



SERVE THE PLANET 2018

Module 1: Study Circle Part 2

Energy: Origin and Impact on the Environment



Outline

- ▶ Why do we need energy?
- ▶ What are various sources of physical energy?
- ▶ What is the effect of our energy use on the environment? (Importance of energy conservation)
- ▶ Are renewable sources the answer?
- ▶ Being aware of our energy footprint, how to reduce it

The purpose of this study circle is to help us have a deeper understanding of the various sources of physical energy, and the impact they have on the environment, guiding us to start thinking about how to reduce our energy footprint and conserve non-renewable energy.



Why do we need energy?



To Grow & Live



$E = mc^2$

2) To Obtain Electricity and Gas



Why do we need energy? contd.

3)



To Keep Warm



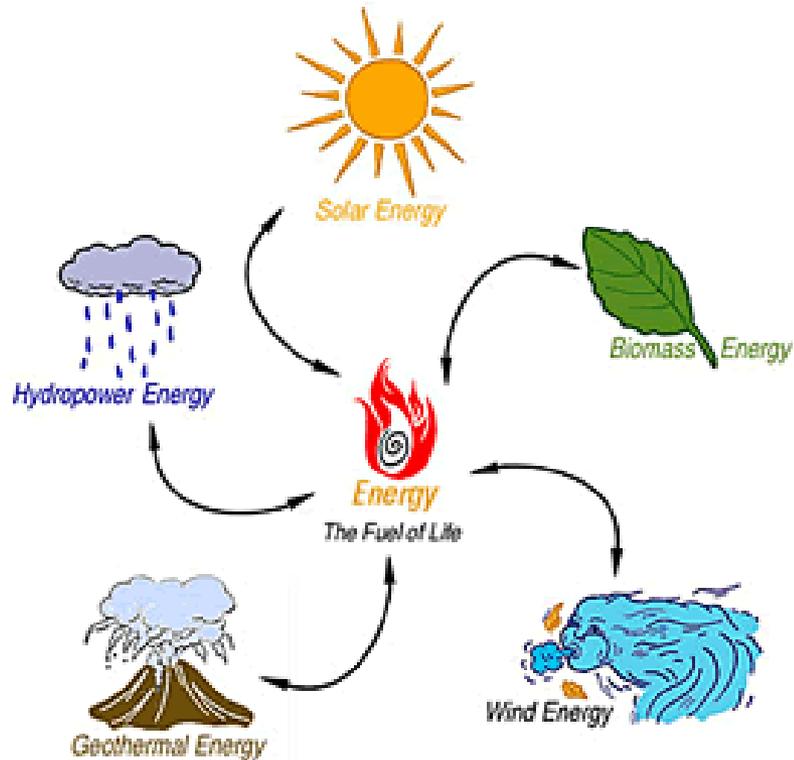
4)

To provide Education, Healthcare, Transportation

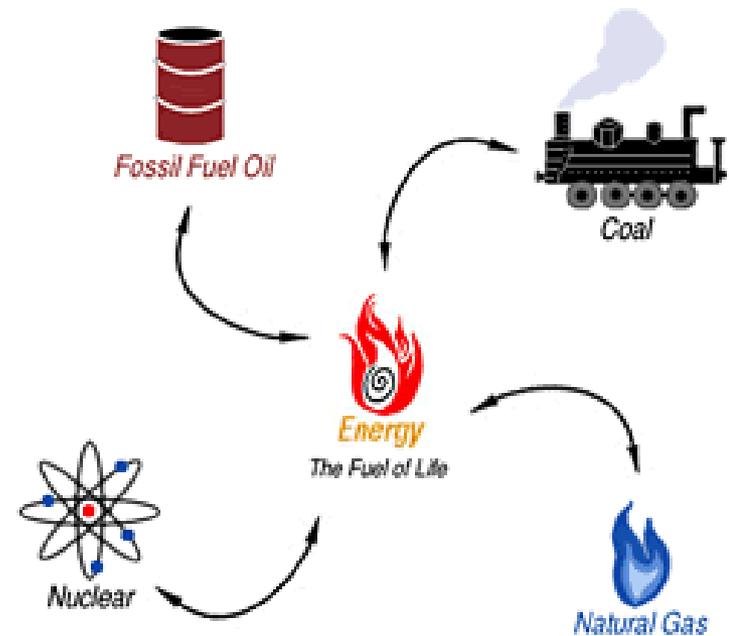


What are various sources of physical energy?

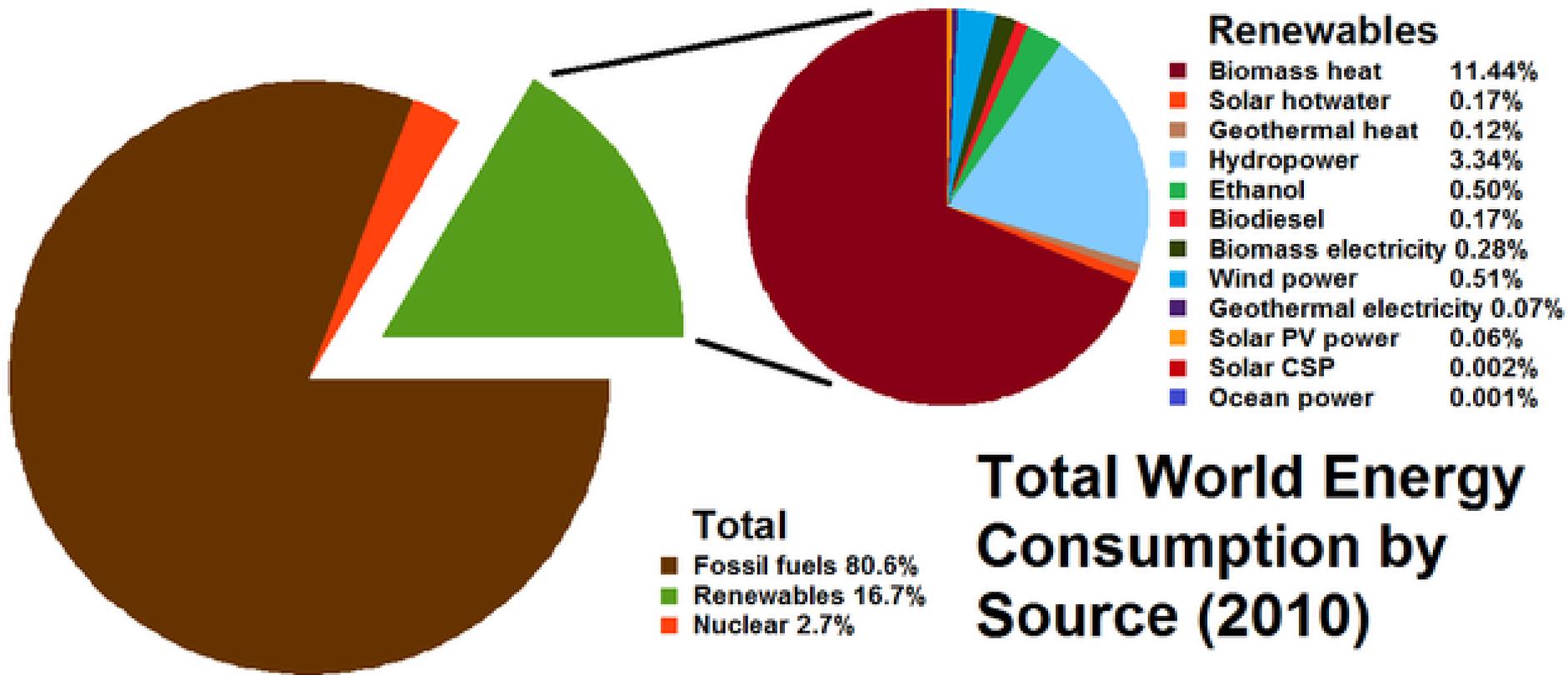
Renewable Energy



Non-Renewable Energy



What are various sources of physical energy? contd.



What is the effect of our energy use on the environment?

Main causes of biodiversity loss

More than **16,000 species** are threatened with extinction, almost wholly as a result of human action

Global warming

Habitat and food loss from temperature change.
Disruption of migration patterns.

Wellington's Solitary Coral (bleaching)



Habitat destruction

Agriculture, infrastructure (industry, urbanisation, etc).



Sumatran Orang-utan (palm oil plantations)

Over-exploitation

Species hunted for food, pet trade, medicines.
Logging, mining, fishing, groundwater extraction.



Great Hammerhead Shark (killed for its fins)

Pollution

(air, land, water)

Fossil fuels, pesticides, sewage, waste, oil slicks, sonars, etc.



Yangtze River Dolphin (pollution, river traffic)

Non-native species

eg. cats and rats on islands; water hyacinth in US, Africa, Middle East



Echo Parakeet (introduction of cats and pigs)

Accidents / persecution

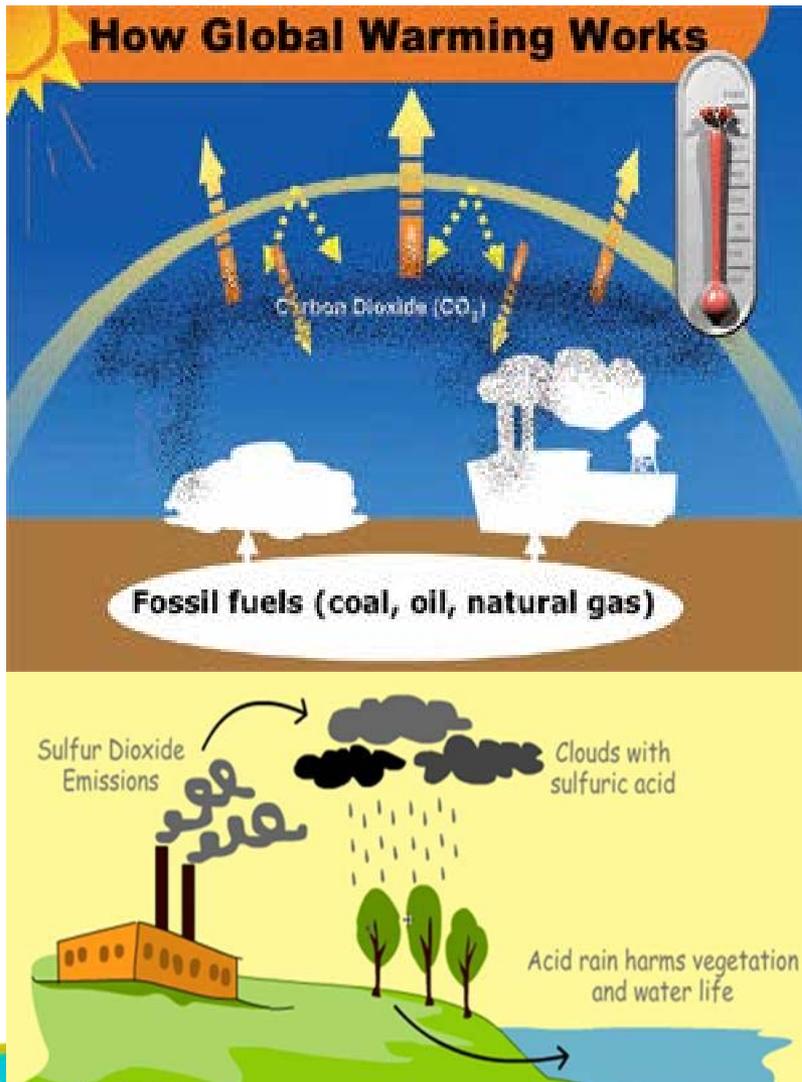
Ensnarement in fishing nets.

Traps, "pest" control, shooting, poisoning.

Red-headed Vulture (poisoned by drug used on cattle)



What is the effect of our energy use on the environment? contd.



<https://www.youtube.com/watch?v=gXQSyqNGLcl>

Video duration – 1:43 minutes



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Are renewable sources the answer?

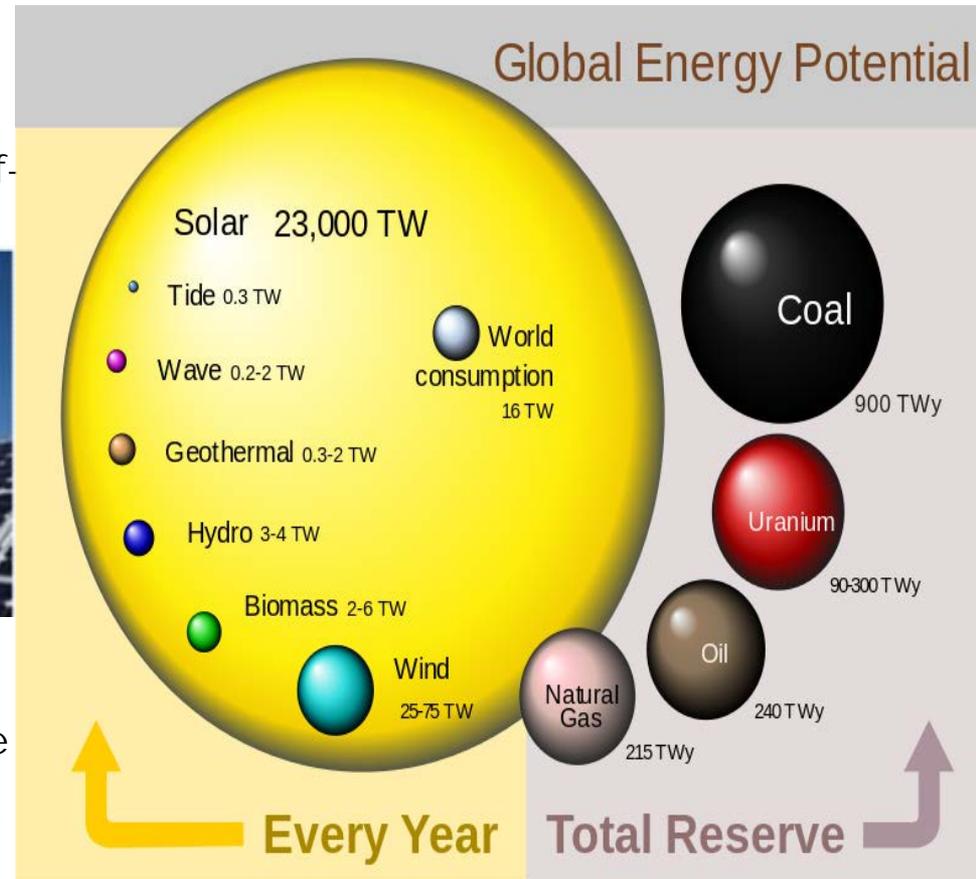
RENEWABLE ENERGIES

These are sources found in nature that are self-regenerating:



- Sunlight
- Wind
- Geothermal heat
- Biomass
- Wave
- Tides

These resources are normally used to produce clean (or green) energy. This production does not lead to climate change and involve emission of pollutants.



Are renewable sources the answer? contd.

WIND ENERGY

How it works

- Wind turbines directly generate electricity



Advantages:

- High net yield
- Renewable and free
- Very clean source of energy
- No pollution (air or water) during operation

Before Using Geothermal Power



After Using Geothermal Power



Are renewable sources the answer? contd.

SOLAR ENERGY

REDUCE WATER SCARCITY

Water consumption will drop in 36 states, enough to hydrate 1.3 million households



1.3 mil

MITIGATE CLIMATE CHANGE

Reducing our carbon footprint could save \$259 billion in global climate change damages



\$259 billion

CURB POLLUTION

By decreasing air pollution, solar can prevent \$167 billion in health and environmental damages

CO₂ NO_x SO₂ PM_{2.5}



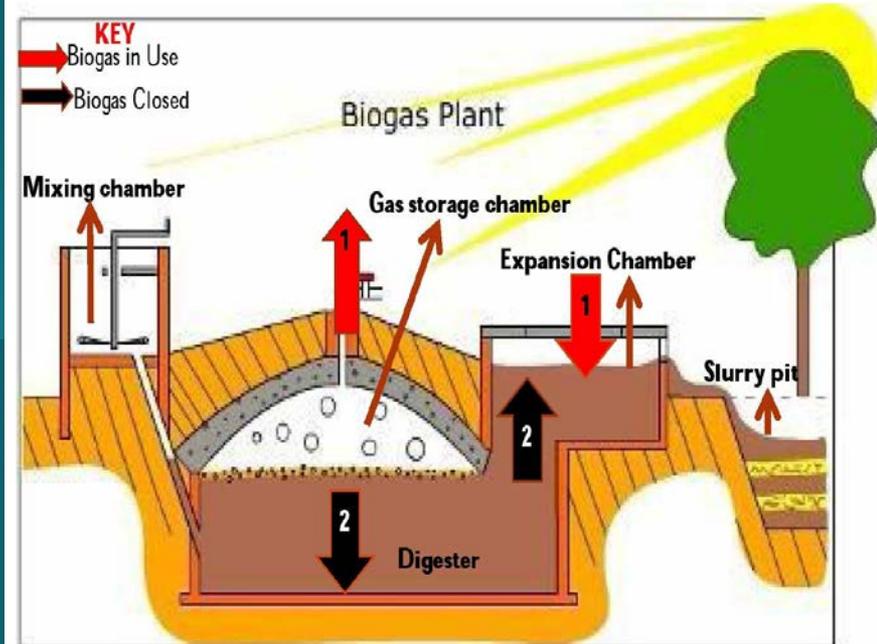
BETTER HEALTH OUTCOMES

Reducing pollutants can prevent unnecessary health care costs and save more than 25,000 lives

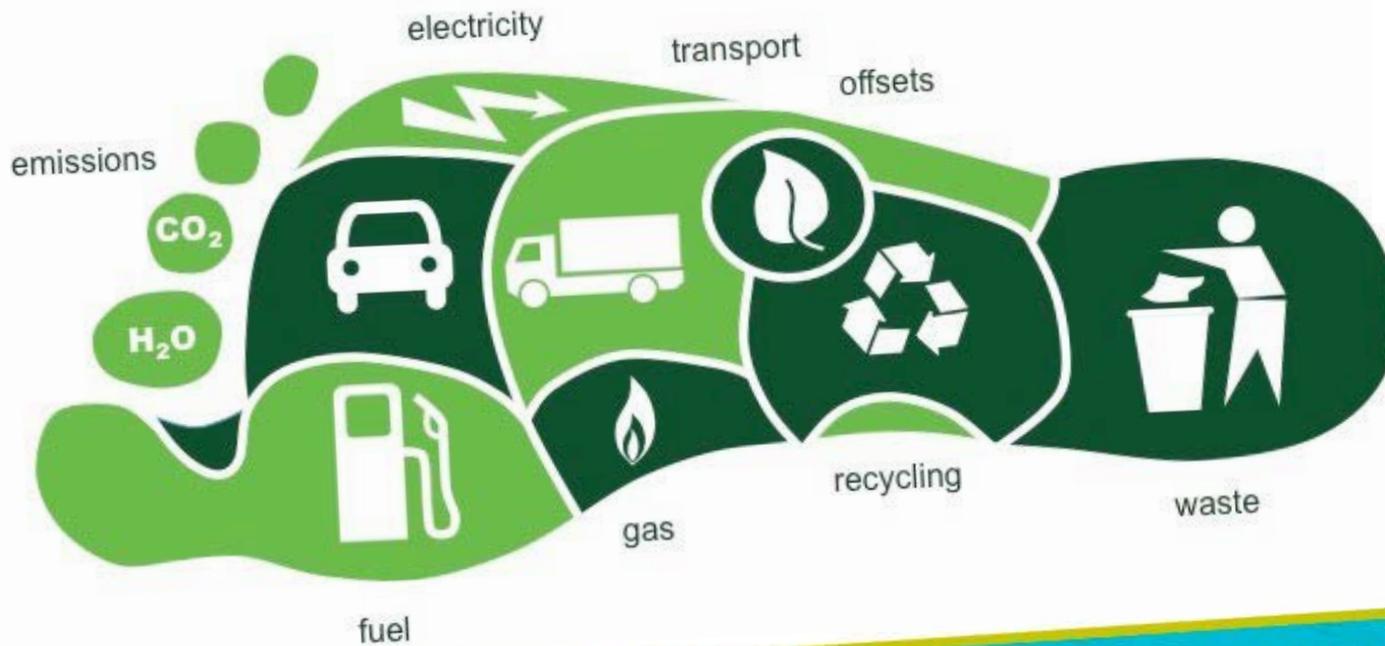




How a Biogas system works



Being aware of our energy footprint, how to reduce it.



Being aware of our energy footprint, how to reduce it. contd.



<https://www.youtube.com/watch?v=TPO0f0SBPIc>

Video duration – 1:26 minutes



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In **Next Module**, we will cover

- 'Ceiling on Desires' in relation to energy
- Energy use in our day-to-day activities including food, clothing, technology, and transportation
- How we can reduce our energy footprint and live more consciously and happily



Get in Touch

If you have any questions, feedback or ideas on Serve The Planet Programme, please get in touch with the Team at servetheplanet.ssio@gmail.com

JAI SRI SAIRAM!



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