Energy

The first scientific meaning for the word energy was elaborated within the discipline of Physics, and applies to the faculty that a body has to produce mechanical work.
In geography, the notion of energy is used in three main fields:
In its most commonly accepted meaning today, the notion of energy is likened to a resource used to meet human needs, and involves all the means that human societies have used to appropriate and transform natural elements. Energy is not limited to fossil resources, but constitutes the common denominator of all living things. Biologist H.T. Odum could therefore propose that an energetic value be assigned to all goods, which would be obtained by combining the potential energy of the object, increased by the energy resulting from the human effort required to put it at the disposal of the community. Over time, energy use has passed through different stages: domestication, stocking and the appropriation of fossil and renewable resources. During several millenia, human beings were content to use human power, as well as solar energy transformed into animal and vegetal species through photosynthesis. Depending on the manner in which energy is extracted and exploited, its impact on the environment varies considerably. This impact may be evaluated by means of balances of energy, which apply not only to fossil raw materials, but also to agriculture, which makes it possible to estimate the degree of efficiency in the way agrarian systems use the biomass.
In geophysics, the notion of energy applies to the forces that act on the functioning of the Earth's system. On a global scale, the Earth is considered as a system receiving solar energy that is then transformed into kinetic energy through the work of a number of natural motors, such as winds and atmospheric pressure. By the working of this global power, solar energy prevails in most natural processes taking place on the surface of the globe. The intensity of this initial flow is estimated by means of the radiation balance. Solar energy acts on climatic mechanisms and constitutes a key element in the operation of photosynthesis, and hence in the production of the biomass.
In addition, the Earth is energised by the internal forces of the globe, which result from the difference between the force of gravity and the centrifugal force of moving bodies. These forces cause internal material to move and flows to travel across the surface of the Earth.
The unequal distribution of energy on the Earth's surface generates latitudinal and longitudinal exchanges of energy between the different parts of the planet (marine streams, airstreams). On another scale, exchanges within a geo-system or trophic links within an ecosystem are also materialised in flows of energy and matter.
In the general systems theory, the concept of energy corresponds to the engine ensuring a sound working of the system, this engine being itself the result of interactions between the elements of the system in question. Hence each system identified as such has its own energy. Between the components of a system, there are energy flows that allow the system to maintain its organisation and its structure and to resist entropy. This power is activated by structural elements of the system that regulate it by means of information flows. Between a spatial configuration and the energy flows of a spatial system, there may exist some more or less durable discordances and lags.

See also :
Neolithisation

Bibliographie