



LAUDATO SI'

CONGRESO INTERNACIONAL
DE ECOLOGÍA INTEGRAL Y MEDIO AMBIENTE

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— UCAM —

2.1 Environmental Engineering and Sustainable Development

2.1.1. Science and Technology for Atmospheric protection

Climate is a common good. Climate is our planet's answer to several effects such as: Earth's orbital conditions with respect to the Sun and other planets, solar and cosmic radiation level at some point and the Earth crust evolutions that affect to the gaseous layers that envelopes it. The real influence of the human activity on climate is subject of debate among the scientific community. But up to date, there is a scientific consensus very consistent which indicates that we found ourselves in a **disturbing warming of the climate system**. This change affects life here on Earth.

Our Pope's call on the encyclical letter "Laudato Si'", do intends to raise awareness about the special needs in reference **to make changes in our lifestyle, resource and energy consumption, energy production and,also, material goods consumption**, in order to make efforts to fight this global warming or, in some way, the human causes that generate or increase it.

The Session is focused in boosting awareness level through a more profound knowledge of the phenomena that provoke such warming, the standing position that, from Science, would be more accurate to maintain in everyday life, cities and economical system, as well as the impact over the ecosystems.

2.1.2. Science and Technology for Water protection

Apart from Air, Water is the main and natural resource that nurtures and sustains life in our planet. **Water resource protection to avoid its**

pollution and increase its availability will be the workhorse for future human generations. Today, water scarcity is the principal source of international conflicts, together with the energetic resources covered in the previous Session.

The Pope said that “drinkable and clean water is a matter of primary importance”. For this reason, now more than ever, Science and Technology and, especially in those environments in which Catholic may influence, play a decisive role concerning such protection. **Research areas aimed at prevention and correction of water contamination as well as efficient water treatments to make it drinkable must be a priority area** and may give viable results at the short term.

The Session must identify and establish a **strategic and coordinated action plan in terms of scientific and Technical research, as well as a real plan of communicate and disclosure findings to the general public** in order to decisively influence in lifestyle and consumption changes that allow water resources protection.

2.1.4 Smart Cities

Governments are fully aware of the importance of converging towards the Intelligent or Smart City.

Besides the urban development, the technological development is a necessary and powerful tool to solve many problems - pollution, safety/security, traffic, etc.-, in order to optimize the throughput of a wide range of basic services - transport, lighting, withdrawal of residues, supplies, etc.-, as well as to promote the deployment of new others - sustainable mobility, accessibility, civil participation, etc.

Every solution share at least two common objectives: saving energy and a efficient and responsible management of the resources.

Emerging technologies and systems like sensors networks, the Internet of the Things (IoT) or Big Data represent the basic structure of the future smart cities.

2.1.5 Green IT

The term " Green Information Technologies" (Green IT) does not represent any innovation, though it wakes an unusual interest up in the

last times. Its main aim is the reduction of the use of potentially harmful materials in the manufacturing of technology, in their recycling process and of the optimization of their energetic consumption. The really interesting thing is that actually, indeed, Green IT is a fantastic initiative that the companies can add to save money, time and to take care of the environment, on the basis of the reduction of the pollution, thanks to the reduction of CO₂ emissions as well as the materials to reject.

2.1.6 Ultra-energy-efficient vehicles

Nowadays there are a lot of students worldwide -vocational and secondary education, as well as university- that encouraged and tutored by their teachers try and get to develop vehicles and prototypes powered by clean energies, with the only purpose to drive the major distance with the minor combustible possible. It is not about speed, it is about energy efficiency. The Shell company is the main promoter of these competitions of ultra-energy efficient vehicles that bring to their young participants a valuable and unforgettable experience of learning (knowledge transfer), competence and friendship.

The technology and innovations incorporated by these prototypes are the base of the sustainable mobility of the future. Nevertheless, it seems that is still far away the moment when these fuels and technologies will be present at the automotion industry, in spite of the fact that there are just 100% ecological vehicles producers.

It is quite interesting to know the main challenges to reach the sustainable mobility, the most advanced technologies developed by manufacturers and the ultra-energy efficient prototypes teams, as well as the public policies related to these issues.