SUSTAINABLE DEVELOPMENT AND ENERGY

- Population is doubling itself every 40-50 years.

Demand on Energy is doubling every 30 years

Demand on Electricity is doubling every 10 years

Developing countries using more energy each year compare with the previous year to improve their lifestyle and situation.

- As example: in 1965 the ratio of energy consumption between developed and developing countries was 18. This ratio in 2006 is reduced to 4. We are heading for equal ratio in 2030 by then we need three times of our need of energy now.

- Excessive use of fossil fuels will continue for the next 10 years while Renewable Energy get adopted globally to replace some of their usage in many applications.

CO_2 in 1960 was 315 ppm, while in 2006 it reached 384 ppm. An increase of 22%. In 2007 so far reached 480 ppm.

An example must be sighted regarding the motor car use: In USA there are 173 m cars on the road while in Germany 60 m cars, UK 33 m and so on.

Air travel and CO_2 emission is 10 times worse than motor car travel. Again sighting an example: In 2006, JF Kennedy airport saw 100 m passengers passing through while Heathrow airport saw 62 m.

RENEWABLE ENERGY WILL MEET THE CHALLENGE: In 2100 WE EXPECT 90% of our energy need will be met from Renewable Energy, the prediction 70% will come from PHOTOVOLTAIC TECHNOLOGY.

DEVELOPING COUNTRIES – Not only have longer hours of sunshine but higher solar intensity as well. IT MAKES SENSE TO INVEST in Renewable Energy.

In 1973, was the first large scale conference at UNESCO in Paris “The Sun in the Service of Mankind”, I was one of the participants. My advice to developing countries was then, please use the SUN for your energy need, the answer I used to hear “ IF IT WAS GOOD” why the people at the west are not using it ?

Now the west is using it extensively and the gap between developed and developing countries is so big, the West is using billions of dollars to develop

and use Renewable Energy while most of the developing countries are watching only!

WHERE ARE WE NOW IN RENEWABLE ENERGY

- Hydroelectricity

Installed capacity: 700, 000 MW
Under construction: 150,000 MW
Potential can be developed: 1,500,000 MW

Other area is Marine Turbine Technology, Wave and Tide Energy which will be the focal main energy in 10-years from now. The largest project is in Portugal now with 2 MW capacity.

- Hydrogen and Fuel Cells:

Research and development in Hydrogen technology, fuel cells, biofuel and biodiesel resulted in many large scale demonstration projects where electricity generation and transport were achieved. Again millions of dollars are being spend by various developed countries governments and private companies aiming at healthy and low cost source of energy by 2030.

Geothemal Application

In heating and thermal application, more than 20,000 MWt is achieved, while more than 10,000 MWe of electricity is being generated from Geothermal sources.

Solar Thermal

Solar Water Heaters are used almost everywhere in the world. Isreal in 1962 saved 2% of their electricity by using water heaters. In the 15 EU countries, solar water heaters saving 60 Mtoe each year.

Power generation: several plants exists globally, 342 MW in USA, 11 MW in Spain, several 5MW in Europe, another 200 MW is being built in Spain and 200MW is being built in Australia by using Solar Chimney Concept.

China has more than 60 companies producing evacuated tubes for hot water. In 2005, the sale of theses tubes earned China more the 50 Million US $.

THE TWO AREAS which steered ahead where most advances are made in the Wind Energy and in the Photovoltaic Applications.

Wind Energy:

Europe is leading the way by having more than 45,000 MW installed, while globally there are more than 80, 000 MW installed capacity. Wind farms varying in sizes, from few MW to 576 MW in Spain. Machines are commercially available 1-3 MW rating. Cost is competitive with gas electricity.

Biomass & Biogas:
This area supply 15% of all world energy supply at present and suited for most rural area.

PHOTOVOLTAIC TECHNOLOGY

From industry we heard the story of Kyocera, started in 1959 with 28 persons and a capital of 30,000 US $, in 1998 employed 12,457 persons and generated 1,000,000,000 US $.
In 2006, the company sale was 11,814,000,000 US $ and employed 61,468 persons.

Shipment of PV in 2006 is reached 2600 MW, while installation is about 4000 MW.

Efficiency for crystalline silicon reached 22%. system cost is about 3US$/W and the largest system planned in Portugal is 62 MW, 8 MW in USA, 11 MW in Spain.
PV Company, the biggest production from one company is 500 MW per year.

PV can be used everywhere with more than 100 different applications from telecommunication to home electricity, traffic parking meters to space sat alight, from medical refrigeration to street lighting.

In China now there are 200 companies producing solar cells.

Mr Chairman, Gentle men, ladies:

RENEWABLE ENERGY IS OUR ENERGY TO SAVE OUR PLANET.

Thank you

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