



Harnessing Solar Energy

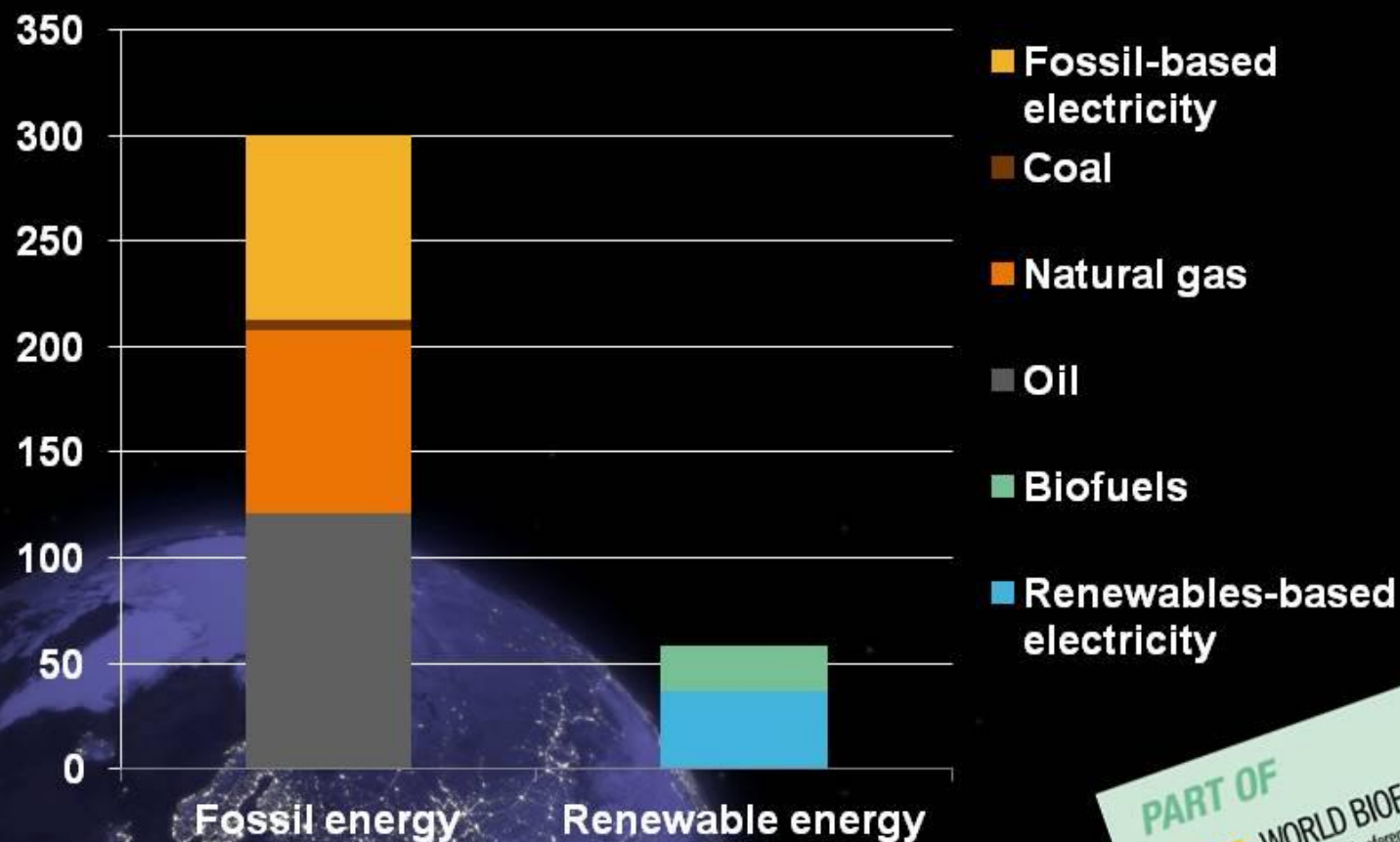
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BURNING FUELS IS DESTRUCTIVE

- ▶ THEY RELEASE HARMFUL POLLUTANTS
 - ▶ CAUSING GLOBAL WARMING
 - ▶ ACID RAIN
 - ▶ LUNG ILLNESS
- ▶ THE CO₂, THAT THEY REPERSENT, HAD BEEN ISOLATED ⇒ HUMAN ACTIVITY RETURN THIS
- ▶ **THEY ARE NON-RENEWABLE**
- ▶ WE NEED TO REPALCE THEM



World subsidies to fossil fuel consumption vs renewables in 2009 (billion USD)



Based on: IEA - World Energy Outlook 2010 and IEA - World Energy Outlook 2011.

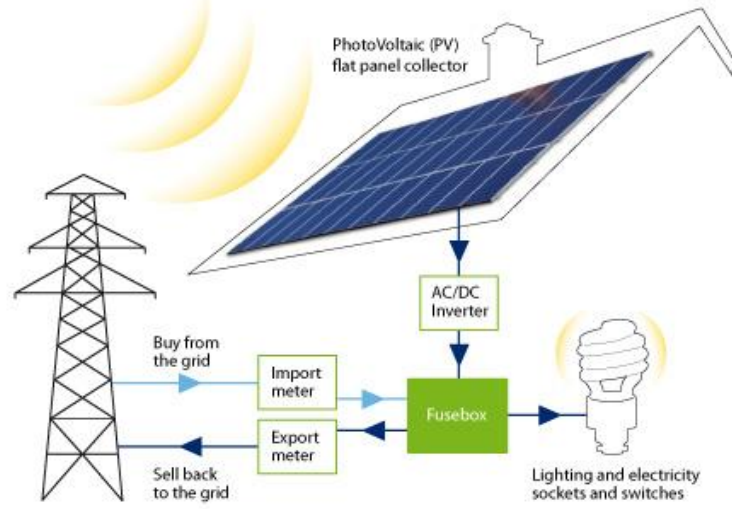
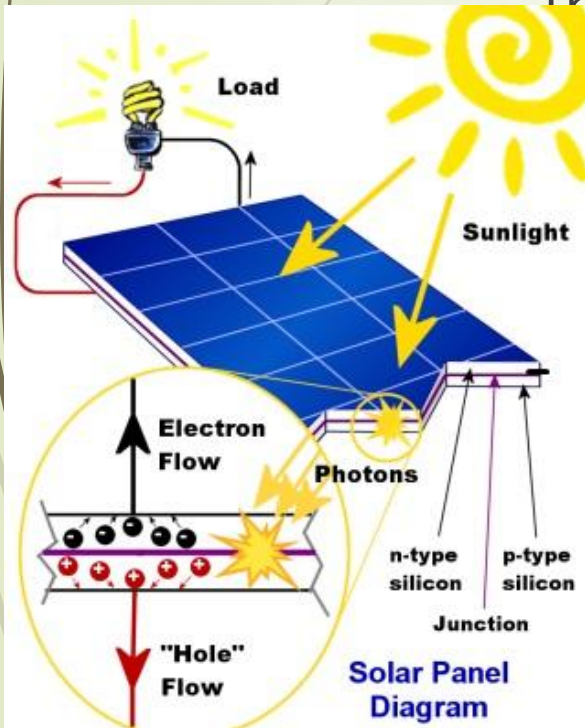
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TWO METHODS HOW SOLAR PANELS PRODUCE ELECTRICITY

Thermal Solar Energy

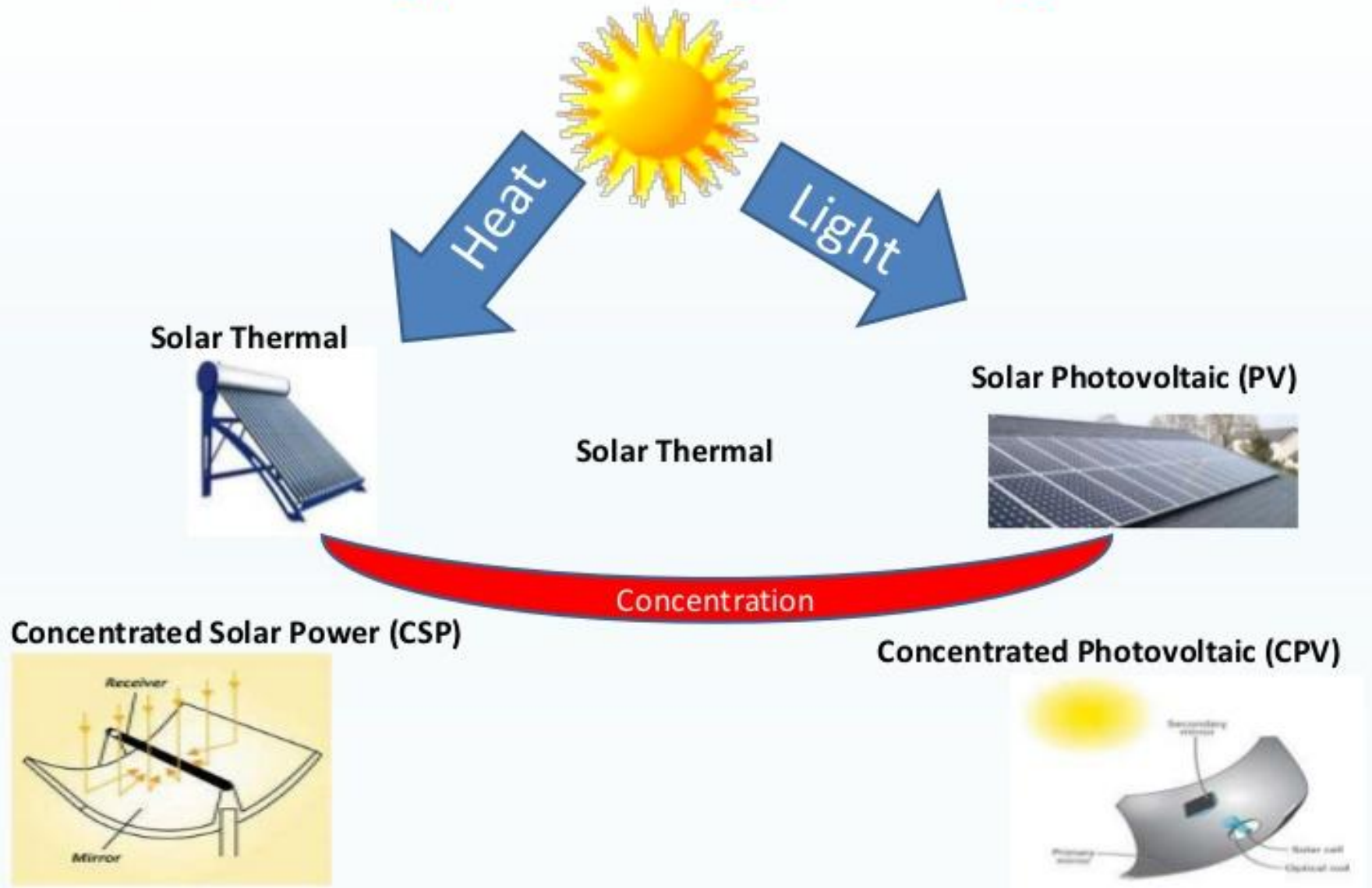
concentrates sunlight



Photovoltaic Solar Power

- the cleanest and most reliable form of renewable energy
- exciting electrons in silicon cells using the photons of light from the Sun
- store the extra energy

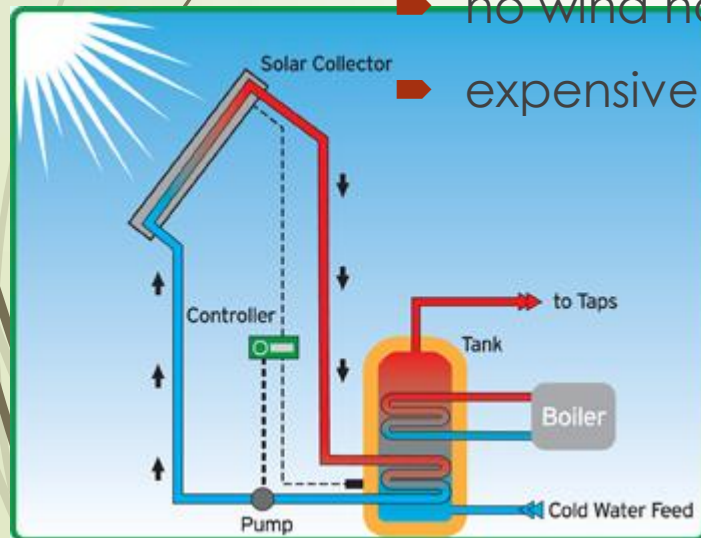
Solar Energy harnessing technologies



WHAT ARE ACTIVE AND PASSIVE SOLAR SYSTEMS?

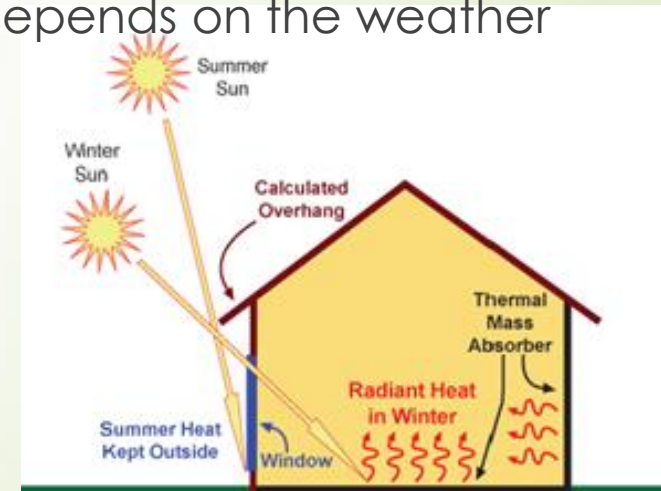
ACTIVE

- rely on external energy sources
- can heat or cool
- PV, liquid or air based
- no wind noise generated
- expensive external equipment



PASSIVE

- doesn't rely on external energy sources
- south-facing windows absorb heat
- don't cause allergy
- depends on the weather



GREEN BUILDINGS

- good and bad lighting
- the practice of creating structures which are environmentally responsible
- Benefits:
 - maximize the light in a room
 - Increases productivity
 - less upkeeps
- Examples:
 - „SolaRoad” in the Netherland
 - Taipei 101 in Taiwan



THE GREENEST COUNTRIES

1. Sweden – recycling, consumption of organic foods
2. Norway and Costa Rica - nearly fossil-fuel-free electricity system
3. Germany – 10 policies

How can a country become green?

- following, 100% renewable electricity
- commitment to the common good
- green policies



Photo Credit: Ellie Taylor

THE BIGGEST SOLAR POWER PLANTS IN THE WORLD

China - The Longyangxia Dam

- ▶ generates 850 MW
- ▶ 200,000 households
- ▶ „the biggest investor in clean energy in the world”



India - Kamuthi Solar Power Project

- ▶ generates 648 MW
- ▶ robotic system



USA - Solar Star

- ▶ two projects: 1 and 2
- ▶ silicon PV panels
- ▶ 255,000 homes



USING SOLAR ENERGY IN THE FUTURE

PROS

- ▶ provides jobs
- ▶ avoid wasting energy
- ▶ reduces our dependence on non-renewables
- ▶ transport

CONS

- ▶ expensive- might increase taxes
- ▶ rare materials
- ▶ special storages
- ▶ limited time



