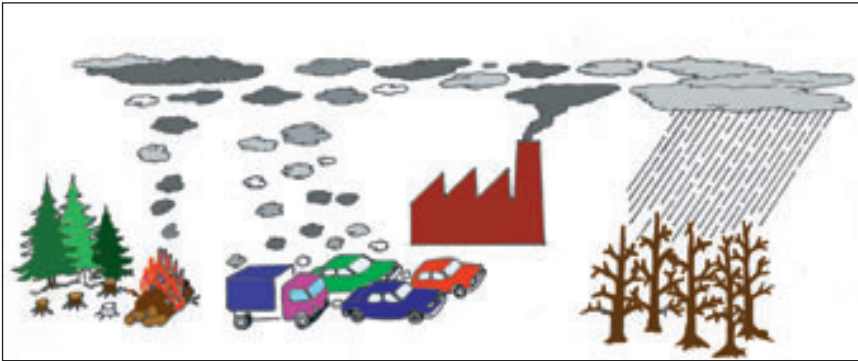




ENERGY AND THE ENVIRONMENT



Certain of the world's most acute environmental problems are tied up with the use of various energy sources (coal, oil, nuclear energy) to produce electricity, or to power various means of transport, such as all kinds of vehicles and aeroplanes, or factories, or for air-conditioning (heating or cooling).

Pollution caused by use of coal

Coal is used in many countries to produce electricity or artificial fuel. It is also used in industry or domestically. Burning coal dangerously pollutes the air; medical studies have established a rise in respiratory ailments in polluted areas.

Acid rain

Burning coal produces dust and particles in suspension, which are eliminated when electrostatic filters - also used to eliminate dust and combustible gas residue - are employed. If these gases are not purified to eliminate the carbon monoxide and nitric acid, they rise to the upper atmosphere, helped in this by high chimneys, where favourable conditions allow them to disperse and become less concentrated. Although such chimneys and other measures diminish the concentration of the pollutant at ground level, their effects plus the humid air in the upper atmosphere produce nitric acid (HN03) and acid rain is formed, usually falling far from the source of pollution which has caused it, harming forests, lakes, agricultural land, buildings, etc.

Luckily, coal is not used on a large scale in most Arab countries, because of the availability of more suitable substitute forms of energy.

Pollution caused by means of transport

Means of transport worsen the air pollution problem. They are the main cause of the atmospheric pollution (mist+smoke) found in towns with a large density of cars. This problem may be eased by enforcing the use of lead-free fuel and anti-pollution devices in cars, such as catalytic exhaust pipes, which guarantee a marked reduction in the fumes of carbon monoxide and nitric acid.

But most Arab countries have no legislation to impose the use of the above-mentioned measures.

Among the obviously beneficial procedures for reducing air pollution is developing public transport systems which represent an attractive alternative to private means of transport, especially in towns.

The disappearance of the forests

Many countries use wood as a source of energy. When the rate of deforestation is higher than that of new growth, the forests disappear. Also, the combustion capacity of wood is very low, insuffi-

cient for cooking and heating requirements. Its use can also worsen respiratory diseases. Average world-wide deforestation has been estimated at millions of hectares per year, for the production of energy, or to get cultivable land, or for urban growth.

The global warming phenomenon (rising temperature of the atmosphere)

The use of energy (of whatever source) has grown rapidly during this century, as a result of the industrial revolution in Europe and North America. The burning of coal, oil and wood has generated vast quantities of carbon dioxide (CO₂). This gas has the same effects as chloro-fluorocarbon since it lets short-wave light through but retains 'infrared' calorific radiation, thus intensifying energy around the earth, which then heats up (greenhouse effect). One probable harmful consequence of this phenomenon is the progressive warming up of the earth, causing enormous climatic changes and greater amounts of water in the seas and oceans as the polar ice melts.

The contribution made to the production of carbon dioxide by someone from the Arab world is tiny in comparison with someone in the industrialised countries. However, it is still true that industrial development and the promotion of means of transport have to bear in mind the demands and consequences of energy use.

Pollution caused by use of oil

The Arab world produces a great proportion of today's oil. Burning oil produces carbon dioxide, sulphur dioxide and nitric acid. Despite this massive production, most Arab oil is used in the industrialised countries, primarily in Japan, Europe and America. These countries are thus directly responsible for the pollution resulting from the consumption of this oil.

Pollution caused by use of nuclear energy

Nuclear energy is used to produce electricity. Atomic power produces dangerous radioactive matter which when stored causes real risks - leaking or infiltration during transport or stocking. Today,

nuclear waste is kept in water- and air-proof reservoirs, which are then buried underground in special places. But at present there are no long-term procedures for safe storage of nuclear waste, some of which is still dangerous after thousands of years.

This kind of energy source is not used in any Arab country because of the technical embargo to which they are subjected, and because they cannot develop nuclear energy by themselves.

Suggestions for discussion

1. As most Arab towns (a very few excepted) have neither a large population density nor a strong concentration of means of transport, is there a need to legislate for the use of lead-free petrol or catalytic exhaust pipes?

2. Bearing in mind the fact that the Arab world's contribution to air pollution and global warming is small, must the Arab countries commit themselves to making radical changes in their policies and institutions in tune with the norms in industrialised countries - past and present polluters ?

3. In view of the peaceful use of nuclear energy, the drying up of oil resources and the fresh water needs of the Arab countries, why not use nuclear energy for water desalination in the Arab world?

References : *Environmental Facts (5 - sustainable agriculture)*, published by a group of NGOs specialising in the environment.

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