

- We identified some topics
- The class was divided in 5 groups
- Each group had a specific topic
- Each component of each group explained to the class what they had learnt about their topic



Renewable & Non-renewable Resources

NON RENEWABLE SOURCES

An energy resource that is not replaced or is replaced only by very slow natural processes (much slower than the rate at which we use them)

Nuclear

No emission of toxic substances

Fossil fuels (Coal, Oil, Natural Gas)

-Main source of pollution in the world -
Emission of toxic substances

Global Warming

Acid

Rains



1) Disposal and long term storage of spent fuel (radioactive waste)



BUT...

2) Safety: accidents with radioactive contamination

3) High costs: fuel, management, waste disposal



RENEWABLE SOURCES

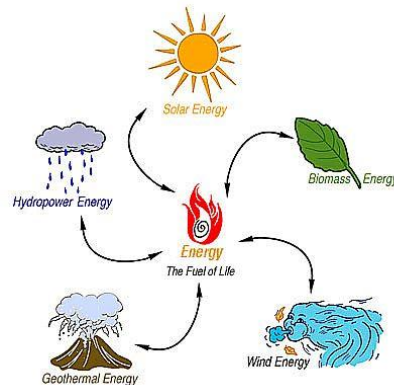
Natural energies which do not have a limited supply which are naturally replaced on a human timescale (Hydraulic, eolic, solar, geothermic, biomasses)

Advantages

- Produce no waste or pollution.
- A good method of supplying energy to remote areas.
- Once you've built a power station, the energy is almost free.

Disadvantages

- Expensive compared to the amount of electricity produced
- It can be unreliable



What is the Energy Crisis?

The “Energy Crisis” is the term coined to indicate the increasing demand for Energy against an exhaustible supply of fossil resources.

What were the actual causes?

1973 : war Egypt vs Israel

→ Embargo → Crisis → Austerity (Italy)

1979 : Islamic revolution in Iran

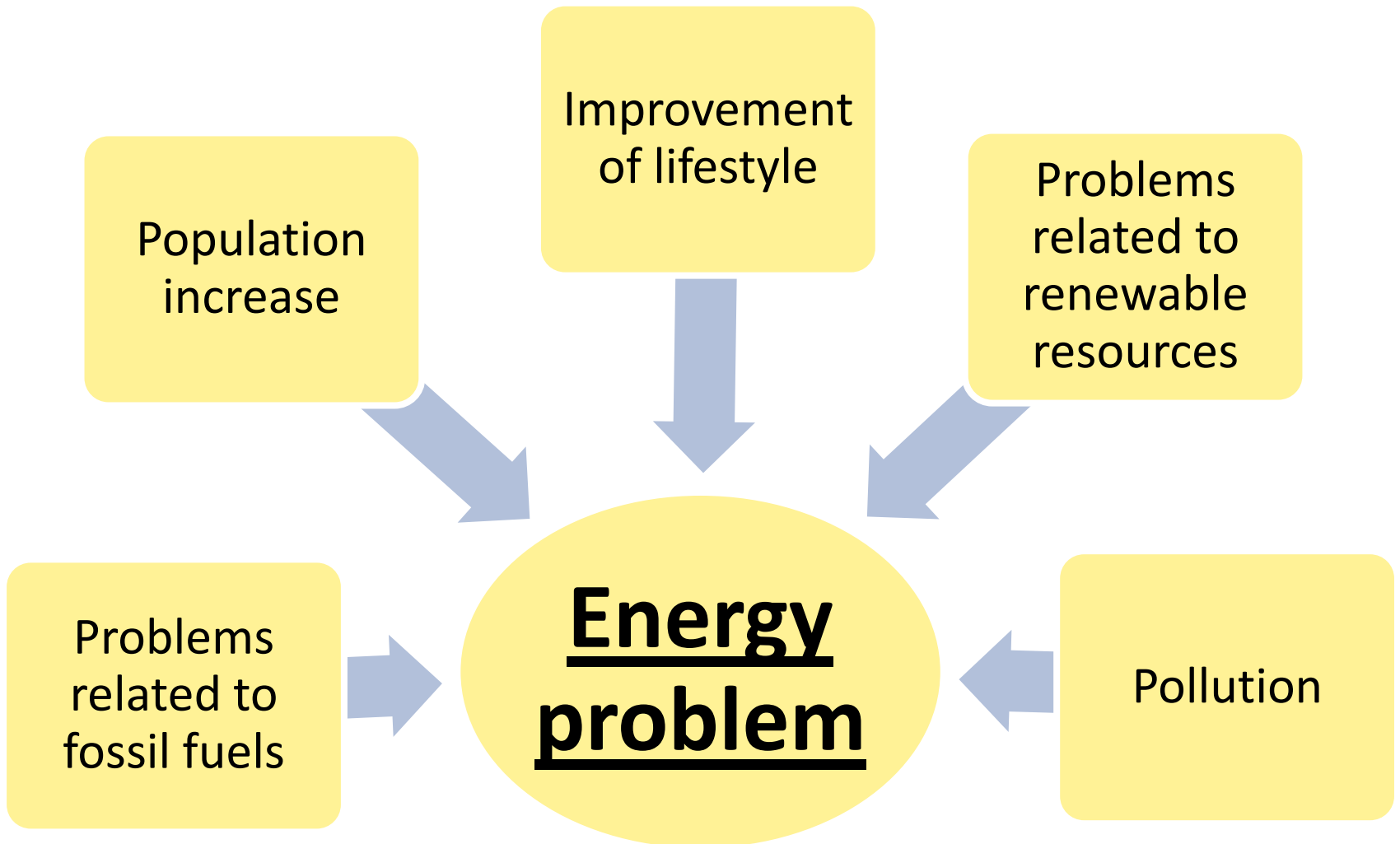
→ Oil Crisis

→ The need to find new ways for getting

What choices did governments take?

- 1997, “Kyoto Protocol”**
- UE 2005, “20-20-20” directive**
- USA + ASIA 2005, “Asia-Pacific Partnership on Clean Development and Climate”**
- UE 2008, “Action Plan”**

Main Causes

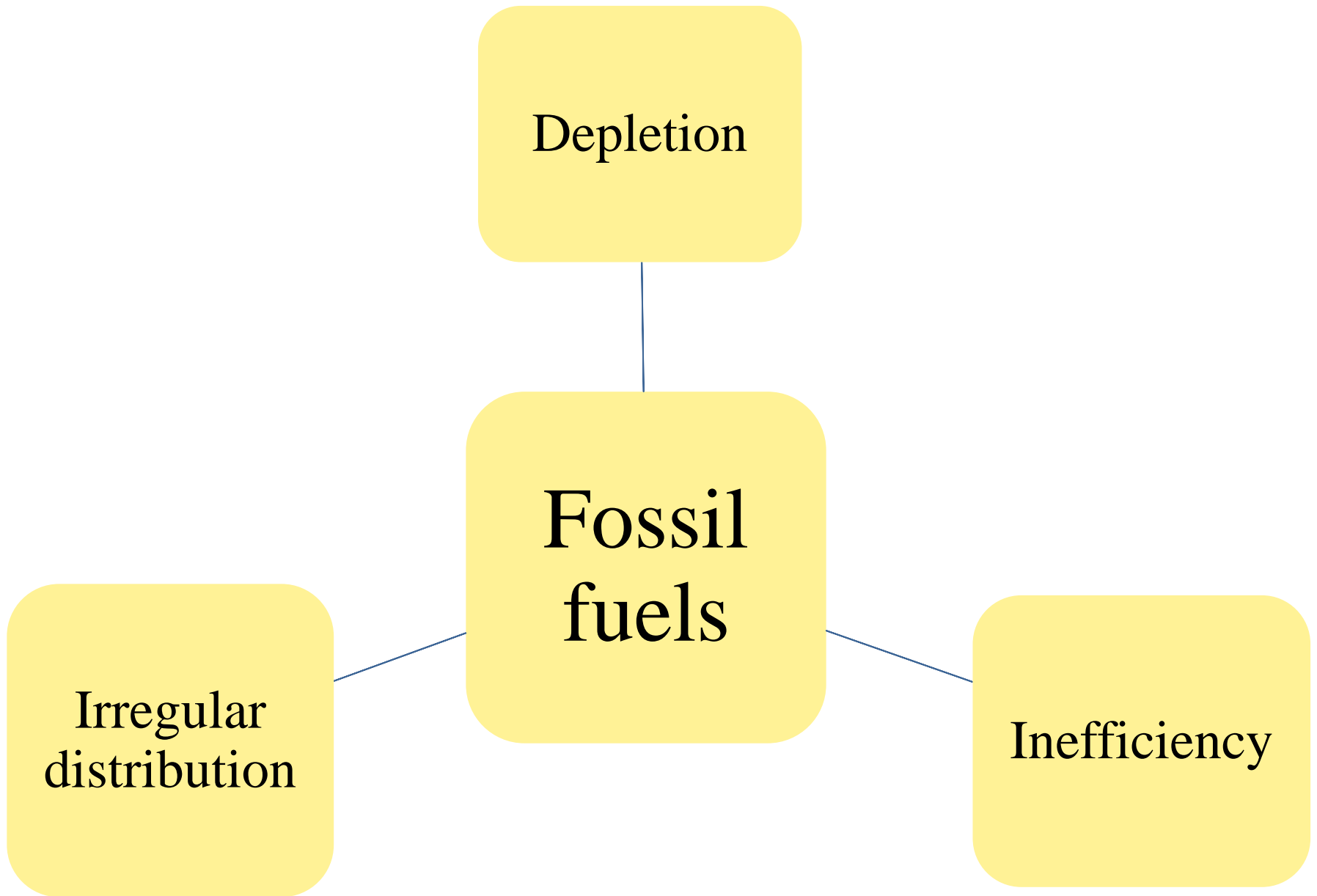


Depletion

Fossil
fuels

Irregular
distribution

Inefficiency





TOP TEN CAUSES OF POLLUTION



1. Oil pollution

2. Radioactivity

3. Urban pollution

4. Power stations

5. Greenhouse gases

6. Drug pollution

7. Plastic

8. Water pollution

9. Lead

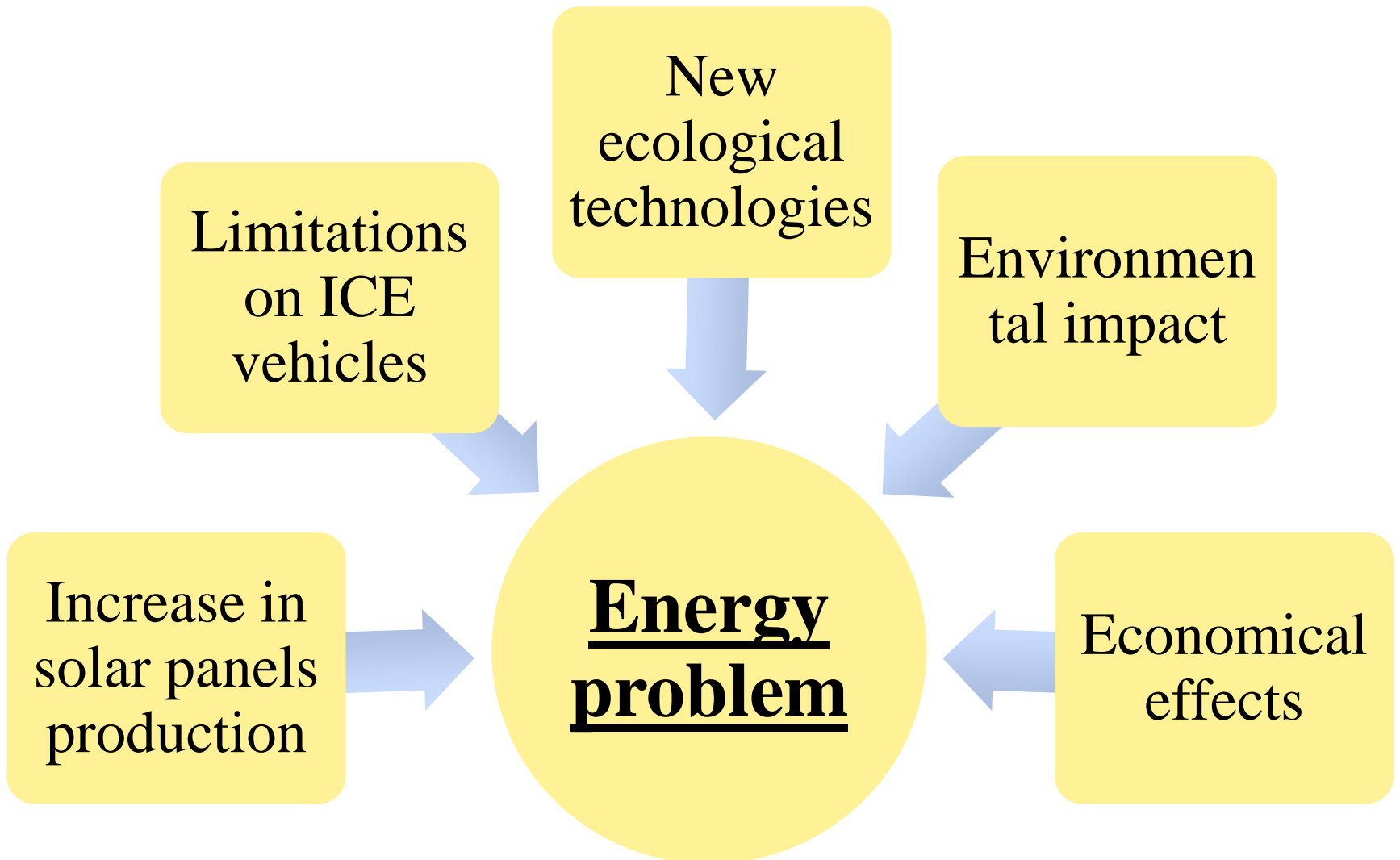
10. Farming pollution

Deepwater
Horizon:
Explosion and
subsequent fire
in the Gulf of
Mexico.

20th April 2010



Main Effects



Environmental impact

Greenhouse gases (released by burning fossil fuels) cause raise of temperature.

Global warming is responsible for:

- **Desertification**
- **Increase of natural disasters**
- **Ice caps and glaciers melting**

What can we do to face this situation?

- **Invest in renewable energy**
- **Choose carefully areas where to built stations**
- **Educate people in energy saving**

Italy should focus on producing energy itself using renewable resources: this will create new workplaces, decrease reliance on other countries, reduce pollution in cities and generally speaking improve life quality.

ENERGETICAL PROSPECT FOR THE FUTURE

Energy Problem

It is thought that this specific problem will arise in 2035, when there will be a huge disparity in the level of production and consumption of energy.

Negative Aspects of Oil dependence

- **Increasing of the greenhouse gases emissions in the atmosphere**
- **“Black Gold Wars”**
- **Economical and social disparity among states**

Peak of Oil

It depends on

- oil production**
- oil demand**
- effective quantity of oil in the world**

These data are not quantifiable in a fixed time because of the continuous changes (new oilfields, new ways of extracting oil, etc)

Why nuclear energy is not a good alternative to fossil fuels?

- Very long time to obtain a first energy production.
- Insurance problems (*because insurance agents don't want to take the risk of catastrophes or other problems*)
- Difficulties to find sites where to dump radioactive waste.
- Very expensive power stations
- Emission of greenhouse gases (*for the manufacturing of radioactive materials*)

Example of alternatives to fossil fuels

BIOFUELS:

- Vegetable Oil
- Biodiesel
- Bioethanol

NATURAL GAS LIQUIDS (NGL)

+ è un problema per l'agricoltura: viene meno l'etica

Energy

- Where is it most needed?
- How to save energy?

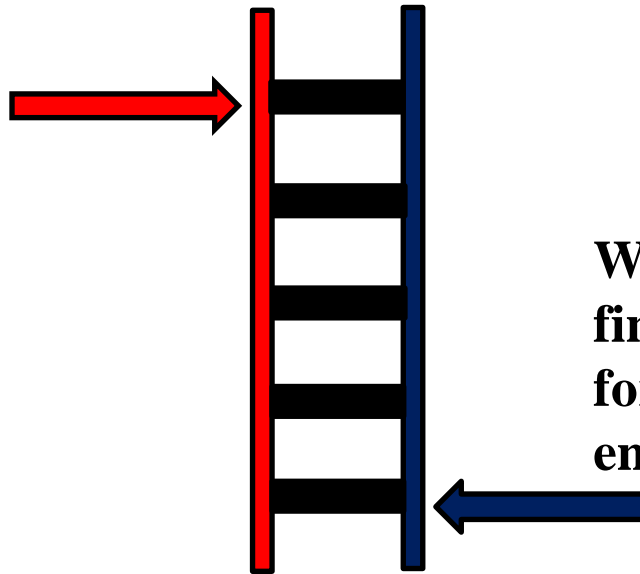
Is it possible to use only renewable resources?

We cannot change the way we produce energy drastically.

Is it possible to use only renewable resources?

We cannot change the way we produce energy drastically.

**We have to
reduce fossil
fuels'
consumption**



**We have to
find new
forms of
energy**

How to save energy?

Houses

We can produce our own energy with solar panels on the roof.

We can save energy by insulating our house so there is less energy loss.

E.g.: Fill wall cavities with foam
Double glazed windows



Big Industries

Hvdc

High Voltage Direct Current

Transport current as direct current and not as alternating one.



New forms of energy

Space-based solar power

Collecting solar power in space

