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How do new technologies become cost-efficient?

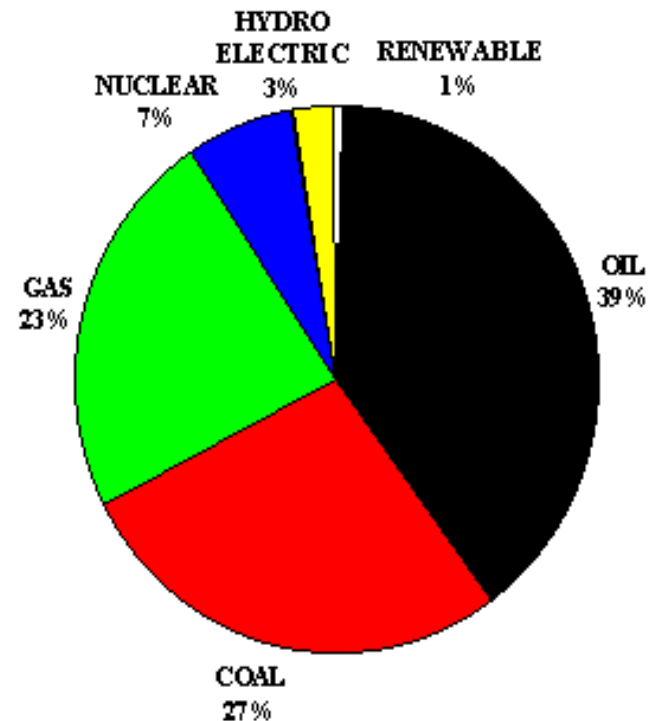
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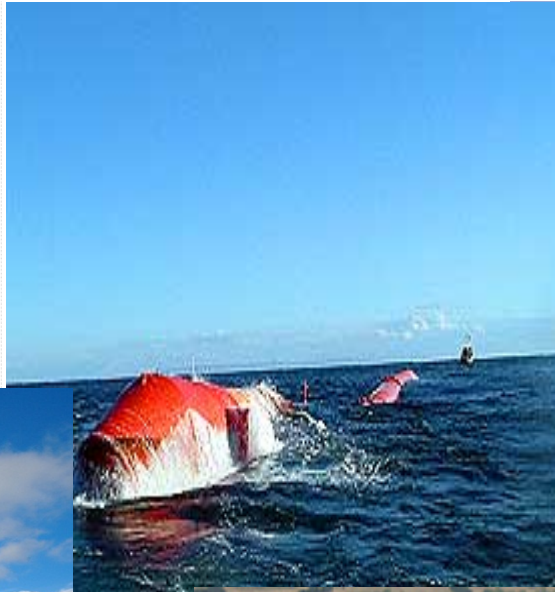
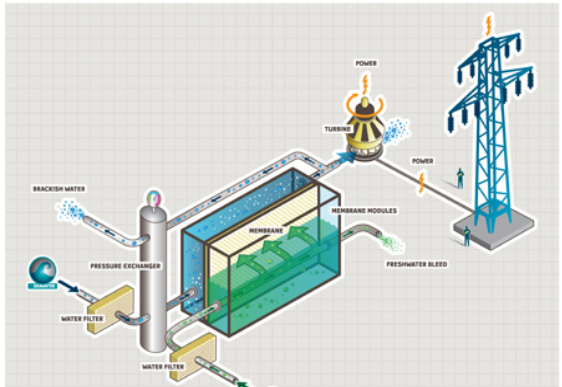


The great energy transition

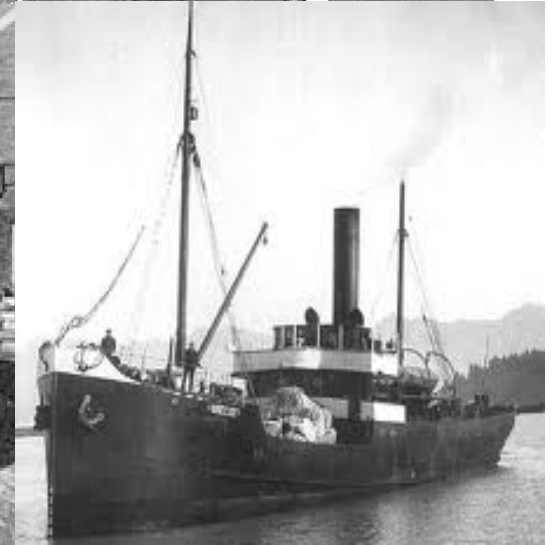
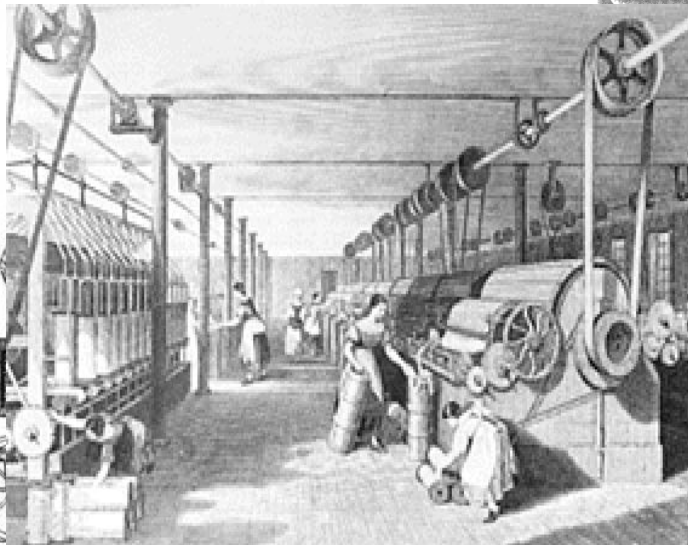
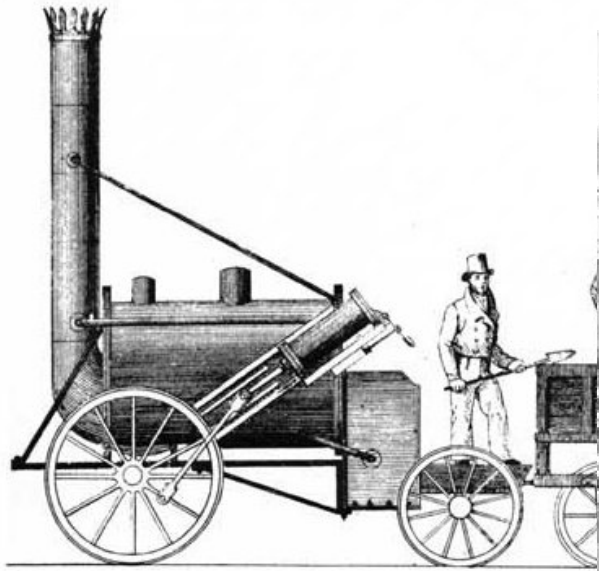
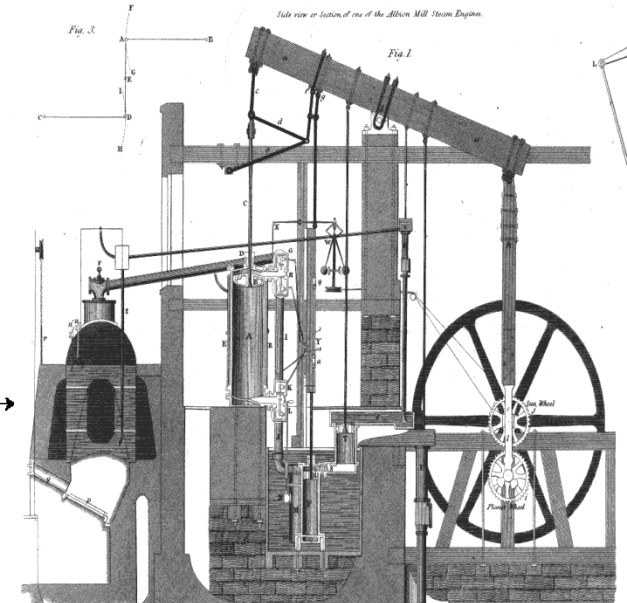
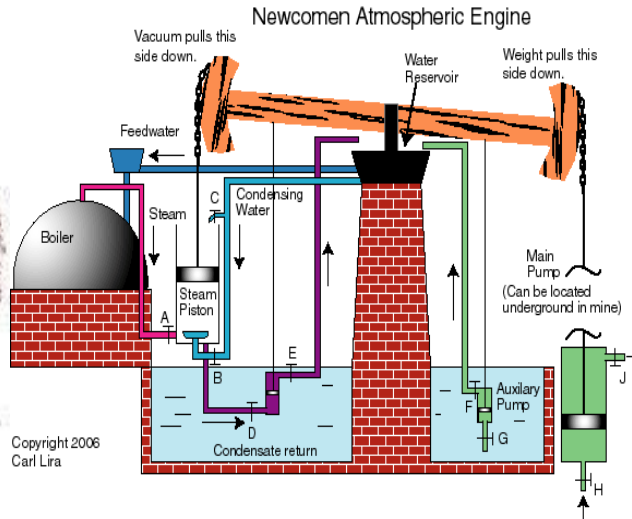
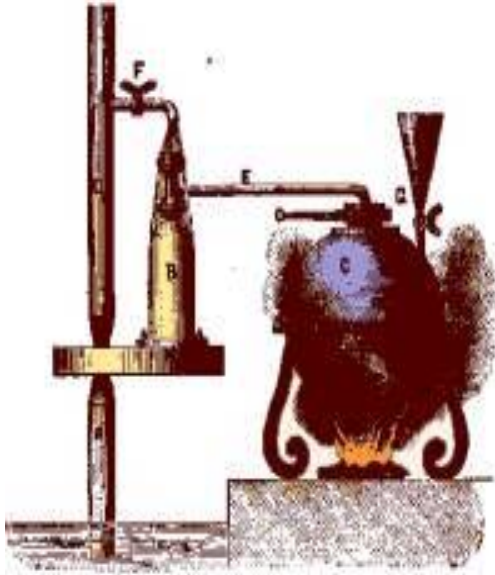
- From fossil to renewable energy regime
- New technologies to transform natural energy
 - Solar
 - Wind (on-shore, off-shore)
 - Biomass
 - Other sources
- EU Energy Roadmap 2050
 - 6000-8000 TWh added capacity
 - 500 TWh in Europe in 2005



New technologies are inefficient



New technologies are 'monsters'



Technological competition

- Diversity and selection: Old vs new (and new vs new)
- How can the young inefficient technologies survive the competition?

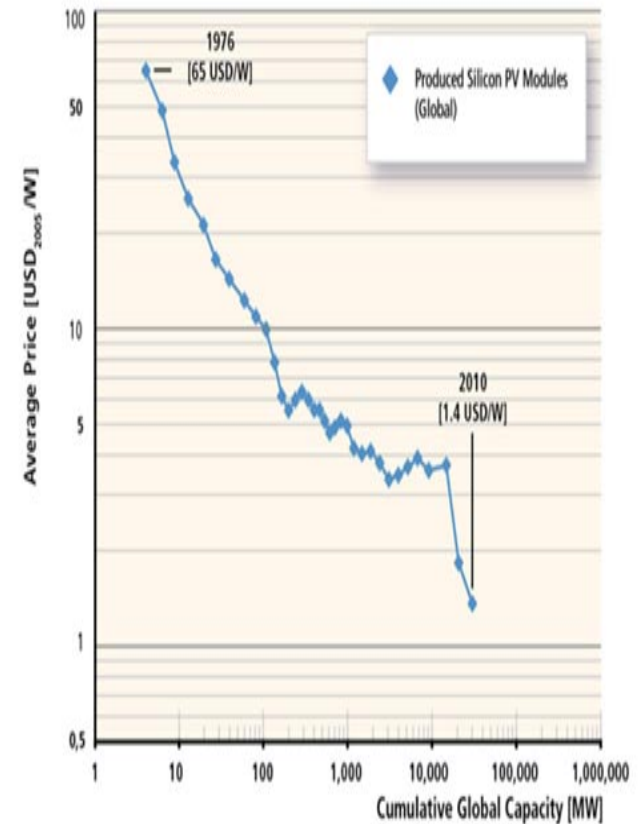


- Niche
- Patron



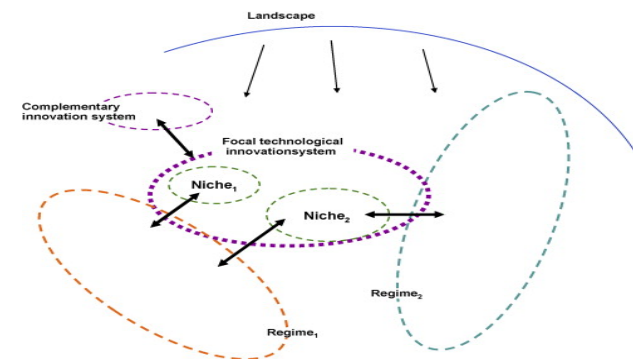
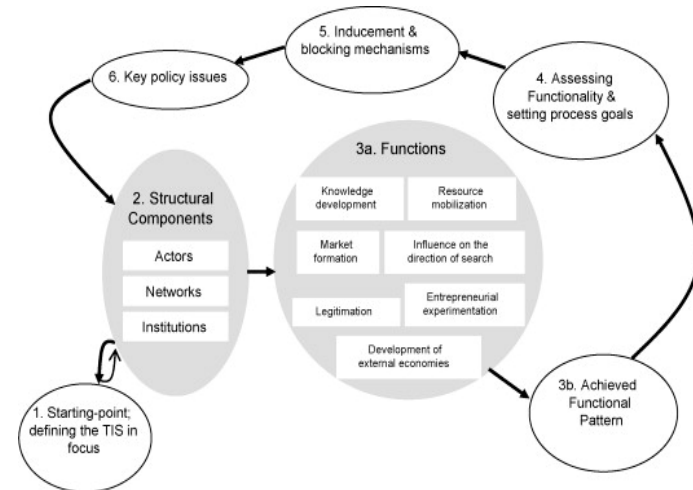
Create learning processes

- Learning processes – improve efficiency
- Main learning arenas:
 - Production of technology
 - Use of technology
 - Experiments
 - R&D
- Policy: create learning arenas
 - Production, use, experiments, R&D



Develop/diffuse new technologies: System building

- Socio-technical processes
 - Actors – system builders
 - Involving new actors
 - Attract resources
 - Create acceptance/legitimacy
 - Networks – interaction
 - Institutions – shaping for interaction
- Takes a long time, involves many resources



Policies to promote cost-efficient technologies

- Support system building processes
 - Long term and heterogeneous
 - Actors, resources, knowledge, experimentation, ...
- Protection of new technologies (patron)
 - Create markets (subsidies)
- Create arenas for learning
 - R&D, production, users, networks, ...

Thank you!

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