



6 November 1987

**Address to the Study Week on the Subject
'A Modern Approach to the Protection of the Environment'**

The Pope declares that science 'must be directed solely to the good of humanity' and adds that science and technology must be governed by moral and ethical principles. He refers to the dangers to nature and to ecological balance caused by man's activities and calls for a worldwide effort to remove and remedy these dangers. In the use of genetic therapy 'extreme care must be taken to avoid endangering the physical integrity and the life of each individual'.

Dear Friends,

1. It is a distinct pleasure for me to welcome those taking part in the study week arranged by the Pontifical Academy of Sciences on the subject of 'A Modern Approach to the Protection of the Environment'. This topic merits most careful attention and is truly one of tremendous importance at the present moment in the history and development of our modern world.

Science is a human work and must be directed solely to the good of humanity. Technology, as the transfer of science to practical applications, must seek the good of humanity and never work against it. Therefore science and technology must be governed by ethical and moral principles.

Theory aimed only at profit has produced in the last century a technology that has not always respected the environment, that has led to situations causing great concern by reason of the irreversible damage done, both locally and worldwide.

Similarly, inadequate farming systems in many countries and the need for energy have continued to create very serious inroads on forest resources. The adverse effects on the environment can be corrected in the causes that produce them only by teaching people a new and respectful attitude towards the environment, an attitude that ensures the rational use of the natural resources which have to be preserved and passed on for the use of future generations.

2. Plans for the rational use of resources must include a harmonisation between nature and human settlements. This will be done through education and through planning which is gradual but which takes into account the enormous problem of poverty.

In 1983 the Academy of Sciences carried out a specific study of the damage done to the environment by the increase of carbon dioxide and by the reduction of the ozone layer. In developing countries – which are generally characterised by a hostile climate and adverse weather conditions – there is the acute problem of the destruction of the forests in the wet tropics and of desertification in the dry tropics, problems that threaten the feeding of the population. The findings of science must be put to use in order to ensure a high productivity of land in such a way that the local population can secure food and sustenance without destroying nature.

In the industrialised countries there is the worrying problem of waste products in gaseous, liquid, solid or radioactive form. Imprudent practices have caused very serious damage to nature. Uncontrolled discharges have resulted in acid rain, trace substances in the environment and the contamination of the seas, as for example the Mediterranean.

3. Many people have contributed to the effort to protect the environment, but the skill and good will of individual experts and scientists are not capable of solving the complex problem. Profound worldwide economic and moral changes must be dealt with at the level of groups of communities and governments, which must include interregional and international exchanges and agreements. Fundamental to this action is educating people about the environment and creating an attitude of understanding, respect, and genuine goodwill.

4. I wish to thank all those present here who have contributed their scientific knowledge and their enthusiasm. I likewise thank the representatives of international bodies such as the European Economic Community and the United Nations Environment Programme, whose headquarters in Nairobi I visited in 1985.

I also wish to thank the experts who last week concluded an important working meeting, developing reports and scientific discussions on 'Aspects of the Uses of Genetic Engineering': the production of drugs and vaccines, and the improvement of the nutritional situation especially on behalf of the developing countries. The prospects

of genetic therapy for treating diseases are likewise hopeful and deserve the commitment of science and the skill of those carrying out research. But in genetic therapy extreme care must be taken to avoid endangering the physical integrity and the life of each individual. About all, any attempt to alter, or danger of altering, the inviolable genetic identity of the human person must be stopped.

Finally, I send in advance my greetings and welcome to the scientists who will next week begin discussions on an important subject of modern astrophysics: 'Large Scale Motions in the Universe'. Twenty scientists will seek to increase our understanding of the degree of homogeneity in the universe on a broad scale, the distribution and nature of 'hidden mass', the question of whether the universe will continue to expand or is destined to fall into another 'singularity'.

May your efforts, individually in your particular fields of competence and as a body associated with the activities of the Pontifical Academy of Sciences, be crowned with every success, as you labour for the good of all humanity!