INOVATIVE TECHNIQUES FOR PROTECTION AGAINST DISASTERS CAUSED BY THE CLIMATIC CHANGES

IDEI Programe PNCDI-II, Project ID_596 (Contract No. 60/01.10.2007)

The actual climatic changes are one of the major problems of the century beginning. By the gravity of the implications, the climatic changes problem has become a main research theme for the science community members, including the Pentagon specialists. The scientifically reports shows that the climatic changes are caused mainly by human activities which inflicts the changes in the global composition and witch it adds the natural variability of the observed climate on a comparable period of time.

The board of this project asserts the fact that the global warming and the climatic changes are due to natural causes related to the toxic emissions due to the human activities. This opinion is not singularly among science community. Important institutes from the world among witch the Research centre for astrophysics from Harvard made public that the CO_2 parameters are not the main factor for the global warming. This means a climatic changes phenomena independent from human activity. It has to be showed that from scientific point of view, the climatic changes problem is still on a pre-paradigmatically stage. That means that more and more information appears from present and the close geological past, but is not enough. There are many theories, models and scenarios for the future but they contain many unknown elements and contradictory data. Also is doesn't has to be excluded that pollution due to the human activities is an aggravator factor of the climatic changes, but is not the case for emitting apocalyptic scenarios which produces panics and doesn't offer solid conclusions. The results can be extremely important, because the human efforts has to be directed towards finding new technologies, equipments, instruments and devices created to protect the population against disasters caused especially by the violent meteorological, hydrological and hydro geological manifestations and excessive increase of temperature.

This priority is in fact the thematic of the project with a deep interdisciplinary character structured on three stages:

1. Inventory of disasters caused by climatic changes; extreme meteorological phenomena and population protection techniques.

2. Dangerous hydrological and hydro geological phenomena and original protection techniques for population living in those areas.

3. Innovative techniques for obtaining the electrical energy need and reducing the effects of climatic changes by using unconventional energies.

Regarding the *extreme meteorological phenomena,* according to the available data for specialists, the climatic changes phenomena are cyclic phenomena, normal in the cosmic system. The researches will follow to identify original solutions to reduce the thermal stress on different hydro technical structures. Verification of building's thermal structure will be done through modern techniques based on infrared photometry by evaluating and interpreting the thermal gradient.

Also, solution will be found to diminish the effects of the eutrophication phenomena in water corps by applying new air techniques using unconventional energy. In the research will be used existing software in order to evaluate the influence of thermal gradient over the aquatic corps.

The increase of infrared radiations towards earth leads to intensifications of convective phenomena and thereby to development of cloud formations with great vertical size that will lead to strong rainfall. We think is necessary to complete the informational system of water management with warning installations based on new technology. We intend to patent measuring devices based on original solutions (sonorous rain gauge, installation for detecting clouds with big vertical development).

It will be analyzed the possibility of non-structural measures implementation and the proposed warning system in the informational system for fighting against disasters.

To protect the civil and industrial buildings and hydro technical construction will be conceived methods and instructions for population comportment in case of storms (in the conditions of increasing number of deaths due to lightning). The research board will analyze solutions for protection against electromagnetic pulses. Not last, solutions will be analyzed to project new types of buildings capable to resist at extreme phenomena (storms and tornadoes).

In case of floods the board intends to complete the information offered by risk maps will be done by placing sensors that could offer information in quick time over the evolution of water level so the population will be warned.

The researches will be completed with *innovative techniques for using unconventional energy* in order to reduce the consumption of electrical energy and obtaining clean energy, a main request of the European Commission Directives.

The new techniques are conforming to a proposal of the European Committee of banning the incandescent lamp because they transform in light only 5% of the consumed energy, being thereby totally inefficient. More so, the used economic light bulbs (fluorescent tubes and compact fluorescent light bulbs) have a continuous polluting electromagnetic field which affects the human life.

The board intends to patent new types of light bulbs that will emit white light based on semi conductive elements with high efficiency and low consumption. They can be used on public lightning, houses or room with human activities, the main power source being the solar energy converted in electrical energy by using photo voltaic panels. In order to increase the conversion efficiency systems will be realized by placing the panels perpendicularly to the Sun beams, as it moves on the sky.

As alternative sources of energy solutions will be proposed to convert the wind energy in electrical energy using units with air generators in vertical axe with important advantages especially in high wind and blasts.

For more information on the PN-II_596 project please visit the project site at:

http://www.hidromed.ro/ID_596.php

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