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Organización  
de las Naciones Unidas  
para la Educación,  
la Ciencia y la Cultura

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## Ethics of science and technology

Cloning, genetically modified food and nanotechnologies are the result of advances of science and technology. They can be used for the benefit of humankind but at the same time they raise ethical questions.

**E**thics of science and technology is the principal priority of the Social and Human Sciences Sector. UNESCO, as the leading international organization in the area of ethics aims to meet the moral challenges that are presented by scientific and technological innovations. New developments demand that we as human communities are innovative and at the same time take appropriate action to make sure that scientific and technological advances will be used to benefit humankind.

The rapid advance of science and technology is fascinating and continuously challenging our imagination and expectations, but our understanding of the ethical implications must be developed at the same time. Science and technology on the other hand can also give rise to fears and risks. When considering technological risks related with the environment and human and animal health, not only scientific and technological uncertainties are at stake, but also socio-economic and ethical concerns. In order to address these uncertainties, a systematic and intensive ethical analysis, involving not only scientists but also policy-makers and the general public is needed. A more informed debate can establish a bridge between science and society, also providing a reliable basis for political decision-making.

### Science and ethics: major challenges

UNESCO's activities in ethics of science and technology seek to place scientific and technological progress in a context of ethical reflection that is rooted in the cultural, legal and philosophical heritage of the Member States. With the advice of the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST), UNESCO assists Member States to address the moral concerns in connection to science and technology through providing expertise in a number of areas of applied ethics, such as:



The Global Ethics Observatory provides data on ethics infrastructures in the Member States  
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- studies on environmental ethics and on clarification of the precautionary principle. They provide clear information and enable scientists and policy-makers to identify relevant ethical principles. Proposals are in development for a core curriculum in environmental ethics while existing programs have been collected in the database;
- studies on science ethics, in connection to possible misuse and dual use and in relation to existing codes of conduct for scientists;

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## The Global Ethics Observatory

In order to help Member States to build capacity in applied ethics, a system of databases is being created: the Global Ethics Observatory (GEObs). GEObs has worldwide coverage in bioethics and other areas of applied ethics in science and technology such as environmental ethics, science ethics and technology ethics. Designed to serve as a valuable reference, collaborative, consultative, and comparative resource hub of ethics activities around the world, it is freely accessible online to all Member States and the general public. Six databases will make up GEObs:

- Database of experts in applied ethics;
- Database of ethics institutions and committees;
- Database of teaching programmes;
- Database of relevant legislation;
- Database of codes of conduct;
- Database of resources in ethics (journals, textbooks, case material, videos and resources for ethics committees).

The databases are also intended to become a platform for supporting and advancing ethics activities by assisting Member States and other interested parties to identify experts, establish ethics committees, construct informed policies in the area of ethics and design ethics teaching curricula. In order to facilitate global accessibility, GEObs will be available in the six official languages of UNESCO: Arabic, Chinese, English, French, Russian, and Spanish.

- studies on the ethics of new and emerging technologies, such as space technologies and nanotechnologies in order to prepare policy-makers and the general public for future ethical debate;

- teaching of ethics, initiating and reinforcing educational activities and developing quality assessment systems in order to promote that young scientists and professionals are sufficiently trained in the ethical dimensions of their disciplines. Educational resources are published (such as a manual on *Informed Consent*). An ethics teacher training course will be organized for the first time in November 2006.

Scientists, philosophers, lawyers, engineers, education specialists, policy-makers, experts with the best reputation and expertise in their respective areas are regularly invited to assist UNESCO and COMEST in such efforts. They are helping UNESCO to identify the state-of-the-art, the significant issues and potential international needs and activities in each area. Their proposals and conclusions, in a subsequent stage, are object of international consultations, starting with intensive discussions in COMEST, leading to advices and recommendations that will be submitted to the UNESCO governing

bodies. The composition of these groups of experts takes into due account considerations of professional excellence, multi-disciplinarity, gender and regional distribution. The diversity of views is indeed the very *raison d'être* of COMEST. Any apparent difference between professionals with scientific training and those from a humanities or with philosophical background represents a healthy reflection of this diversity of views and an attempt to reconcile the different perspectives of scientific and philosophical approaches. Ethics of science will necessarily require intimate relationships with science itself, as expressed in a well-known adagium: "*Science without ethics is blind, ethics without science is empty*".

## Contact

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## To Find Out More

Social and Human Sciences Portal:  
[www.unesco.org/shs/ethics](http://www.unesco.org/shs/ethics)