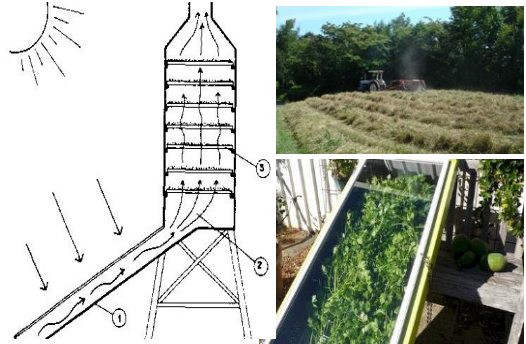


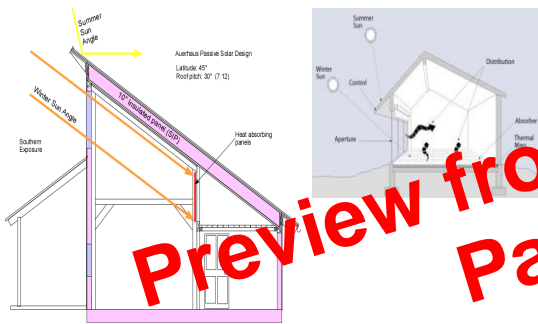
Daylighting



Drying Agricultural Products



Space Heating Through Passive Solar



Generating Electrical Power

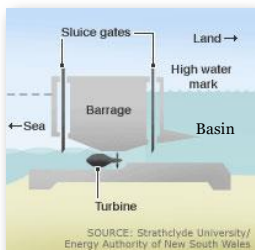
- Concentrating Solar Power (CSP)
 - Trough systems
 - Power towers
- Heat exchanger plus steam turbine
- Photovoltaics
 - Small-scale (buildings) kW production
 - Large-scale (utilities) MW production
- Photoelectric effect

Concentrating Solar Power (CSP)



Tidal Barrage

- Utilize potential energy
- Tidal barrages are typically dams built across an estuary or bay.
- consist of turbines, sluice gates, embankments, and ship locks.



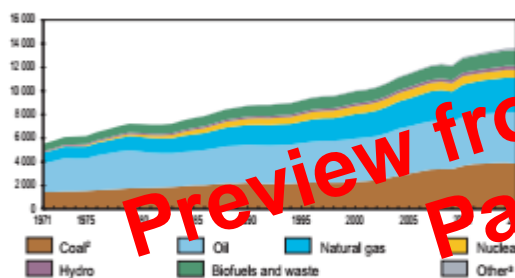
Tidal current turbines

- Extracts kinetic energy from moving water generated by tides.
- Operate during flood and ebb tides.
- Consists of a rotor, gearbox, and a generator. These three parts are mounted onto a support structure. There are three main types:
 - Gravity structure
 - Piled structure
 - Floating structure



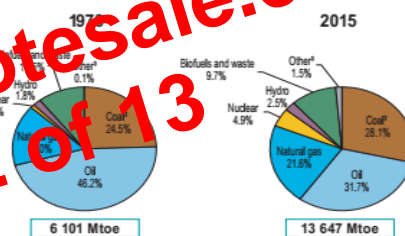
Total Primary Energy Supply (TPES) –Source: Key World Energy Statistics, 2017 by the International Energy Agency

World¹ TPES from 1971 to 2015 by fuel (Mtoe)



Total Primary energy Supply

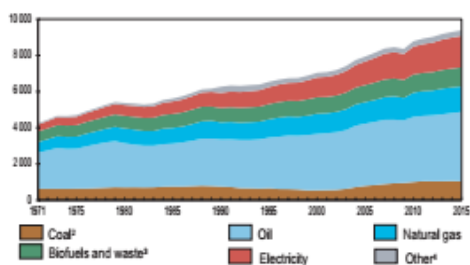
1973 and 2015 fuel shares of TPES



1. World includes international aviation and international marine bunkers.
 2. In these graphs, peat and oil shale are aggregated with coal.
 3. Includes geothermal, solar, wind, tide/wave/ocean, heat and other.

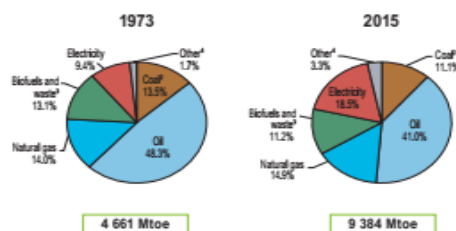
Total Final Consumption (TFC) –Source: Key World Energy Statistics, 2017 by the International Energy Agency

World¹ TFC from 1971 to 2015 by fuel (Mtoe)



Total Final Consumption

1973 and 2015 fuel shares of TFC



1. World includes international aviation and international marine bunkers.
 2. In these graphs, peat and oil shale are aggregated with coal.
 3. Data for biofuels and waste final consumption have been estimated for a number of countries.
 4. Includes heat, solar thermal and geothermal.