

Science and Education as a Key to Development

Mr. Chairman,
Your Excellency,
Distinguished Participants,
Ladies and Gentlemen,

As the head of UNESCO delegation participating in this "Science Forum on Research, Development and Education – the Basis for Wide-spread Employment of Renewable Energies", let me first say how pleased I am to take part in this Opening Session of this Forum.

We live in the age of the "knowledge-based society" where knowledge plays an increasingly important role in sustainable social and economic development. Science and education is an essential and interlinked key to this very development.

Knowledge relates essentially to science and technology, and education and training are vital in networking and the transmission of knowledge to build capacity – so that knowledge can be applied where it is needed. For UNESCO, this includes a priority focus on the developing and least developed countries. For UNESCO, this also includes a focus on applications in science and technology – and this includes, importantly, energy and renewable energy.

The development of science and technology has brought tremendous changes to our lives. The exploration of outer space, the development of conventional, nuclear and now renewable energy technologies, the invention of electronic computers and a range of other innovations mark an epoch in the history of civilization. One is often tempted to ponder how many new discoveries and innovations are in the pipeline, and how they will affect our lives over the next few decades!

It is hard to imagine what our lives would have been like without all the benefits which scientific knowledge and engineering skill have given us. The crucial point here, of course, relates to

access, as these benefits are unevenly distributed – there are millions of people who do not have such access to these benefits of science and technology, who live in poverty and destitution. This presents an ongoing overall challenge for research, development and education in science and technology, particularly in such an area as energy – where access is very unevenly distributed.



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Strategy for Sustainability

The World Summit on Sustainable Development and the United Nations' Millennium Development Goals place the promotion of sustainable development and renewable energies high on the international agenda. In line with UNESCO's Medium-Term Strategy and our contribution to sustainable energy and development, UNESCO will continue to advocate for energy efficiency, diversification and renewable energy. This includes capacity-building, development of human and institutional resources, awareness raising and prioritising the use of renewable energies and provision of related policy advice. There is an emphasis on improving the living conditions in rural areas of poor countries, especially in the developing countries and small island states.

Within the Global Renewable Energy Education and Training (GREET) Programme and its regional component, with particular emphasis on its African Chapter, we emphasise capacity building and development of co-operation in the renewable energy sector to promote renewable energies. Activities focus on the improvement of use, maintenance and management of solar energy projects and programmes, and transfer of technological know-how.

This involves the design and field implementation of training platforms, the elaboration and dissemination of learning and teaching materials,

introduction of training programmes at all educational levels, setting of educational standards and certification of centres of excellence to serve as a catalyst. Concurrently, support is given to the definition of national energy strategies and experimentation of pilot projects focused on development goals. We also foster advocacy and awareness-raising to stimulate the use of renewable energies to meet the Millennium Development Goals and to improve living conditions in rural areas. Further extra-budgetary resources need to be mobilised to extend the scope of activities.

The promotion of renewable energies to address developmental goals will be pursued in association with UNESCO programmes in the Natural Sciences, Education, Social and Human Sciences, Communication and Information Sectors, and with intergovernmental programmes at UNESCO. Consultations with relevant and competent United Nations agencies and programmes will continue, including participation in the United Nations Ad hoc Inter-Agency Task Force on Energy and cooperation with competent national, regional and international NGOs.

Raising Awareness

UNESCO has contributed to the World Solar Programme in raising awareness on potential and opportunities for utilization of renewable energy. Projects implemented in this activity have created awareness at political and in particular government levels. The Honduran government, for example, used the Solar Village Demonstration Project to source funding for more solar village projects. Electrification of schools has provided a linkage between education and energy. Children have become aware of benefits of solar energy applications. The project has contributed to broaden children's knowledge through exposure to new educational technologies using computers, providing access to information, and communication via the internet.

Through such projects, rural business operators have realized opportunities to extend their business operating hours by using solar energy

for lighting. The Honduran project has also contributed to raising awareness of the people in the community about the opportunities in micro-enterprises through television and via internet. Solar village electrification has also contributed to raising awareness on HIV/AIDS through public media such as television.

Capacity Building

Capacity building in renewable energies through implementation of education and training activities is the main focus of the GREET Programme. These activities have focused on the organisation of summer schools, training of trainers and implementation of the Renewable Energy Training Platform. Training activities aim at enhancing knowledge of managers, engineers, technicians and trainers on use, application and maintenance of renewable energy technologies.

Learning and teaching materials produced within the GREET programme serve as a tool to assist in teaching courses on renewable energy in universities and also as a reference material for the scientific community. The Renewable Energy Training Platform to enhance local capacity and expertise in renewable energy use and applications will be duplicated and implemented in other countries and regions to develop and enhance local capacity building on the use and maintenance of renewable energy systems. This will improve the implementation of renewable energy projects and contribute to their sustainability.

Through the GREET Programme, a series of books for use in primary schools has been developed for incorporation into the school curriculum for English speaking countries in Africa. This material has contributed to enhancing knowledge on renewable energy systems. A series of text books, composed of six volumes, has been produced and distributed through the Ministries of Education in 14 Southern African countries. This links to UNESCO's wider activity under the New Partnership for Africa's Development (NEPAD) and cooperation with the African Union in science and technology.

UNESCO has also cooperated with Wiley Publications in the production of a "UNESCO Energy Engineering Series" of learning packages. This series includes, amongst others, titles on Solar Electricity, Geothermal Energy, Electric Power Generation, and Energy Planning and Policy.

This series has been most successful, with some titles already in second edition. Most recently, we have updated and republished the volume on Geothermal Energy and published a new volume on Solar Detoxification and two related volumes on Solar Photovoltaic Systems and Project Development. We have also produced a video and booklet entitled "Rays of Hope: Renewable Energy in the Pacific" – which examines the pioneering use of renewable energy in the Pacific islands.

Mr. Chairman,
Ladies and gentlemen,

Let me conclude by noting again the overall importance of research and development, education and training in the knowledge-based society and economy. This is particularly important in promoting the development and widespread employment of renewable energies.

I mentioned at the beginning that knowledge relates essentially to science and technology, and education and training are vital in networking and the transmission of knowledge to build capacity – so that knowledge can be applied where it is needed.

To do this, it is essential to create linkages, to develop and share models and information, learning and teaching materials. This is what has happened at the solar school project facilitating internet access in Honduras, and the solar village project raising awareness on HIV/AIDS in Zimbabwe.

I also mentioned at the beginning that we need to promote access to the benefits of science and technology for the millions of people who live in poverty. It is no small irony that our planet receives enormous quantities of solar energy and that much of this energy falls on

developing countries, where many poor people live.

We face a vital challenge to enhance our efforts to focus research, education and training on renewable energy for the benefit of developing countries. Promoting access to energy and the benefits of science and technology is a vital dimension for poverty reduction in developing and least developed countries.

Finally, let me say that, together with my colleagues from UNESCO, I look forward to the outcome of your discussions and hope that the Forum will succeed in laying the foundation and taking further actions that will result in a major drive to improve the world energy situation in this millennium.

I wish you every success in your important deliberations and look forward to the results of your presentations and discussions.

Thank you.