AFGAN, NAIM.

Discussion of the paper: A secure energy future - a challenge for development
M. Alonso

Mr. Chairman,

Its my privilege to be a disscuser of the paper A secure energy future: A challenge for development, presented by Prof. M.Alonso. It is an excelent paper giving very interesting picture of the present and future production and consumption of different energy sources. It gives emphasize on the energy problems in developing countries. Knowing Prof M.Alonso as the energy expert and ~~its~~ energy use in developing countries, its very difficult to add any new information relevant to the subject. But, If you will alow me, Mr. Chairman, I would like to try to enlight some aspect of energy problem which might be relevant the main subject of our committee.

As it was pointed out in the paper, its know, that energy consumption depend on the total national income and accordance with the available date there is different energy consumption per capita for every country. Analyzes have shown that countries could be grouped in tree different group in accordance with energy consumption per capita; namely:

I GROUP - 75% of all world countries or 72% of world population have consumption lower than 2 KWh/cap.

II GROUP - 22% of countries (all europian countries) or 22% of world population is with consumption between 2-7 KWh/cap.

III GROUP - 3% of countries (USA, Canda and Kuwayt) or 6% of world population consume more than 7 KWh/cap.

Its obvious that a largest group with the lowest energy consumption per capita include most of the developing countries. Their economic development has to be accompanied with respective energy consumption. As known, these countries with their low national income per capita, have a large populations rate growth independent of the current police of the population growth limitation.
In the near future its expected that increase in tne energy consumption in DC due to increase in population growth rate, will be expsplosiv. At the same time urbanization process will require new energy as a result of the increase in services needed in the urbane setlements and change the style of life, which

will accompany this growth. Finaly, its necessary to have in mind that industrialization process itself will have strong effect on the increase of energy demand in DC. (Fig 1)

When we talk about the energy development in DC, we have in mind economic and social structure change of individual country. This will require not only substancial energy demand increase, but also identification of energy sources needed for the accelerated economic development of DC. This means, that programing and expansion of those energy resources which will be required to enable accelerated economic development of D.C. Special attention have to be paid to the energy resources in DC. It exsists a general convection that DC are poor in hydro carbons fuels. This argument is based on the available information obtained as a result of limited capital invested in the energy resources prospection in DC. It is known, that recently there have been discovery of the substantional resources of hydro carbon fuel in DC. But, it has to be emphasized that these new energy resources are to small in comparison to need of these countries for their future development. If we add, that these countries have limited possibility in use of nuclear energy at the present technological level, then the third world countries , even theoreticaly will not have at the disposal so cooled convencional energy resource to satisfied a large energy need in the near future. Some academic people belives that renewable energy source, might be a realistic chanse for these countries. With this, we have in mind available hydro and bio mass potential. The first option, as its known will require high investment capital not available in DC and second option has to be carefully programmed in order to prevent devastation of biological potential in same regions causing a large range addverse effects.

Speaking about primary energy resources in DC it should be emphasized that present situation reflects past prospection police which has been mostly orientated to the teritory politicaly controlled by capital investors. Even, UN specialized organization haven't paid enough attention to this problem, so by available evidence thay have been only interested more in metal ore prospection and less to the primery energy resource. So, besides economic interest for the new primary energy resources in DC there is strong motivation those injoing benefits of presently available resources to release the pressure which will be developed in near future at the world energy market by DC. This pressure might be a result in the political disturbances of global scale. For this reason its necessary to emphasize importance of prospection technology transfer in DC.

Most of industrial developing countries belong to the second groupe. These countries endeavor to form its energy vector to be less dependent of those energy sources, which could be the subject of political perturbation. At the same time, these countries are faced increasing demand of the substitution of those energy sources showing its devestation.

In 1973 OECD countries have used about 2×10^9 tons of oil which is almost 53% of total energy consumption in those countries. About 68% of this oil consumption was imported from other countries and 85% of imported oil was from OPEC. In 1980 even with drastic fall of energy consumption OECD countries have been using $1,8 \times 10^9$ tons of oil or 50% of total primary energy sources. 60% of the oil was imported. Even dependence of OPEC is decreasing these countires are still importing 60% of its need from those countries.

The third group of countries by the energy consumption per capita are USA, Canada and Kuwayt. First and second are the most developed part of the world. These two countries are less sensitive to the market perturbation, because of their large indigenous energy resources and like others western countries these countries have used the energy crizes induced by the increase price in 1973 and 1979, to reconsider its energy consumption in order to find possible path for its racional use. This approach in USA has given a positive results in decreasing, which is the need for a new electric energy production capacity for about 10%. Effect of different energy structure options on the quality of life in industrialy developed countries have lead to the number social problems. Very often the source of these problems are coming out from the need of comparison of different opinions of the consequences and risks from the actions which effect couldn't been measured. These have developed insentive for social grouping with the general adverse effect on the further technology development. Some of these conflicting social grouping might lead to unpredictable behavior of the population. Good example for the these conflictes could be seen in the recent dispute growing in the press about green house effect. Recent diagram published in New York Times (June 24,1988) has shown global temperature change in the last hundred years (Fig. 1). It could be noticed that we are witnessing constant increase of global temperature. If it continue there will be disastrous effect in global scale. This is the one of the proof of the internationalization of the energy problem which has required multidisciplinary approach.

Second, examples which I would like to draw your attention relates to the nuclear energy. Without going deeper in this subject I would like you to read a following letter (Fig. 2).

In closing my remarks I would like to emphasize a following:

1.) DC will be facing high requirement of the primary energy sources in order to meet their economic development. One of the possible parth in solving this problem is to increase primary energy prospection in DC. In particulary, emphasize should be given to the technology transfer in the energy resource prospection technology in order to develope a many indigenous capobility in this field.

2.) Increase in the organic fuel use in the near future will lead to the global environmental adverse effect. Its very urgent to bring attention of all interested parties to take into a consideration potential consequences of those effects. Special attention should be paid to the interdisciplinary approach toting into a consideration social, scientific, technical and economic aspects.

3.) For a long time the nuclear energy with its controversy will be a challenge for the humen society to find appropriate approach to its safety and development of respective confidence in the society.

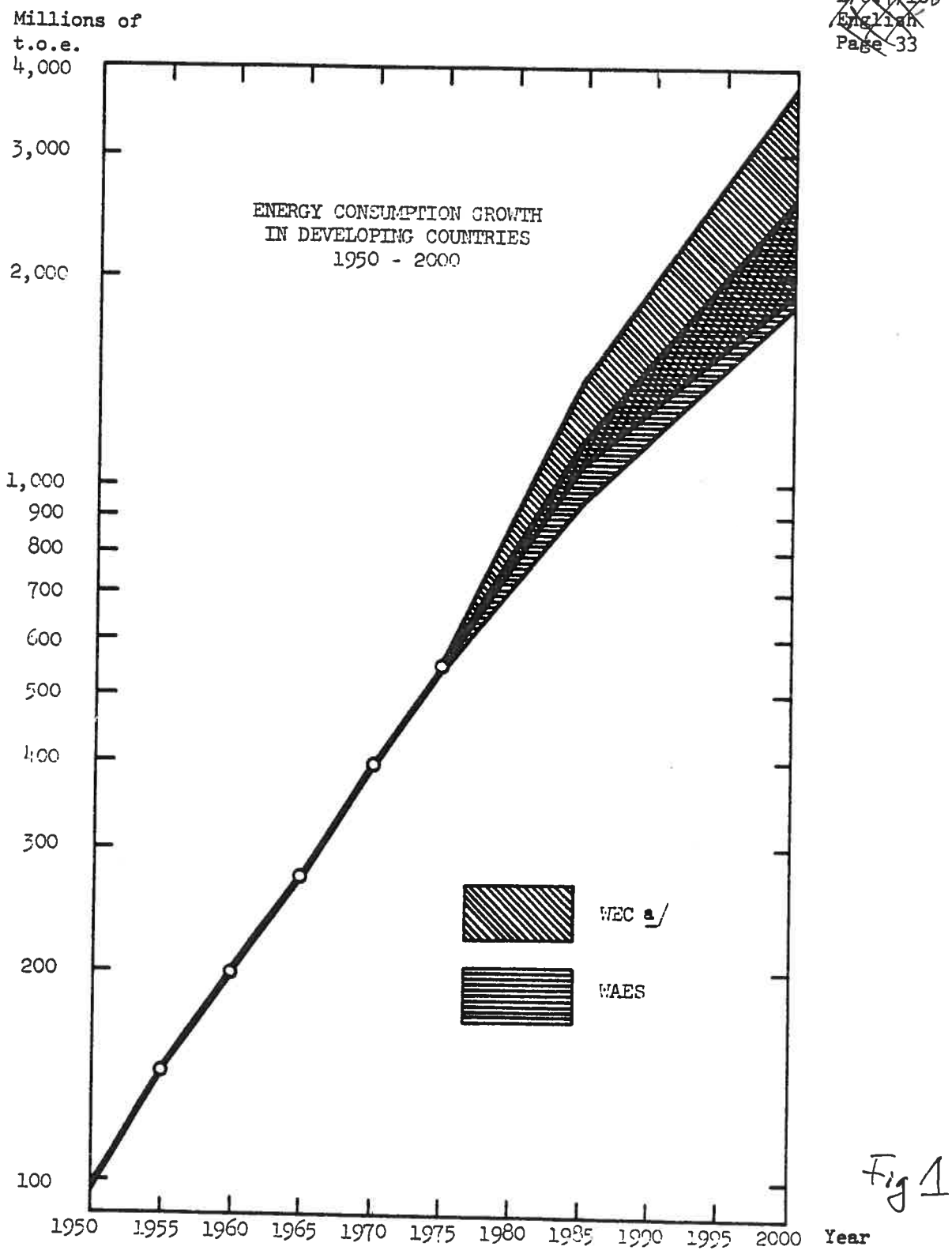

Fig 1

Source: Based on tables 1 and 3 and on World Energy Supplies 1950-1974 and World Energy Supplies 1972-1976 (United Nations publications, Sales Nos. E.76.XVII.5 and E.78.XVII.7).

a/ Consumption of wood which is assumed to remain constant at about 336 million t.o.e. has been excluded.

The New York Times

Global Warming Has Begun, Expert Tells Senate

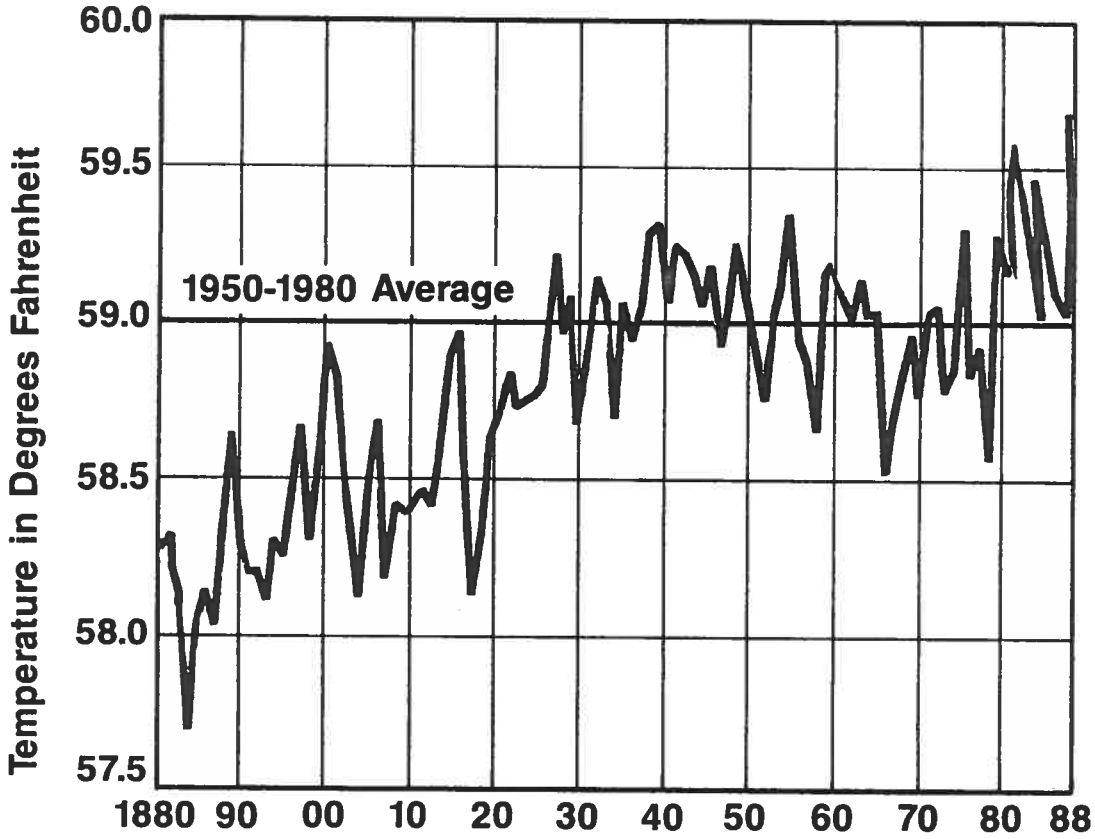

Figure 2

Global Warming: Greenhouse Effect?

Average global temperatures through the first five months of 1988. As a baseline, scientists use the global average from 1950 to 1980.

Source: James E. Hansen and Sergej Lebedeff
The New York Times/June 24, 1988

Japanese Mother Makes An Antinuclear Plea

To the Editor:

I am the mother of two children, concerned about their health. I fear the possibility of a nuclear power plant accident and want to stop the operation of all nuclear power plants in Japan. Thirty-six plants operate here.

Despite radiation leaks caused by pinholes, which has often happened, the ministry of international trade and industry is planning to extend maximum continuous operation of nuclear plants. The government and electric power companies, ignoring protests by residents, prepare to construct a nuclear fuel-reprocessing plant and a spent-fuel storage facility.

In Japan, more than 80 percent of the people are concerned about the dangers, but the news media hardly ever report on the antinuclear power movement. We have the appalling experience of Hiroshima and Nagasaki, but don't seem to care about radioactive contamination of food.

Nuclear power is not a problem of one country, but a matter for all the people of the world.

Fukushima, Japan, July 12, 1988

Figure 5