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Environmental problems

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In recent decades environmental problems

have become globalized in terms of their exist-

ence and impacts as well as the socioeconomic

forces that generate them. After briefly noting

the growth of international awareness of envi-

ronmental problems, this entry examines first

the nature of environmental problems and their

global reach, then evidence that humans are

increasingly pushing against global ecological

constraints, next the global politico-economic

forces that generate and exacerbate ecological

degradation on a worldwide basis, and finally

ends with concluding remarks.

Humans have faced poor environmental

conditions throughout history, but what we

think of as environmental problems became

more common and apparent with industriali-

zation and urbanization. In the United States,

for example, air and water pollution from

factories and dense urban living conditions

attracted growing attention throughout the last

century, and by the 1960s became recognized

as significant problems. Concern over air and

water pollution rapidly spread to a range of

other conditions – soil erosion, pesticide con-

tamination, deforestation, declining animal

populations and species, and so on – through

the efforts of environmental scientists, activ-

ists, and policy-makers. These diverse con-

cerns gradually merged into environmental

problems (or environmental degradation),

and the 1970 Earth Day in the United States

and then the 1972 United Nations Conference

on the Human Environment in Stockholm

helped turn “environmental quality” into a

major international issue. By the time of the

United Nations Conference on Environment

and Development in Rio de Janeiro in 1992,

significant “Green Parties” had been formed

in Europe and environmental problems were

the subject of citizen and governmental atten-

tion worldwide (Dunlap et al. 1993; Frank

et al. 2000). Environmental problems, espe-

cially human-induced climate change, continue

to have a prominent place on the international

policy agenda.

“Environmental problems” is a ubiquitous

but vague concept, and we begin by clarify-

ing the nature of these problems and how they

emerge from human use of the environment by

employing some basic concepts from ecology.

Ecologists note that the environment provides

many “goods and services” for human beings

(de Groot et al. 2002), but we can simplify these

into three general functions that it performs

for human populations and all other species

(Dunlap & Catton 2002). First, the environ-

ment provides us with the resources necessary

for life, from clean air and water to food and

shelter, as well as the natural resources used in

industrial economies. In providing what ecolo-

gists term the “sustenance base” for human

societies, the environment is serving a “sup-

ply depot” function. It supplies us with both

renewable and non-renewable resources, and

overuse of the former (e.g., water) may result

in shortages and the latter (e.g., fossil fuels) in

potential scarcities.

Second, in the process of consuming

resources humans produce “waste” products;

indeed, we produce an enormously greater

quantity and variety of wastes than does any

other species. The environment must serve as

a “sink” or “waste repository” for these wastes,

either by absorbing or recycling them into use-

ful or at least harmless substances. When the

waste products (e.g., city sewage or factory

emissions) exceed the environment’s abil-

ity to absorb them, the result is water and air

pollution.

Finally, like all other species, humans must

also have a place to live, and the environment

provides our “habitat” – where we live, work

**Humans are increasingly influencing the climate and the earth's temperature by burning fossil fuels, cutting down rainforests and farming livestock.**

**This adds enormous amounts of greenhouse gases to those naturally occurring in the atmosphere, increasing the greenhouse effect and global warming.**

**Greenhouse gases**

Some gases in the Earth's atmosphere act a bit like the glass in a greenhouse, trapping the sun's heat and stopping it from leaking back into space.

Many of these gases occur naturally, but human activity is increasing the concentrations of some of them in the atmosphere, in particular:

* carbon dioxide (CO2)
* methane
* nitrous oxide
* fluorinated gases

**CO2** is the greenhouse gas most commonly produced by human activities and it is **responsible for 64% of man-made global warming**. Its concentration in the atmosphere is currently 40% higher than it was when industrialisation began.

**Other greenhouse gases** are emitted in smaller quantities, but they trap heat far more effectively than CO2, and in some cases are thousands of times stronger. **Methane**is responsible for 17% of man-made global warming, **nitrous oxide** for 6%.

**Causes for rising emissions**

* **Burning coal, oil and gas** produces carbon dioxide and nitrous oxide.
* **Cutting down forests (deforestation).**Trees help to regulate the climate by absorbing CO2 from the atmosphere. So when they are cut down, that beneficial effect is lost and the carbon stored in the trees is released into the atmosphere, adding to the greenhouse effect.
* **Increasing livestock farming.**Cows and sheep produce large amounts of methane when they digest their food.
* **Fertilisers containing nitrogen** produce nitrous oxide emissions.
* **Fluorinated gases** produce a very strong warming effect, up to 23 000 times greater than CO2. Thankfully these are released in smaller quantities and are being phased down by EU regulation.

**Global warming**



TThe current **global average temperature is 0.85ºC higher** than it was in the late 19th century. Each of the past three decades has been warmer than any preceding decade since records began in 1850.

The world's leading climate scientists think human activities are almost certainly the main cause of the warming observed since the middle of the 20th century.

An increase of 2°C compared to the temperature in pre-industrial times is seen by scientists as the threshold beyond which there is a much higher risk that dangerous and possibly catastrophic changes in the global environment will occur. For this reason, the international community has recognised the need to keep warming below 2°C.