

**IAEA Scientific Forum 2009**  
**“Energy for Development”**  
**Report to the 53<sup>rd</sup> General Conference**  
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Madam President, Director General, Distinguished Delegates

Without energy there is no development. For every aspect of development we need energy, be it nutrition, health care, education or the production of goods and services.

However, 1.6 billion people or one fourth of world population have no access to modern energy services provided by electricity. Although energy is not explicitly included among the Millennium Development Goals, there was general agreement that eradicating energy poverty is an essential prerequisite for achieving them. This will require working towards bold targets for access to modern energy services for all by 2030.

The Forum first identified key factors that hamper efforts to effectively tackle energy poverty. At the international level, work on energy is fragmented. The Director General proposes that this should be alleviated by establishing a global energy organization to focus on, among other possibilities: energy planning, technology transfer, R&D on technologies serving the energy needs of the poor and energy supplies in crisis situations. These international arrangements should be complemented by support to local energy initiatives based on local skills, technologies and material.

An important issue for framing the energy predicament is climate change. The responsibility of reducing greenhouse gas emissions has to be shared by everybody. Developing countries are most vulnerable and their best defence against the impacts of climate change will be development. Their contribution to greenhouse gas reductions is important for a successful global climate policy, but the financial burden should be carried by developed countries. This will require at least three internationally coordinated tasks: mobilizing contributions from developed countries, arranging distribution among developing countries and then channelling the resources

and monitoring accountability. The estimated requirement would be on the order of 1% of GDP of developed countries.

After identifying the energy-related impediments to development, the forum addressed the drivers shaping future energy demand, recognizing that it is energy services not energy or fuel per se that societies need for development. Demographic change - growth or decline, ageing population, shifting household sizes – and migration are key factors affecting the quantity and mix of energy services. While international development has traditionally focussed on energy poverty in rural areas, ongoing urbanization and access to urban amenities in rural areas are expected to broaden the challenge of providing energy access for all.

Another important driver of energy demand is infrastructure. Many developing countries are in the process of establishing or expanding their basic infrastructure (from settlement patterns and transportation infrastructure to buildings and industrial production facilities). Establishing infrastructures is an energy-intensive process in itself, and because of its longevity, its operation will considerably affect energy demand for decades to come. Hence, there is a chance and need for public policy to build the “right” infrastructure for development. Energy efficiency, especially at the level of energy end use, is a crucial factor for effective development. Pursuing energy efficiency has many benefits, ranging from the possibility to improve access to energy, enhance energy security and reduce reliance on imports to economic gains (like improving returns on rural investments) and health and education benefits.

The steadily growing demand for energy, as projected by the International Energy Agency, for example, will require huge investments, but enticing private capital will require institutional improvements, like reforms in the power sector. If done well, such reforms can improve the performance, service quality and thus the affordability of electricity for the poor, but in addition to the energy sector reforms, complementary measures are often needed, for example incentive schemes, subsidies or regulatory mandates to warrant equity. Energy production and use involve many negative environmental and social impacts called externalities. The external costs need to be assessed so that they can be incorporated in prices by adequate regulation, for example through pollution taxes or tradable permits. Despite pervasive uncertainties,

the scientific basis for assessing energy-related externalities is well-established but social aspects, especially ethical considerations, remain controversial.

Even with an accelerated implementation of energy efficiency, low energy-intensive infrastructures and life style changes, global energy demand is set to rise, especially when the currently 1.6 billion unconnected people begin to enjoy modern energy services.

After demand, the deliberations turned to energy supply. Though in the next few decades the world will not be running out of any of the energy resources, time has come to plan for an optimized use of energy resources to achieve a long-term sustainability. With fossil fuel reserve being depleted and with the pressing need to reduce greenhouse gas emissions, we must increase the share of nuclear and renewable energy in the world's energy mix. Fossil and fissile energy resources in the earth's crust are sufficient for providing energy for a few centuries. But utilization of these resources for providing energy services to all requires timely investments in exploration, mining and energy production capacities.

Despite several advantages of renewable energy, namely, energy security and reduced price volatility, for example, only a small portion of their technical potential is now used due to intermittency, large space requirements and other challenges. Funding is needed for research and development (R&D) to improve the technologies for harnessing renewable energy sources and innovative financing arrangements are required to increase their contribution to the energy mix.

Fossil fuels will continue to provide the largest share of global energy needs in the next few decades. The main benefits of cleaner fossil technologies, especially complemented with carbon capture and storage (CCS) include stretching the available energy reserves, keeping fossil fuels in the energy mix and thereby increasing energy security and reducing local air pollution and greenhouse gas emission. Nuclear energy has a good prospect for playing a larger role in the global energy supply due to progress being made on safety, economics, waste management and proliferation resistance in the current and future reactor technologies and fuel cycles. Biofuels might also become an increasingly important element of energy supply but thorough assessments and policies will be required to avoid conflicts with food security targets due to increasing competition for land and the associated higher agricultural prices.

Key areas for technology development and innovation on the supply side include, but are not limited to

1. The adoption of closed nuclear fuel cycles and thorium utilization for full utilization of fissile and fertile nuclear materials;
2. The development of suitable technologies for managing CO<sub>2</sub> from fossil fuel and for nuclear waste; and
3. Further development of renewable technologies.

The Scientific Forum closed with several variations on the DG's opening proposal for a new global energy organization. UNIDO Director General Kandeh Yumkella suggested several immediate fora to advance the idea and to discuss specific mechanisms, including an expanded role of UN-Energy, the use of the Vienna based international energy organizations as an international hub, and building on the 2009 Vienna International Energy Conference.

André Mernier, Secretary General of the Energy Charter Treaty (ECT), reported on prospective new Charter members from the Middle East and suggested further extension to Africa to help aggregate small markets and establish norms attractive to investors. A proposal for a global energy agency focussed on oil and gas to contain oil market price volatility within negotiated band widths was also discussed.

In summary, there was a general consensus that crafting robust national energy strategies is a prerequisite for reducing energy poverty and charting sustainable energy development. The planning tools and capacity building provided by IAEA are an important contribution towards this objective but much more is needed. The session concluded that there was indeed a need for an International Energy Organization that would address development-energy challenges by searching for technology solutions, elaborating policy frameworks and monitoring implementation. An important task would be fostering relevant international treaties that bring together resource rich and resource poor, developing and developed countries.