

DISCUSSION PAPER

on

Marcelo Alonso's

A SECURE FUTURE: A CHALLENGE FOR DEVELOPMENT

by

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The Seventeenth International Conference on the Unity of the Sciences
Los Angeles, California November 24-27, 1988

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Preliminary remarks on the paper:

"A secure energy future: a challenge for development"

of M. Alonso

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The inter-weaving of energy with world economics, geopolitics and social development constitutes a complex structure in a multidimensional space. Any cross-section, however carefully attempted, is liable to distort or even neglect important features, to the extent sometimes of leaving out the parameters most significant to the aspect one is attempting to focus on. Short term and long term views often give contradictory perceptions of what the problems are, if they can be clearly recognized at all. In many of the discussions on the energy crisis, one is reminded of the philosophy student that, after many explanations by a patient teacher of Zenon's sophism on the non existence of motion, threw up his hands in despair saying: "I understand the solution but not what the problem is".

In view of this, the presentation of Prof. Alonso is remarkable. Within the limited space that a paper for a meeting represents, he succeeds in transmitting in a very fluid manner the complexity and interdisciplinarity of the energy problem, and ultimately its global character. First, in a bird's eye overview, one aspect is touched upon just enough to record its importance and link it to the next one, and so on. Thus the challenge for

development brings together energy, population growth, urbanization trends, environmental concerns and social inequities. Key contrasts between industrialized countries (IC) and less developed countries (LDC) are set forth, leading then to a global energy scenario. The selection of elements and accompanying data in this global scenario is noteworthy for its insight in the problem, and its focusing on the determining factors. Thus the forest is not ignored for looking at particular trees, as is often the case.

First and foremost, population growth trends and the present energy consumption per capita in the LDC compared to the IC, show us clearly that the problem still resides fundamentally in making available much more energy, especially in the LDC. Conservation of the world energy resources per se would only create more inequities and thus, more social and political tensions. The needed increased energy production and consumption have to proceed in more rational and efficient ways, and on a more diversified basis, certainly, but face several structural constraints.

Oil cannot be easily substituted in many of its uses, such as the one in the transportation sector, that tends to be intensified by the trend towards urbanization. Substitution of gasoline by liquid fuels obtained from biomass, immediately raises the problem of the availability of land for energy crops vis-à-vis the need for food crops: thus this way is blocked for many countries, unless a global approach is taken.

Substitution of oil by coal, that is plentiful, in the generation of electricity and in industry, aggravates the environment problem unless existing but costly technical measures are implemented. The increase in cost that this implies, cannot be afforded at present by developing countries using coal intensively, like the Popular Republic of China (PROC)*. This shows that the compromise between energy and environment cannot be stated in absolute terms, valid for all countries. The standards of the IC cannot be easily transported to the LDC that still face food, basic health and low standard of living problems, to be coped with limited financial resources. Unless again, a global approach is taken.

* Here one can note a perceptible and original aspect of Dr. Alonso's global energy scenario. It is the singling out of the PROC as one important element by itself in the evolution of the world energy system, next to the rest of the LDC and of the IC.

Finally, it is noted that the non uniform availability of the resources limits large hydroelectric projects to certain countries, and that the size of the electric grid excludes the use of nucleoelectricity in others, unless one integrates multinational projects, or develops technological alternatives. This also applies to other renewable energy sources, like wind and solar, that are marginal respect to intensive energy production, unless scientific and technological breakthroughs are achieved. As a consequence, Prof. Alonso's paper clearly states that one basis element for a secure energy future is a concerted effort in research and development.

Thus an agenda for international energy research and development cooperation is certainly needed. The programs listed are all significative, and in some of them, like fusion reactors for example, there exists already strong cooperation between the IC. However, success in here, like in the other technological efforts carried out by the IC, will only widen the gap with the LDC, that have no participation in such projects.

For, what does development mean, in the context of the present and the coming century?

Whatever economic and social organization processes are taken as indicators of development -like for example those noted by the World Bank: economic growth, structural change, equity and social welfare, structural development (The World Bank, "Energy in Developing Countries", Washington, D.C. August 1980)-, a

fundamental element is still education. Indeed, in many instances, underdevelopment of a country is not the consequence of a lack of natural resources, but rather the lack of capability of its population to fully exploit them for its own benefit. Instead of being involved and beneficiary, this population becomes subordinated and even marginal.

The concept of education is not static. It evolves according to the development stage reached by a society and what it aims for. We can permanently speak of alphabetization. But this goes from simply learning the alphabet to enable us to read and write, to the humanistic, scientific and technological alphabetization of a modern society. Within the variety of aspects that the last part of the previous statement implies, a distinctive trait of the countries we consider advanced, is that their cultural baggage contains the technology to create technology.

Indeed, a crucial difference between the developing countries -even those already with a large industrial base-, and the advanced countries, is that the latter have the know-how to generate know-how. And unless the LDC can begin to acquire this basic skill, no true development will be ever achieved. This is to my view the main challenge for development.

A suitable international cooperation in research and development in the energy field, must thus try to assure the participation of the LDC in all stages of the process. This

includes the industrial based type of technological research and not only the basic research, to which they already have reasonable access through the acceptance of LDC scientist at the university and basic research programs of the IC. This aspect, under the present perceived interests by the IC, will be extremely difficult to achieve, but is the one area in which the ~~committees~~ ^{committees} of experts called for by Dr. Alonso would be invaluable, especially to convince the IC of the long range benefits of having other modern and prosperous societies to interact and trade with. Besides, as oriental wisdom has it, if you really want to help a starving man, rather than fish give him a fishing rod and teach him how to use it.