

## **Energy for All**

We have all seen graphs showing how living standards are strongly linked to per capita energy consumption. It is no surprise that countries of the South, in their quest for economic development, are becoming avid consumers of energy. If they merely catch up to the world average, the energy use will triple by 2050. It will swell because of the continual increase of the world population and the rapid expansion of economies of populous countries such as China and India.

The successful model of economic development in front of the world is that of Europe and America which, for reasons of historical accident, was built on fossil fuels. If today's developing countries follow this same path, there will not be enough resources for all. It is not just that the oil is running out; it is also that if the present CO<sub>2</sub> emission of about 25,000 million tons a year is tripled, the world will be far less hospitable and even more unpredictable.

What is the role of industrialized countries? Without practicing alternatives, they cannot preach developing countries not to build dirty coal plants or make oil deals with questionable regimes. They have to take the lead in harnessing new technologies and assisting poorer parts of the world which are hungry for development. One should be aware that, while the running of engines on palm oil might limit pollution in Holland, the cost is the enormous deforestation in Indonesia which supplies the oil! This is no longer an altruistic luxury but a survival strategy: one cannot leave any part of the world too far behind and hope to do well in isolation.

No one doubts that there is an abundance of renewable energy but it is often characterized as peanuts, the principal issue being that it is too "retailed". The impact of any progress made will not be felt on the world at large unless that progress carries with it the major parts of the world population. The action needed is not just technology or money, but the mindset and politics. Finding solutions for an increasing number of problems will require sound policies, not science in isolation: ideally, what is needed is an effective cadre of people who are adept at policy-making and trained in the rigors of science.

The Abdus Salam International Centre for Theoretical Physics (ICTP) was created to support the building of scientific capacity, especially in developing countries. Its focus has been basic sciences but it has been concerned with energy from inception. In fact, the Centre's first long-term program focused on energy. The Centre has organized some 30 courses on renewable energy so far, in which some 2000 scientists worldwide have taken part. Through our Training and Research in Italian Laboratories ICTP has supported the work of some 400 foreign post-doctoral scientists in Italy on projects of renewable energy. They are now the prime movers of renewable energy projects in their own countries. We would be delighted to work on these problems with all willing partners.

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