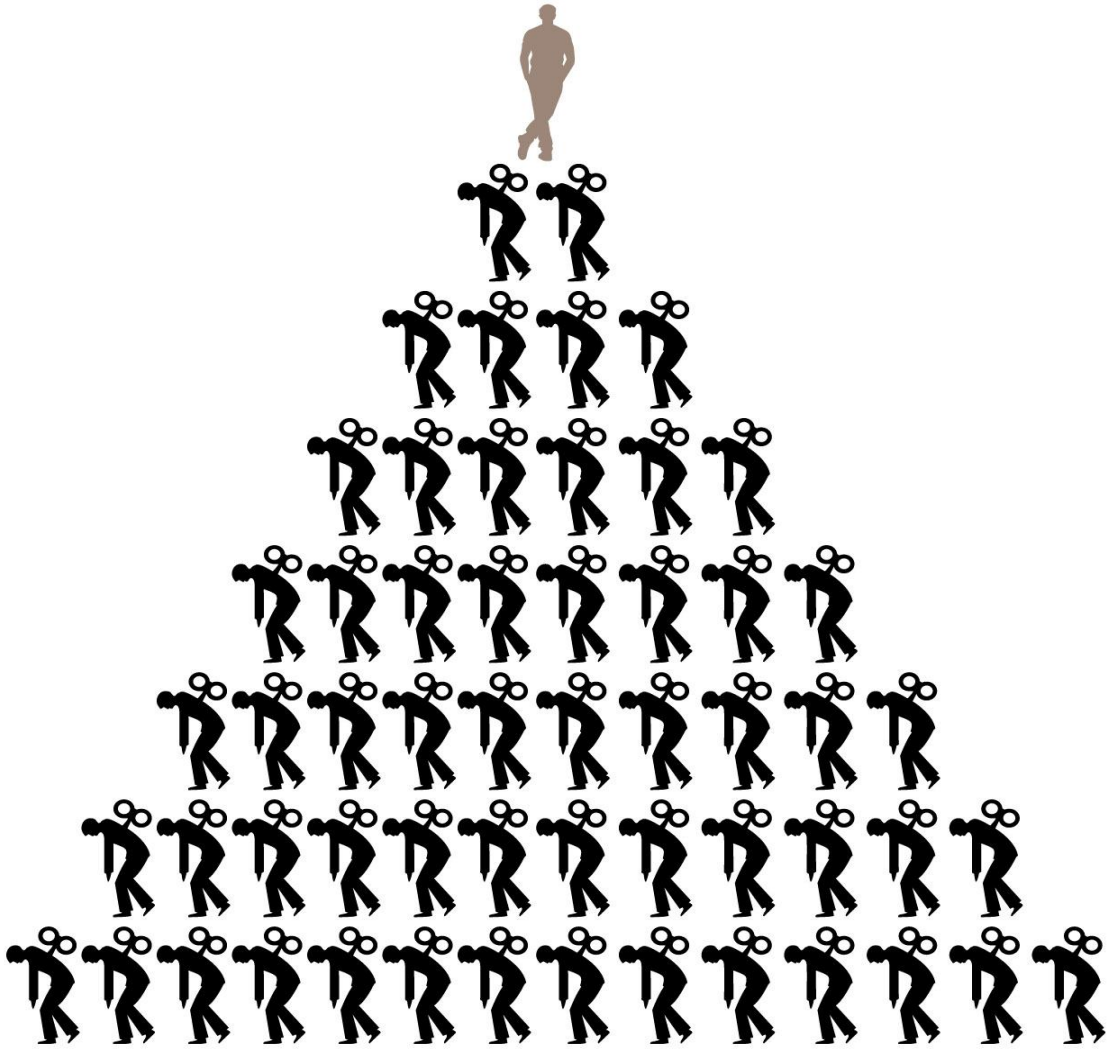
‘Human Habitats today have become centers of energy consumption. By conserving energy with appropriate building design, reducing energy by efficient energy management and producing energy with decentralized systems that allows feeding surplus energy into the grid, we can create a shift towards energy positive habitats. Essential to this movement is the fact that humans have to change their life styles to consume less energy.‘

htpp://agp.aurovilleconsulting.com

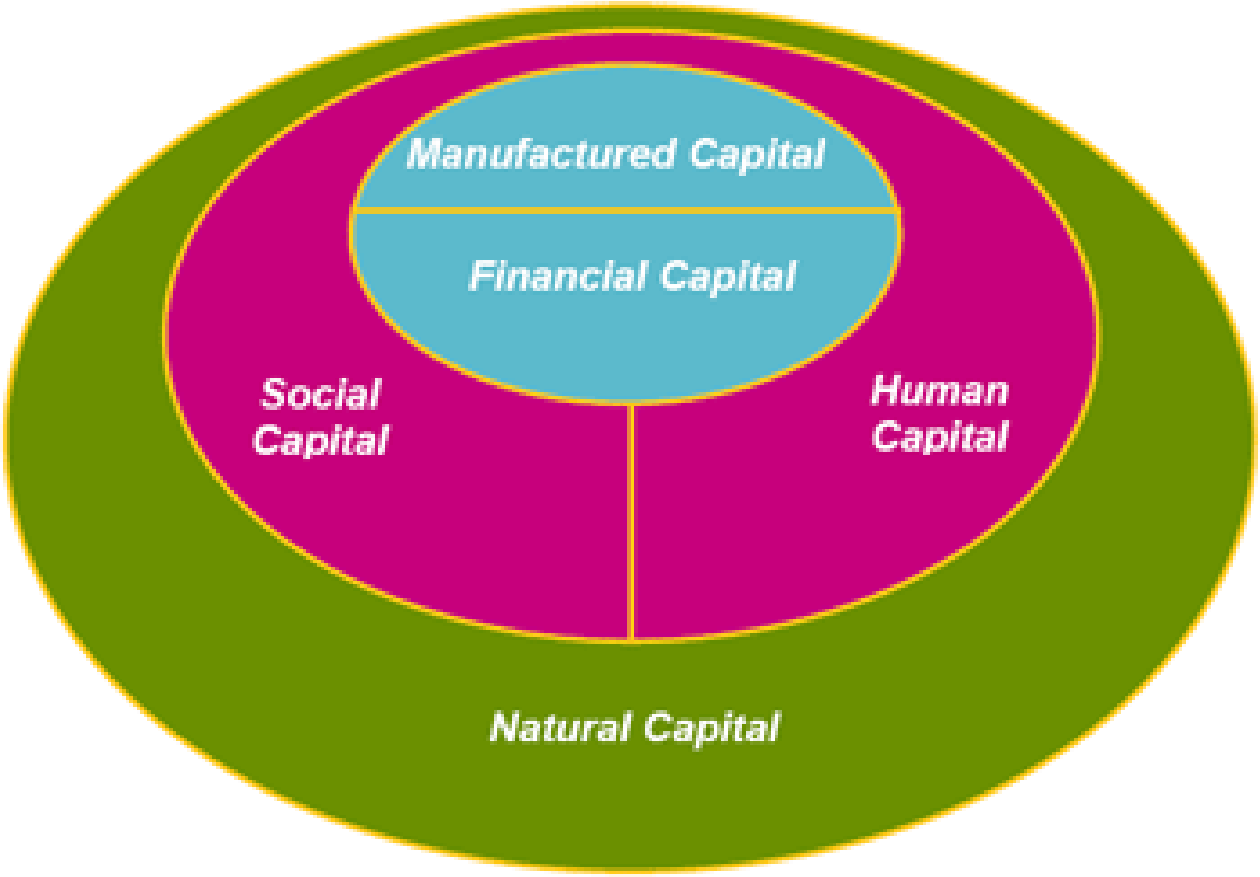
Emerging Energy Policies

Herbert Girardet

Each European has about 60 energy slaves, each American about 110 energy slaves. That is the energy equivalent of a strong man working 10 hours a day six days a week represented by the energy output of the motors and engines, powered by fossil fuel energy, working on our behalf. In a sustainable world this figure would have to come down to a quarter or less.



Natural capital is the basis of our economies and our individual wellbeing



Need for change

- Humanity is burning some two million years worth of fossil fuels a year
- Depletion of fossil fuel stores as well as transfer of carbon into the atmosphere
- Need to link energy and climate policy
- Demand for “future-proof” global energy system
- How can we “decarbonise” economic and urban development?
- Pressure from civil society on policy makers


BED

Investing in efficiency

- The concept of negawatts (Amory Lovins):
- The benefits of avoiding investment in new generating capacity
- First practiced in California in the 1970s under governor Gerry Brown
- Utilities allowed to charge slightly more for unit of electricity if encouraging consumer to make energy savings

Improving efficiency standards

- LEED - US
- BREAM - UK
- GRIHA - INDIA
- Energy performance contracting
- “2000 watt society” – Switzerland
- “Smart grid” development – better management of energy demand to reduce need for energy supply

Feed-in Tariffs

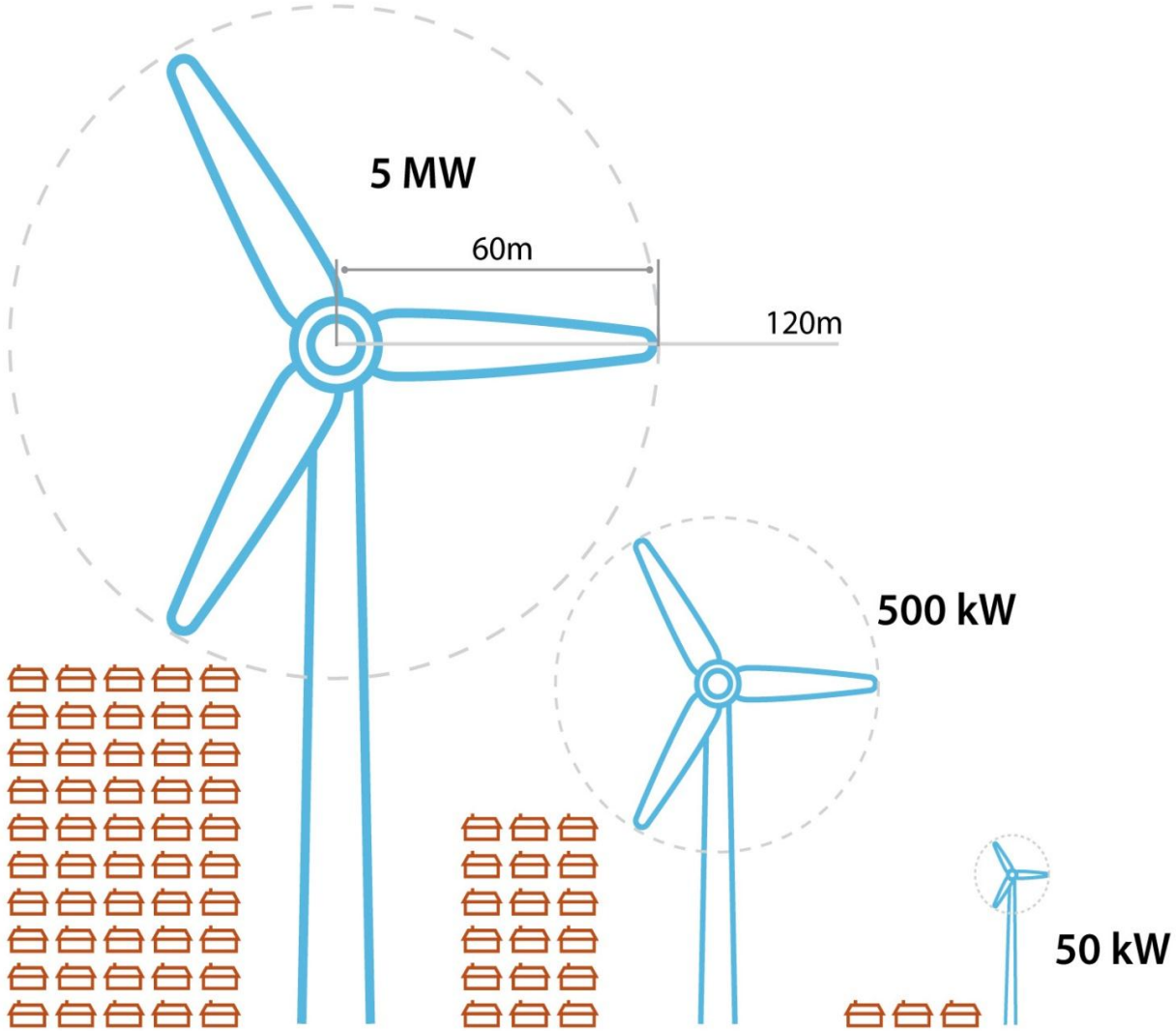
- Highly effective policy mechanism that lowers the barriers to rapid development of renewable energy
- Differented price set for each RE technology
- FITs assure a good return on RE investment
- The cost of introduction of RE is shared by all energy consumers
- Increased demand for RE has led to technology innovation and increased production

Germany‘s Feed-In Tariffs, 2000 – 2012

- **Secure investment in renewable energy with 7% return**
- **380,000 jobs created, €27.5bn turnover for RE companies, €10bn investment per year**
- **Reduced imports: €8 billion euro fuel imports avoided**
- **Reduced emissions: 120 million tonnes of CO2 saved**
- **Eco-benefit: €5.40 less environmental damage per household/ month**
- **Total cost: €6.00 per household/ month**
- **Growing share of power: 2008: 18% of electricity supply**
- **At current growth rates renewables will provide 40% of electricity by 2020, or 100% by 2050**


www.GreenTechnoLog.com

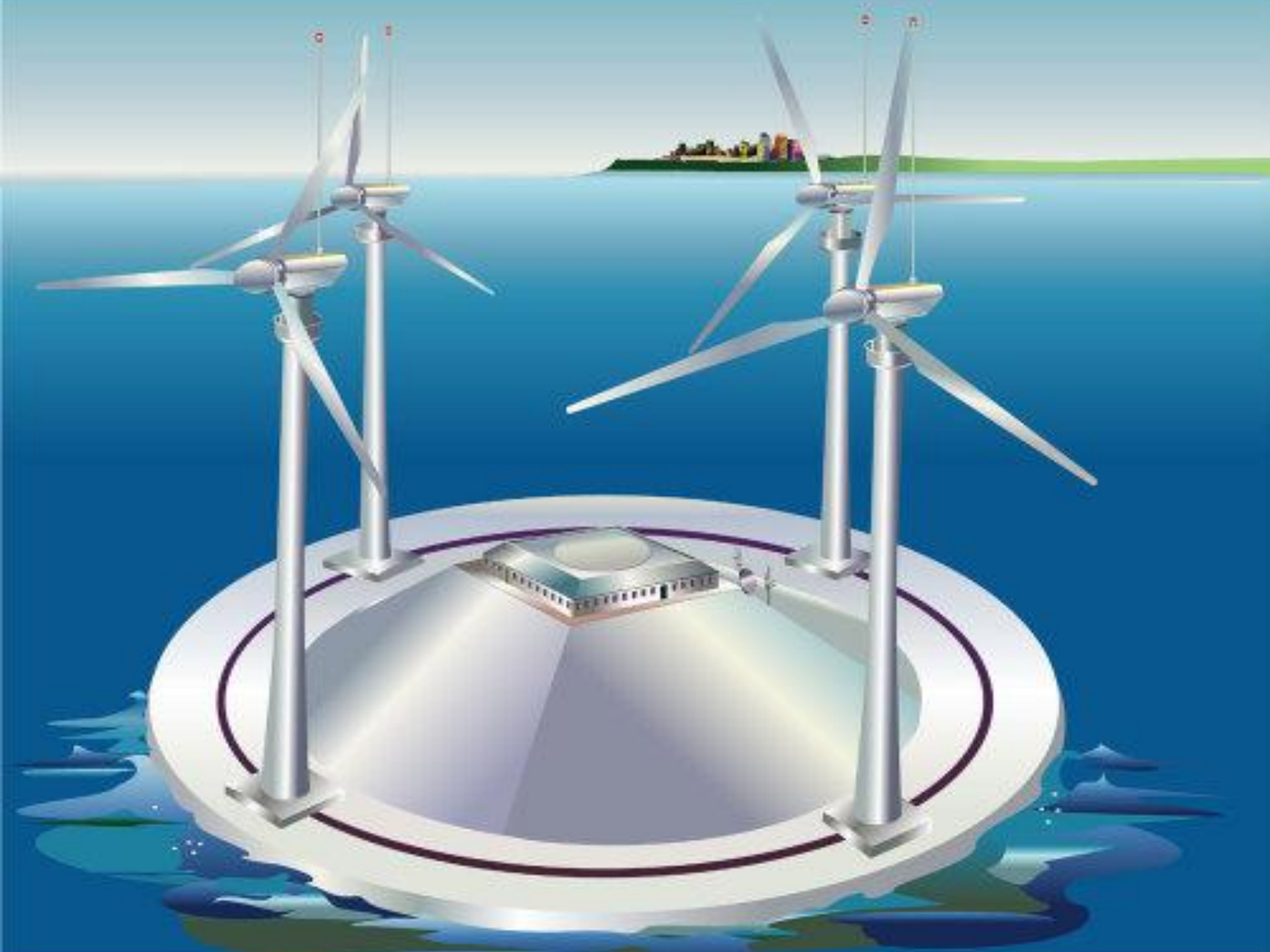
Freiburg



With good wind, this turbine could generate enough electricity for 1250 homes.

With good wind, this turbine could generate enough electricity for 50 homes.

With good wind, this turbine could generate enough electricity for 12 homes.

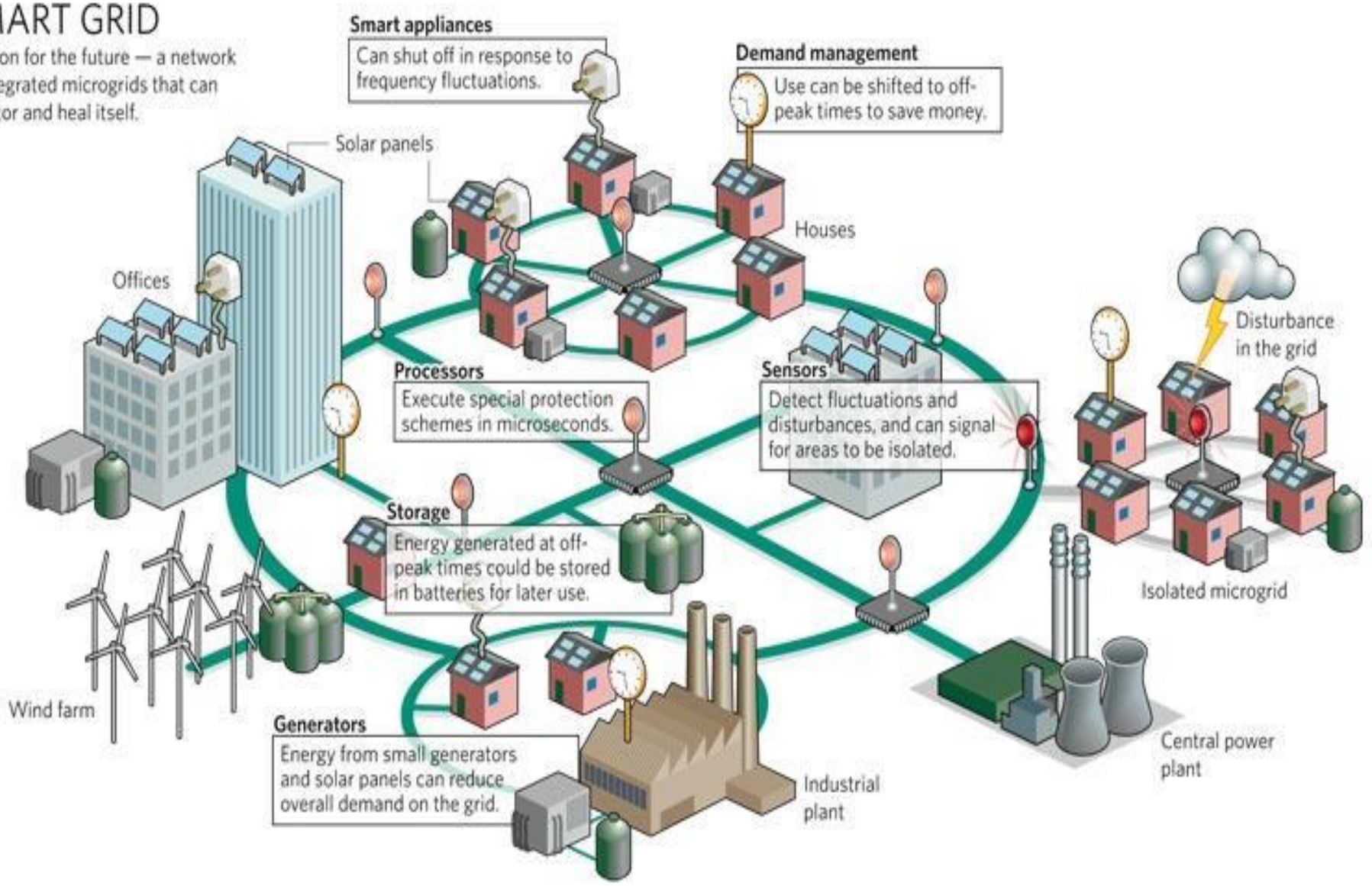


FIT policy convergence

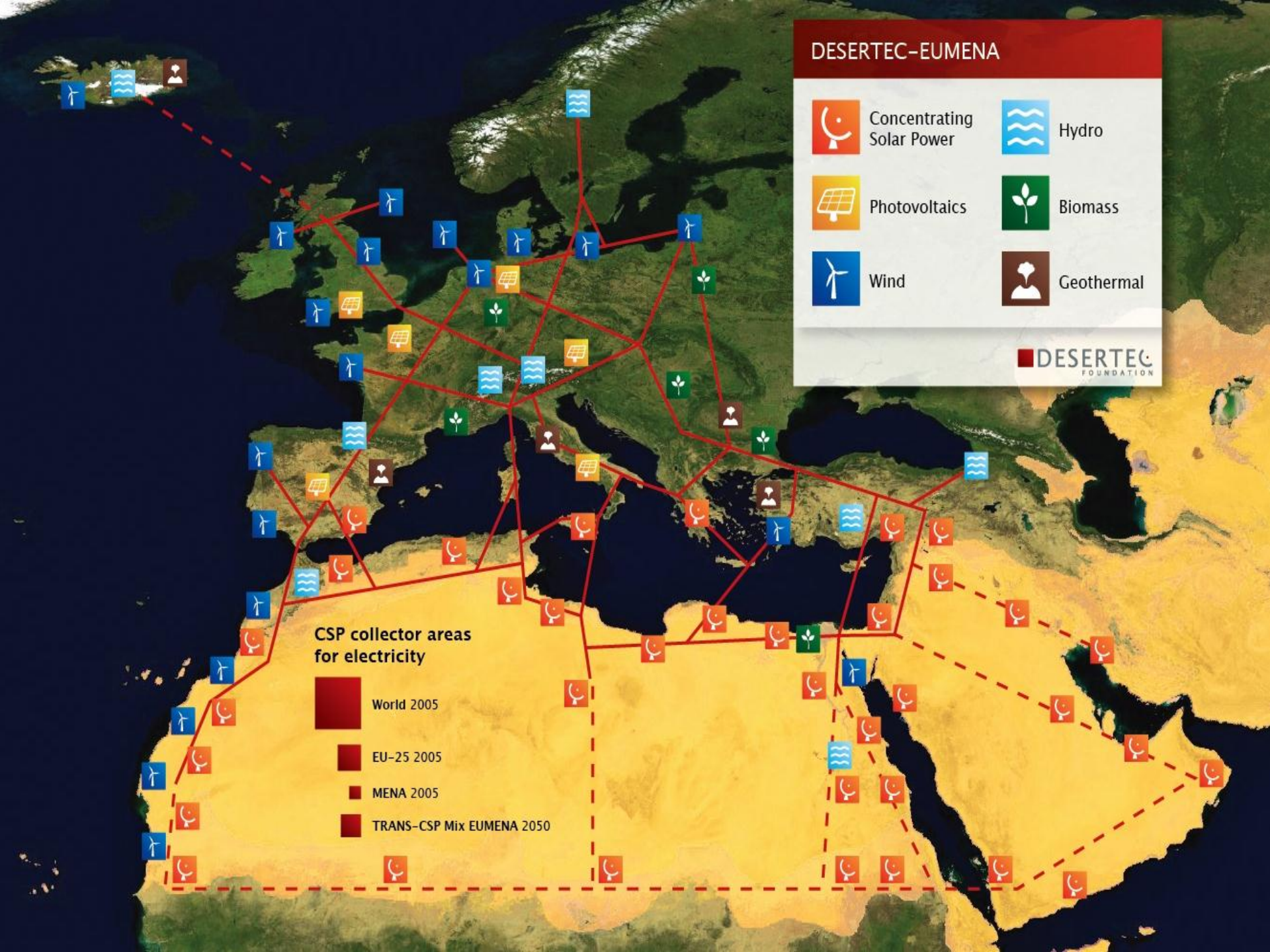
- The inescapable logic of FITs
- They have now spread to over sixty countries
- In addition there are many regional FITs, particularly in the USA
- But: strong opposition from power station companies
- Pioneering countries like Germany have been pressured to reduce RE prices
- Similar development in South Australia and UK

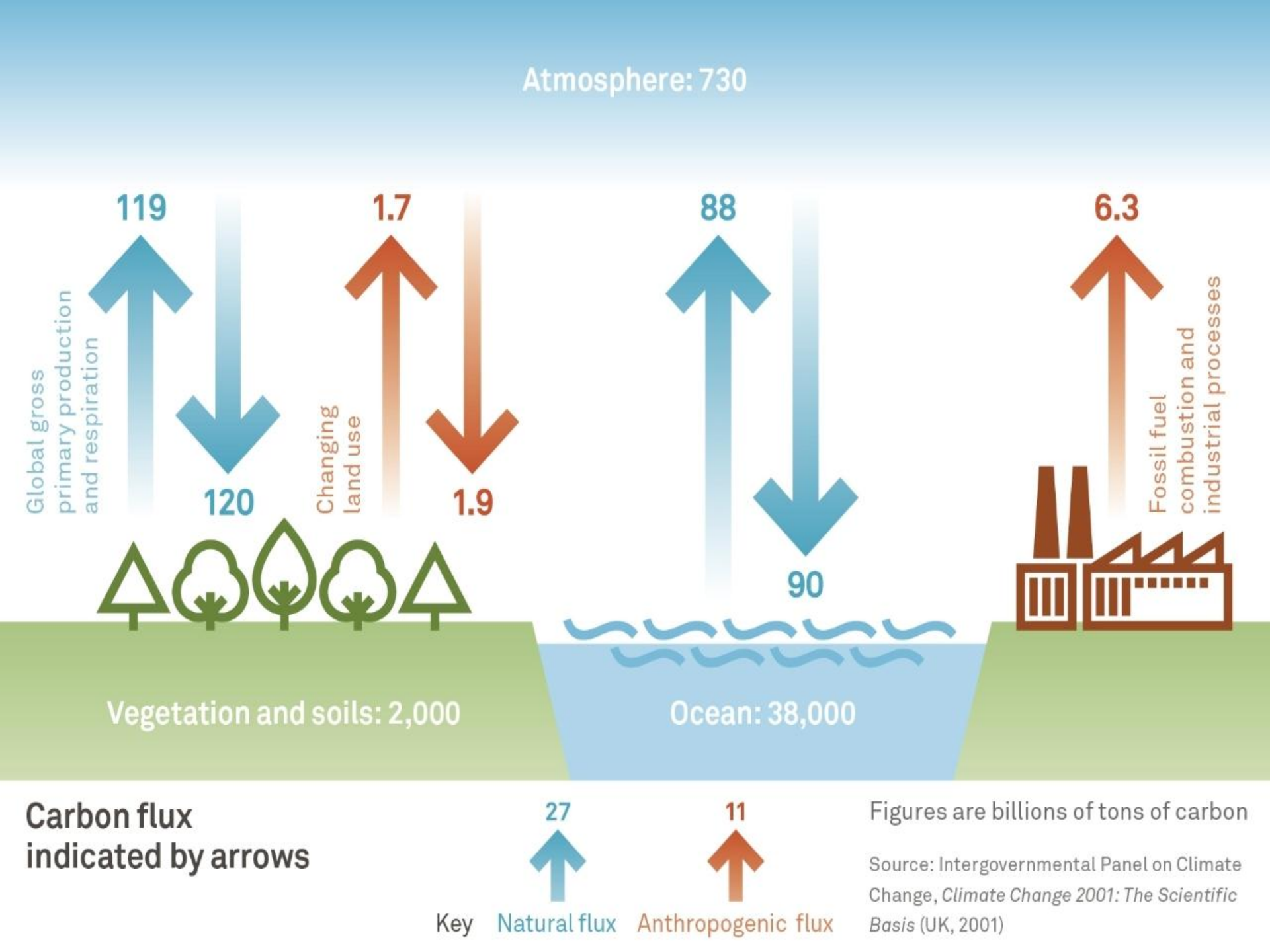
SMART GRID

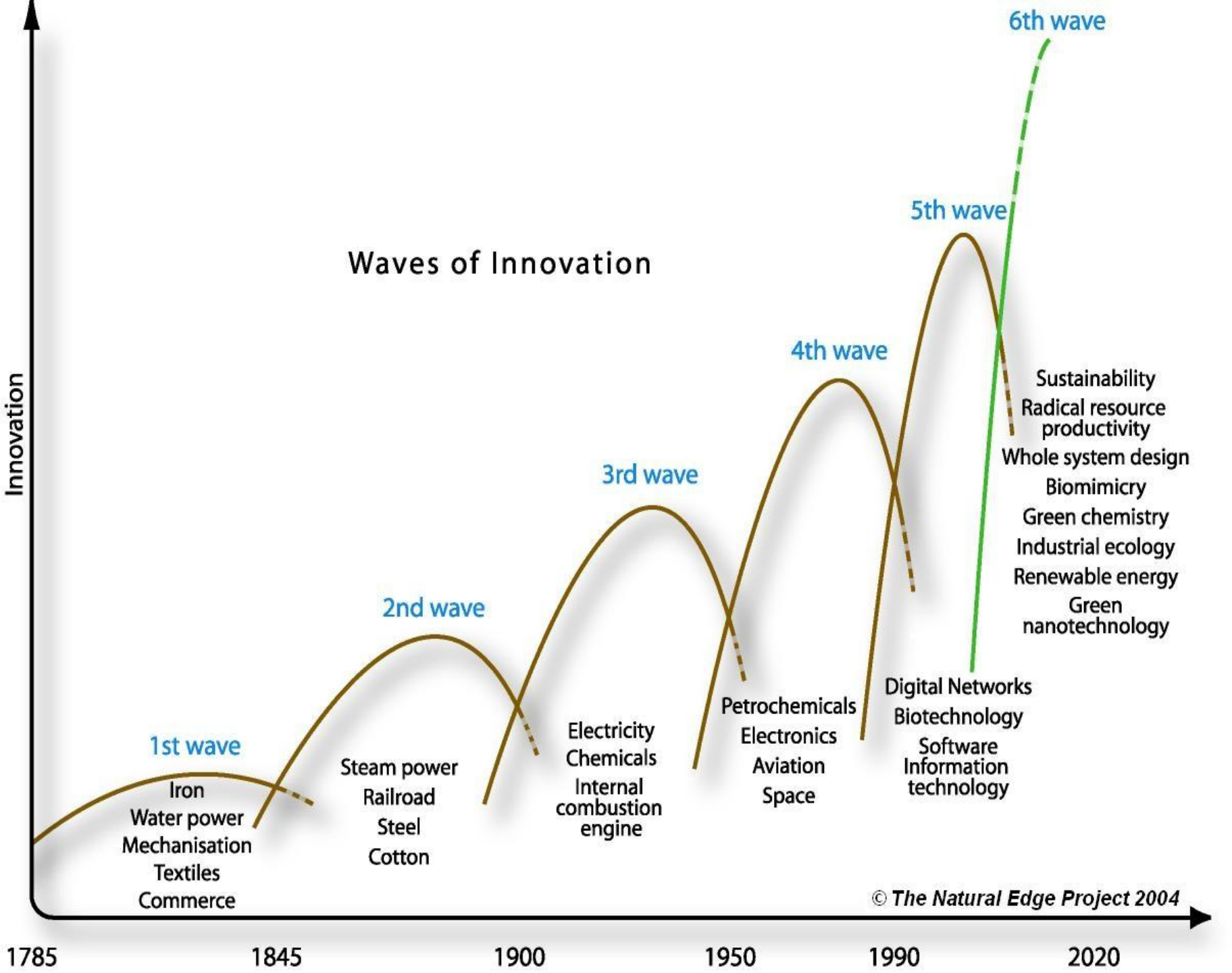
A vision for the future — a network of integrated microgrids that can monitor and heal itself.



Masdar, Abu Dhabi


DESERTEC-EUMENA
Concentrating Solar Power
Hydro
Photovoltaics
Biomass
Wind
Geothermal
DESERTEC FOUNDATION
CSP collector areas for electricity
World 2005
EU-25 2005
MENA 2005
TRANS-CSP Mix EUMENA 2050


Atmosphere: 730
119
120
Global gross primary production and respiration
1.7
1.9
Changing land use
88
90
6.3
Fossil fuel combustion and industrial processes
Vegetation and soils: 2,000
Ocean: 38,000
Carbon flux indicated by arrows
27
11
Key
Natural flux
Anthropogenic flux
Figures are billions of tons of carbon
Source: Intergovernmental Panel on Climate Change, *Climate Change 2001: The Scientific Basis* (UK, 2001)


Waves of Innovation
Innovation
1st wave
Iron
Water power
Mechanisation
Textiles
Commerce
2nd wave
Steam power
Railroad
Steel
Cotton
3rd wave
Electricity
Chemicals
Internal combustion engine
4th wave
Petrochemicals
Electronics
Aviation
Space
5th wave
Digital Networks
Biotechnology
Software
Information technology
6th wave
Sustainability
Radical resource productivity
Whole system design
Biomimicry
Green chemistry
Industrial ecology
Renewable energy
Green nanotechnology
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1785
1845
1900
1950
1990
2020