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Preparations for the World Summit on Sustainable Development

Energy was a key concern among delegations, NGOs and other participants at the Fourth Preparatory Committee for the World Summit on Sustainable Development held in Bali, Indonesia 27 May-7 June 2002, in negotiating sessions, side events and "in-the-margin" discussions.

As a primary venue for negotiating the WSSD Plan of Implementation, the "Prepcom" considered energy and sustainable development along with many other issues including consumption and production patterns, natural resources, finance, trade, and globalization. For many issues, including energy, small negotiation groups were formed to assist the process. The energy contact group was facilitated by the delegation from Argentina and met in a number of marathon sessions. Agreement was reached on many energy-related issues including financial resources, energy efficiency, advanced energy technologies, renewable energy, the reduction of natural gas flaring, research and development, networks of centres of excellence and the reduction of market distortion as well as on international and regional cooperation and dialogue between energy producers and consumers. Issues still pending include energy subsidies, targets and timetables and public/private partnerships, and negotiations are expected to continue before and/or at the Summit.

Guide for Potential Partnerships

The Fourth Prepcom also provided the opportunity for participants to become familiar with work undertaken by the United Nations to facilitate partnerships in the area of energy. In response to numerous queries addressed to the WSSD Secretariat, by various stakeholders interested in energy partnerships and seeking guidance in this area, a paper entitled "Guide for Potential Partnerships on Energy for Sustainable Development" was submitted and made available to all participants. The main purpose of this paper is to illuminate the existing context for such efforts, as well as indicates possible types of useful action. The Guide draws upon existing international agreements and highlights certain desirable goals and

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Towards Cleaner Fuels: A WSSD Partnership

A World Summit for Sustainable Development Partnership Toward Cleaner Fuels is expected to be announced during the first week of the Summit in Johannesburg by the International Fuel Quality Center (IFQC), the United Nations Environment Programme (UNEP) and the United Nations Department of Economic and Social Affairs (DESA). The Partnership Toward Cleaner Fuels addresses transport-related air pollution which is a significant problem in developed and, increasingly, in developing countries, especially for many of the world's emerging urban centres. In Latin America, for example, vehicle-related air pollution accounts for 70% of air pollution in its megacities.

Many countries, often with the assistance of international organizations and NGOs, have undertaken steps to address this problem by developing plans and programmes to curb air pollution, including efforts to eliminate lead from gasoline, and introducing urban transport schemes placing emphasis on mass transit and improved land planning. However, the essential role of fuel quality has been, if not overlooked, at least not yet fully realized in these programmes. Furthermore, the integration of fuel and vehicle policies is imperative to ensure successful and cost-effective implementation of programmes that will result in improvements to air quality.

The international community addressed this problem at the ninth session of the Commission on Sustainable Development held in April 2001, and it recommended that efforts be undertaken to promote the use of cleaner fuels and specifically pointed to the need to reduce sulphur and benzene, as well as eliminate lead from gasoline. The United Nations has undertaken activities to promote these goals including those in cooperation with various industry groups, NGOs, research institutions and universities. The International Fuel Quality Center (IFCQ) comprises private sector firms engaged in vehicle manufacturing and fuel-refining and has access to the expertise needed for improving fuel quality and eliminating lead from gasoline.

This partnership would assist developing countries in achieving transport

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Passive Solar Housing for Somalia

As part of the post-conflict reconstruction effort in Somalia, the Energy and Transport Branch launched an Italian Government funded project to transfer the techniques of brick and tile production and dome and vault roof construction to northern Somalia. The CC Horn of Africa, an NGO active in Somalia and with offices in New York was selected to implement the field component of the project. Actual implementation started in January 2001. The project is a pilot effort designed to bring the cost of housing within the reach of returning refugees, internally displaced persons and the urban poor, and to improve the climatic conditions in dwellings by providing a passive solar energy alternative to imported corrugated metal roofing, which becomes excessively hot in the sun.

The project is located in Burao, the administrative center of the Togdheer region in northwestern Somalia (locally referred to Somaliland). This area was selected because it had experienced the most severe war devastation with more than 50 % of all housing and buildings destroyed or damaged beyond repair. With the return of peace and political stability, a major concern is housing the population, especially the huge numbers of returning refugees and persons internally displaced by the conflict.

The major components of the project comprise a kiln for firing bricks and tiles, a nursery and plantation for the fuelwood needed to fire the kiln, equipment for brick making and the training of masons in the design and construction of vault and dome buildings. The training consisted of two components: training in brick making including selection of the appropriate mix of clay and sands and the organization of brick and tile production. Mr. Adel Fahmy of Egypt provided the second component of the training based on the techniques revived and disseminated by the late Professor Hassan Fathy. These designs involve the use of sun-dried mud bricks to construct buildings of all sizes with dome and vault roofs, and the use of architectural forms that make use of the natural thermodynamic properties of the bricks and the energy of the sun and wind to provide a comfortable internal environment for the building's occupants. While these techniques are very ancient, they are based on sound scientific principles as described in Professor Fathy's book on "Natural Energy and Vernacular Architecture" (University of Chicago Press and UNU Press, 1986). In adapting these techniques to the local situation, Mr. Fahmy modeled his design for the smaller housing units after the traditional nomadic dwellings of northern Somalia.

A Completed Model Unit in Burao, Somalia

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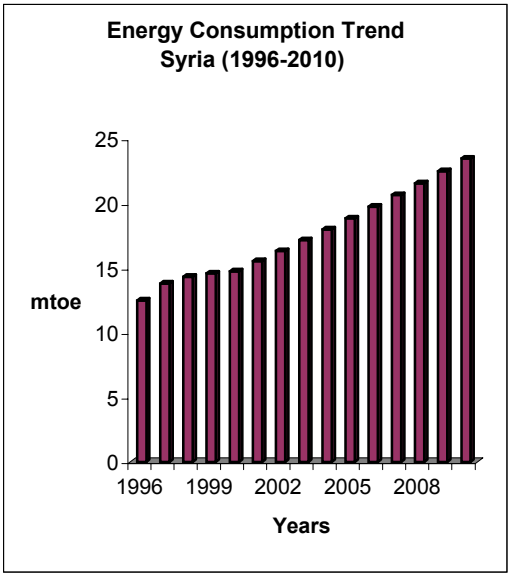
Renewable Energy Development in Syria

At the request of the Government of Syria, a project was undertaken by the Energy and Transport Branch (ETB) of the United Nations Department of Economic and Social Affairs, with the financial support of UNDP through its Syria Country Office, to formulate a comprehensive national master plan for the development of renewable energy sources and relevant applications. Progressively increasing the contribution from these sources to the total energy mix can help in addressing the goals of sustainable development. Proposals that have been developed include a 10-year development plan, as well as several accompanying measures covering policies and institutional arrangements for strengthening the capacities needed to translate these plans into concrete actions.

Syria is well endowed with fossil fuel as well as renewable energy resources. There are significant reserves of natural gas and a large reserve of oil. Currently oil makes the largest contribution to the primary energy supply, followed by gaseous fuels. The share of oil in the energy mix has been declining steadily, which is being replaced by gaseous fuels as a result of a national strategy. Although Syrian energy consumption is not large, it is higher than the regional and continental average in per capita and GDP terms. The same can be said about Syrian greenhouse gas (GHG) emissions, which are higher than the regional and global levels in terms of GDP. These GHG emissions especially from energy use are projected to increase significantly in the coming years. For Syria to move towards greater sustainability, future energy developments must reduce expected GHG emissions, some of which may be achieved through the use of renewable energy technologies.



The purpose of the Syria National Renewable Energy Master Plan is to induce an increasing contribution from renewable sources of energy in the national energy balance thereby reducing dependence on conventional energy sources and leading to environmentally sound, sustainable development. The Syrian renewable energy industry is in the early stages of development but capacity exists in solar hot water, photovoltaics and wind energy manufacturing.

The draft master plan identifies application areas where renewable energy can make a significant contribution. Renewable energy activities currently underway in Syria are on a small scale and therefore are unable to make an impact. Proposals have therefore been worked out, based on existing data and information, for a realistically achievable level of development of renewable energy resources through planned efforts. The master plan reviews the institutional arrangements in the country to set the stage for new institutional arrangements that are proposed.

The master plan consists of two main components: the Energy Development Plan and Accompanying Measures Plan. While the energy development plan consists of developments in wind, bioenergy, solar, hydro and hybrid energy systems that directly contribute to increasing the share of renewable energy in the primary energy supply, accompanying measures consist of studies, capacity building, promotional and institutional development efforts that facilitate the energy developments. The planning horizon is from 2002 to 2011 and activity descriptions, plans, cost implications, sources of finance, benefits and alternatives are provided.

Plans and proposals are based on scenarios that rely on a set of assumptions regarding levels of the renewable energy contribution to the total energy supply that can be aimed for in a period of 10 years. These proposals cover research and development and demonstration and operational projects. An estimate of the resources required to accomplish the tasks involved and to achieve the objectives of the proposals is also given. Various barriers in the policy, institutional and financing areas that will have to be removed for achieving the goals are also identified.

The proposals concerning institutional development comprise the establishment of :

- An apex body for overall direction and coordination such as a government department or Council or Authority
- A Renewable Energy Finance Corporation
- A Syrian Renewable Energy Industry Association
- A consumer's Association

The draft master plan was completed by the ETB working in close cooperation with national authorities and with the help of national and international consultants. Syria is planning an event to disseminate the contents of the master plan to all relevant organizations in the country.

WSSD continued...

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indicative targets that can serve to focus major activities relating to energy for sustainable development. The Guide attempts to provide a broad framework for partnerships, giving five examples of major partnerships in other fields such as the Consultative Group on International Agricultural Research (CGIAR), the Global Water Partnership (GWP), the Global Alliance for Vaccines and Immunization (GAVI), the UN Information and Communications Technologies Task Force (ICT Task Force), the United Nations Foundation (UNF) and the Global Initiative on Transport Initiatives (GITE).

The Guide is the result of the UN-sponsored "Working Group on Partnerships Related to Energy for Sustainable Development" held in New York to develop a framework for WSSD partnerships on energy. Participants included energy experts as well as representatives of UN agencies and programmes. The paper was presented to the contact group on energy and generated lively discussions during the Prepcom.

Beijing Forum

A United Nations Forum on New and Emerging Technologies and Sustainable Development was held in Beijing, China, from 15 to 17 April 2002. It was attended by representatives of Governments, business and industry, academia and professional institutions from various countries around the world. The Forum was opened by Madame Deng Nan, Vice Minister of the Ministry of Science and Technology of the People's Republic of China, and Mr. Nitin Desai, United Nations Under-Secretary- General for Economic and Social Affairs and Secretary-General of the World Summit on Sustainable Development.

The principal objectives of the Beijing Forum were to bring business and science representatives together to survey new and emerging technologies and their uses for sustainable development and to encourage them to explore ways and means to permit developing countries to acquire, develop and apply the new technologies needed for sustainable development.

In this age of globalization, rapid advances are being made in such fields as information, telecommunications, clean environment, energy, health, materials, and transportation technologies, as well as biotechnology, electronics and nanotechnology - the new and emerging technologies (NETs). These new scientific and technological advances and their applications are imposing a new social and ethical responsibility on the scientific and technological community to direct their application of these new developments in ways that strengthen efforts for achieving the goals of sustainable development.

As spelled out in Agenda 21, achieving the goals of sustainable development, requires the application of science and environmentally sound technologies to eliminating poverty and sustaining economic development, advancing social priorities, and protecting the environment. In order for developing countries to meet their sustainable development goals, they must have access to environmentally sound technologies, which requires technology transfer, technical cooperation and a scientific and technological capacity to participate in the development and adaptation of these technologies to local conditions.

The Forum recognized that the current North-South gap in the generation of NETs and their application to practical problems constitutes a "technological divide" that must be bridged. In an effort to identify more effective ways of ensuring technology transfer and the strengthening of scientific and technological capacity, the Forum focused on partnerships between the scientific and technological community and the international business community.

The Beijing Forum produced a framework document on this subject, the Beijing Communiqué, which was submitted to the Fourth Preparatory Committee for the World Summit on Sustainable Development held in Bali, Indonesia, from 27 May to 7 June 2002.

The Communiqué notes that, where human, institutional, infrastructural and/or managerial capacities need strengthening, private corporations should consider supporting the strengthening of these capacities as a long-term investment for both local capacities and markets. Like the scientific and technological community, the international business community has a responsibility to direct more of its activities toward achieving the goals of sustainable development, especially to reducing material and energy inputs, and waste emissions, and to contributing to improving the economic and social conditions in developing countries through poverty reduction and providing opportunities for entry into the global economy. The vehicles for business-science partnerships range from direct foreign investment of venture capital, through joint ventures, to the establishment of major research and development, and manufacturing facilities.

Among the many new vistas for purposeful cooperation between the science and technological, and business communities, the Communiqué calls for exploring the possibility of establishing an international science park devoted to NETs, acting as a focal point for an international network of science parks for sustainable development. In addition to providing space for business and production, the science park could house centres for research, innovation and incubation, training, and forecasting, as well as facilities for fairs, exhibitions and market development through popularization. Some of the science parks could seek strengths in certain technological areas, such as biotechnology, and others could address the set of problems that arid or mountainous regions or remote oceanic islands.

Sustainable Transport Planning: Car Free Days

Logo of the Bogotá CFD

As part of the ground level preparation for the World Summit on Sustainable Development, the United Nations Department of Economic and Social Affairs (DESA), Division for Sustainable Development, through its joint Global Initiative on Transport Emissions with the World Bank, started the UN Car Free Day (CFD) series as a way of promoting sustainable transport. The series includes Car Free Days and Regional Practicums for Mayors in Bogotá, Colombia, Fremantle, Australia, and Bilbao, Spain. Partners include a wide range of stakeholders including Governments, NGOs, and the private sector.

Bogotá, Colombia

The Colombian Car Free Day was held on Thursday, 7 February 2002. The cities of Bogotá, Chia, Cali, and Valledupar closed all of their streets to private vehicles for the entire day, and over 10 million citizens used public or alternative modes of transport to commute to work and go about their daily activities. UNDESA invited Mayors and city officials from 24 Latin American cities, including all capital cities, to come to Bogotá to experience the CFD and discuss possible implementation in their own cities.

The fully implemented, city-wide, complete ban on private vehicles during a working day was successful in Bogotá for several reasons. The density of the city creates short travel distances that can be easily made by bicycle and thus not all trips have to be motorized. Because of the nature of the bus system, there is actually a surplus of public transport available to citizens so there was adequate space available for people moving out of cars and into buses on the CFD. The Car Free Day served to promote the use of these alternatives. As people were forced to find new ways of taking their children to school or commuting to work, they often found that using an alternative mode may even be more efficient and cost effective than using their car. The CFD thus created a mandate for the Mayor's office to increase and improve infrastructure for bicycle use as well as public transport.

Bogota's Mayor Antanus Mockus (centre)

While in most developed countries, CFDs are promoted as an exercise in improving the natural environment, the main focus of the Bogotá CFD was that of social justice. In Bogotá, as in most developing countries, only a small fraction of the population (in this case 15%) can actually afford private vehicles yet they consume the majority of the space on roads and are the main cause of congestion. The Car Free Day in Bogotá is a way of increasing social justice – opening public space for equal use by all citizens and bridging socio-economic divides, if only on the street.

Over the last two years, Bogotá's new Mayor, Antanus Mockus, has continued to support and drive the movement for a more equitable, efficient transport system for the city. By placing an increasing importance on citizenship and the role of individual actions in improving the face and shape of the city, he is propelling the shift in perspective that is slowly turning Bogotá into a leader in sustainable transportation policy making.

The popularity and recognition of the changes taking place in Bogotá is evidenced by the growing support of similar initiatives in other Colombian cities. This year, three other cities joined Bogotá for the first Colombia Car Free Day and half a dozen more have pledged to join in next year. The Regional Practicum for Mayors also served to spread the use of Car Free Days to other parts of Latin America, with many participating Mayors pledging to implement Car Free Days in their own cities.

Fremantle, Western Australia

The second event of the CFD series was held in Fremantle, Australia from 8-10 May 2002. Mayors and city officials from Western Australia were invited to experience Fremantle's Shed Your Car Day held on 9 May 2002. Fremantle closed the major streets of the city to private vehicles and successfully planned a number of community events aimed at promoting the use of sustainable transport. Like most cities

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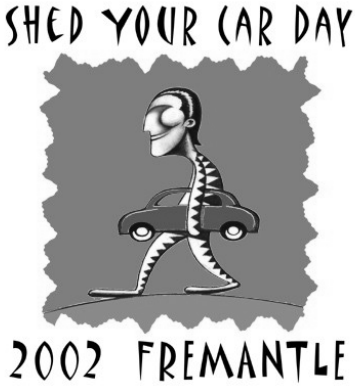

Biomass Power for Rural India

Nearly 2 billion people in the developing world have no access to electricity. However efficient use of biomass resources for electricity generation could meet this need, and provide a key option for sustainable development. A two-year project sponsored by the United Nations Department Economic and Social Affairs (DESA) and financed by the UN Foundation and W. Alton Jones Foundation is addressing some of the technical and policy issues that have prevented the widespread utilization of advanced biomass conversion technology in rural areas of developing countries. Launched in 2000, the project demonstrates the technical viability, commercial competitiveness, and environmental compatibility of biomass-fuelled electricity generation systems with generation capacities between 100 and 500 kW for use in rural India.

Several factors influenced the choice of India for this catalytic project. These include the existence of an enabling environment, institutional capacity, entrepreneurial interest, financing mechanisms, a large resource base, an acute shortage of electricity services in rural areas, and the potential for spurring economic and social development activities including employment generation, education and health.

Annual per capita consumption of electricity in India is a mere 350 kWh compared to a global average of over 2,000 kWh, and although rural electrification is reported to have reached 80% of villages, less than 40% of rural households have access to electricity. Increasing the availability of electricity is essential for the growth of Indian agriculture and human development in rural areas, where 70% of India's population lives. The estimated potential for generating electricity from biomass exceeds 15,000 MW. In a relatively short period of time, it should be possible to target at least 4000 MW of electrical power from biomass by accessing available technologies. Thus, the stage is set for an integrated demonstration of a total electricity generation system to establish the commercial viability of biomass-based power, and demonstrate its relevance in rural areas.

This project is being managed by the Energy and Transport Branch of DESA with specified activities being undertaken by the Department of Engineering and Public Policy of Carnegie Mellon University, Pittsburgh, USA and by leading Indian institutions, including the Indian Institute of Science, Bangalore, the Indian Institute of Technology, Mumbai, the National Aerospace laboratory, Bangalore, and the Tata Energy Research Institute, New Delhi. This collaboration is the first of its kind where academic, research, and industrial engineering experts from various disciplines in India and the United States have worked together to study and prove the potential of biomass energy.

Anekal Gasifier Unit

Carnegie Mellon University worked with the Indian institutions to develop an integrated design for an electricity generation system with the required capacity. The project team completed detailed studies on the economic, technological and environmental viability of such plants to set the stage for building a demonstration plant for large-scale commercial emulation. Specifically, the project determined the viability of biomass gasifiers for different agricultural feedstock through modeling, simulation, and experimental verification. During design development, the integrated team worked with commercial organizations and banking institutions to help build a demonstration plant in the second phase of the project.

The recent commissioning of an 80 kW biomass demonstration plant for a rural milk-chilling centre at Anekal near Bangalore in southern India marks the successful completion of the second phase of the project. The Indian Institute of Science which has done pioneering work in biomass gasification played a key role in this part of the project. This plant has several innovative features such as using a gas engine as the prime mover, which avoids the use of expensive diesel fuel, and having the plant run by private operators instead of the rural milk cooperative. This model ensures continuous and smooth operation of the plant, and provides for private sector involvement for replicability on a wider scale particularly in rural areas.

As the milk chilling cooperative deals with a large number of dairy farmers daily, it is in an excellent position to demonstrate the attractions of biomass-based power to a wide audience. The project team has already received a number of inquiries from farmers and entrepreneurs interested in setting up similar plants elsewhere in rural India. Through this project, small-scale private entrepreneurs in the area have been encouraged to build the necessary equipment and systems, and the manufacturing technology is thus available for wider deployment. The technical, commercial, and engineering details of this project will be disseminated to all interested parties in developing countries who have an interest in and need for such sustainable and affordable technologies. The final project report will include necessary policy initiatives that will make such projects successful.

Solar Water Heating Technology in China

As China's economic growth continues to raise the living standard of its people, residential construction and energy use is expected to expand dramatically over the next 10 years. This situation, coupled with a coal-based energy structure, could pose, if not properly managed, a serious challenge to the local, national and global environment in terms of water contamination, atmospheric pollution and greenhouse gas emission. To address these problems, the Government of China is working with the United Nations Foundation (UNF), and the United Nations on a three-year project for the Improvement and Expansion of Solar Water Heating Technology in China that began in December 2001. The Energy and Transport Branch (ETB) of the Department for Economic and Social Affairs and the United Nations Development Programme are implementing the project.

In April 2002, State Economic and Trade Commission (SETC) of China and the ETB visited the various project sites and launched the implementation of project activities. Prior to project initiation SETC and the Ministry of Construction consulted solar thermal and construction industries, and renewable energy experts and architects at both the national and city levels, resulting in common agreement about the project and broad-based participation. Through visits to the candidate cities (Kunming, Yangzhou, Wuhu and Beijing) the needs, capacity and commitment of local governments, real estate developers and industries were further assessed. Municipal governments indicated that they would strongly support the project by providing visible sites for a increased demonstration impact and setting the target for market penetration in new construction programmes. Real estate developers in Kunming city said that they would not construct any new buildings without solar water heater units installed, as it is the most economical and convenient solution to supplying hot water to households.

The objective of the project is to reduce the emission of greenhouse gases and mitigate atmospheric pollution associated with the combustion of coal through the utilisation of renewable energy, in particular, in the construction industry and the residential housing sector in China.

The project comprises the following tasks:

1. Creating a new generation of solar thermal engineers and practicing building architects strong in integrating solar water heating systems into residential buildings;
2. Developing and implementing an industry-led programme to improve and expand solar water heating systems in residential construction; and
3. Enhancing the awareness of homebuyers, real estate developers and city planning authorities regarding the benefits of solar water heating technology.

These objectives will be achieved through a) the development and publication of a series of design manuals and construction codes that integrate solar water heating systems into residential design and construction, b) the construction of at least 100,000 m^2 of demonstration buildings with solar water systems, and c) conduct of policy studies and public awareness enhancement to widely disseminate the project results.

The project will be implemented using a "bottom-up" approach. The manufacturers of solar thermal products in the three or four pilot cities will reengineer and upgrade solar water heating products to be incorporated into buildings. The China Architectural Design and Research Institute will study and develop a set of designs that integrate solar water heating systems into building components. Local real estate developers and construction companies will then use the designs and work with solar thermal experts and architects to build demonstration buildings in the pilot cities. The technical performance of these demonstration buildings will be carefully evaluated and economic and environmental assessments will be conducted. This will provide first-hand information and a scientific basis for the improvement and standardisation of architectural designs and for the formulation of relevant construction standards and codes for future dissemination of demonstration buildings.

It is anticipated that many workshops and seminars will be conducted to address technical issues relating to the design and manufacture of new solar thermal products and building components, and the formulation of standards and codes. In addition, several on-the-spot seminars will be convened at demonstration sites with broad participation by solar thermal and construction industries, architects and real estate developers, as well as government officials responsible for the issuance and enforcement, where appropriate, of standards and codes. Consumers and real estate developers will be educated to insure that market demand for solar water heating remains strong and visible in the housing sector as it is privatised.

Matching funds from private real estate developers will be used to build demonstration buildings. Cooperating developers will benefit from the design and training resources made available through the project, as well as from the visibility the project will bring to their developments. It is assumed that developers will be able to recover any added costs for the solar components in the buildings. Also, information on the benefits of solar technology will be disseminated and opportunities to create financial incentives for real estate developers and homebuyers for widespread expansion of solar water heating systems will be explored.

Commercializing Renewable Energy in India

Winrock International, in collaboration with Winrock International India, and the Energy and Transport branch of the United Nations Department of Economic and Social Affairs initiated a three-year project on Commercializing Renewable Energy in India in September 2001.

The project, co-sponsored by the United Nations Foundation and the W. Alton Jones Foundation, aims to strengthen local entrepreneurial capacity for the sustained commercial operation of small-scale energy enterprises that harness renewable energy technologies (RETs) to service productive use applications in five districts in the Indian state of Andhra Pradesh. The Project team will work through intermediaries such as micro credit institutions, self help groups, and scheduled caste and tribal corporations that already offer credit and business advisory services to their members to facilitate the development of entrepreneurial talent.

The target region for the project is made up of approximately 5680 villages with over 12.2 million people and falls in the semi-arid tropics of central India. A number of rural development programmes for poverty alleviation have already been implemented in the region with encouraging results. Watershed development programmes and women's self-help groups have been among the most successful in the country. The continuing success of these programmes has led to a situation where a continuous and reliable supply of energy services will significantly contribute to sustainable rural development.

In the five target districts of the project, less than 40 % of the farmers and 50 % of the rural households have access to electricity. Furthermore, the quality of electricity, wherever the supply is available, is low and erratic. Consequently, there is a high requirement for reliable energy services. Being situated in a semi-arid region, farmers have a serious need for irrigation facilities. The pre-project survey has clearly established the "felt-need" for such energy services, and a "willingness to pay" on the part of the people for those services under reasonable terms. In addition, this region has a number of local NGOs and other organizations, such as watershed development committees, that have been working in the field of rural development and shown a willingness to provide rural energy services on a full-cost basis.

Lack of an organized efficient supply of energy to rural areas has a hidden cost. Energy is a prime mover in economic development. Per capita energy consumption is directly correlated to the overall quality of life. Lack of energy is among the key retarding forces preventing economic development and consequently slowing down poverty alleviation and economic growth in the rural sector. The severity of the problem continues to increase and calls for a re-examination, to learn from previous experiences and develop a fresh attempt to accelerate the process of providing reliable energy to India's rural areas.

The challenge at hand is to help create an energy infrastructure in the five districts in Andhra Pradesh that will directly address the alleviation of poverty through income generation and other means in an economically viable and environmentally sustainable fashion so as to improve the overall quality of life, especially among the poorer and marginalized sections of society. In other words, provision of energy services should not be an end in itself but only a means to achieve the larger goal of sustainable rural development.

In Andhra Pradesh, RETs have long been recognized for their potential as environment-friendly, versatile, and sustainable energy alternatives for the rural areas of India. However, despite efforts by various government agencies, RETs have not yet succeeded as a

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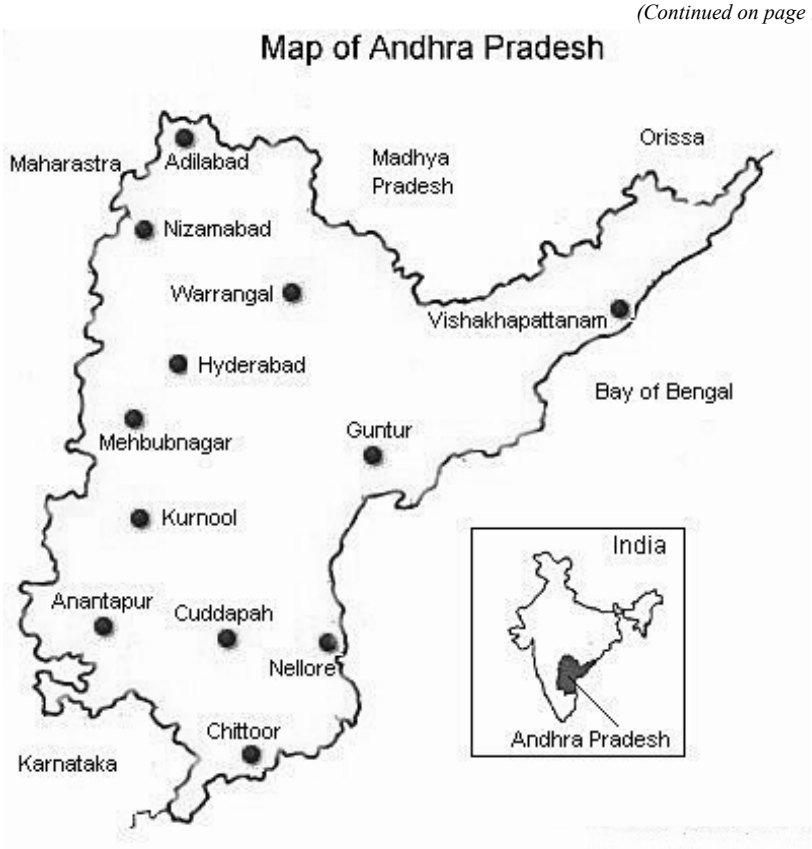

Commercializing Renewable Energy continued...

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major alternative source of energy.

The project offers an innovative approach to overcoming barriers to developing and mainstreaming the delivery of energy services in Andhra Pradesh. The project's approach is anchored on assisting entrepreneurs in developing businesses that link renewable energy technologies with productive use applications. Upstream enterprise incubation, seed capital investment, and financial facilitation services are designed to assist entrepreneurs in structuring and developing such enterprises and complement the downstream investment interests of host micro-credit institutions, the Syndicate Bank, Infrastructure Development and Finance Corporation, and other financial institutions seeking a sound portfolio of well-prepared small-scale enterprises that link RETs to productive use applications in rural areas.

The project links development of enterprises that match renewable energy technologies to productive use applications with the substantial on-going efforts to develop enterprise capacity in rural Andhra Pradesh by micro-credit institutions and women's self-help groups and associated NGOs, and ongoing efforts of the United Kingdom's Department for International Development to promote sustainable rural livelihoods. The project is structured to include assistance to entrepreneurs in designing, developing, and financing small-scale enterprises that create opportunities for income generation activities and help to establish capital and service chain linkages involving local technology suppliers.

The project will: catalyze market development for small-scale renewable energy systems linked to productive applications; provide enterprise incubation services, training inputs covering all aspects of the commercialization chain, and initial small investments of seed capital; facilitate community involvement; and interface with ongoing rural development activities at the local levels. Thus the project will pave the way for sustained rural energy services at the local level through the entrepreneurial approach.

The growth of a new enterprise can be viewed as a four-phase process: the concept phase, the business plan phase, the operational phase, and growth and expansion phase. The technical approach for the project is built around an assistance package designed to aid individual entrepreneurs and intermediaries by offering services to complement these four phases of growth, working at "points of influence" where investment, training, and technical assistance services can assist an entrepreneur.

The first potential point of influence occurs during the development phase when the technical, organizational, economic, and financial characteristics of an enterprise are defined. Entrepreneurs make initial decisions regarding energy source, technical application, market conditions, and the like. In this stage, the project will assist individual entrepreneurs and intermediaries in identifying and/or refining the match between RETs and particular productive use applications and business models for the development of viable enterprises. Training and technical assistance will be provided in areas ranging from structuring micro-credit programmes to support solar lanterns for milking or basket-weaving operations, to basic technical dynamics of structuring an efficient combustion system for rice waste.

The second point of influence occurs when the entrepreneur develops a business plan that details the market, team, approach and financial models, as well as the operating parameters, cost of the equipment, and design for the enterprise, and secures all contract and permits. At this point the project team will work directly or through an appropriate intermediary to help the entrepreneur develop each element of the business plan and provide him/her with the necessary business counseling and technical assistance services.

The third point of influence occurs when a financial institution evaluates the business plan and commits financing. The facilitation services of the project team will be put to use by helping link the entrepreneur to the small universe of financial institutions interested in investing in the initial stages of an enterprise. Micro-credit organizations and women's self-help groups are very strong in the target region. The project team will be working with these financing institutions to structure wholesale credit packages to support their members development of micro-enterprises that link the RETs with productive use applications, as well as working on connecting individual entrepreneurs directly to financial institutions.

The fourth point of influence occurs when investors believe that the enterprise has established a solid record of growth and is ready for capital for expansion or for accelerated growth. The investment at this stage can be used to develop new or expand existing lines of business to include projects that link RETs to productive use applications.

The technical approach in the project is specifically designed for work in partnership with intermediaries such as micro credit institutions, self help groups, and scheduled caste and tribal corporations that already offer credit and business advisory services to their members. The project team will work to develop the capacity of intermediaries to expand their products and services to include a full package of tailored technical assistance and credit services for entrepreneurs to facilitate the development of enterprises that link RETs with productive use applications. In this way, the provision of the training and technical advisory services of the project will result in the availability of the services on an ongoing basis once the project has been completed.

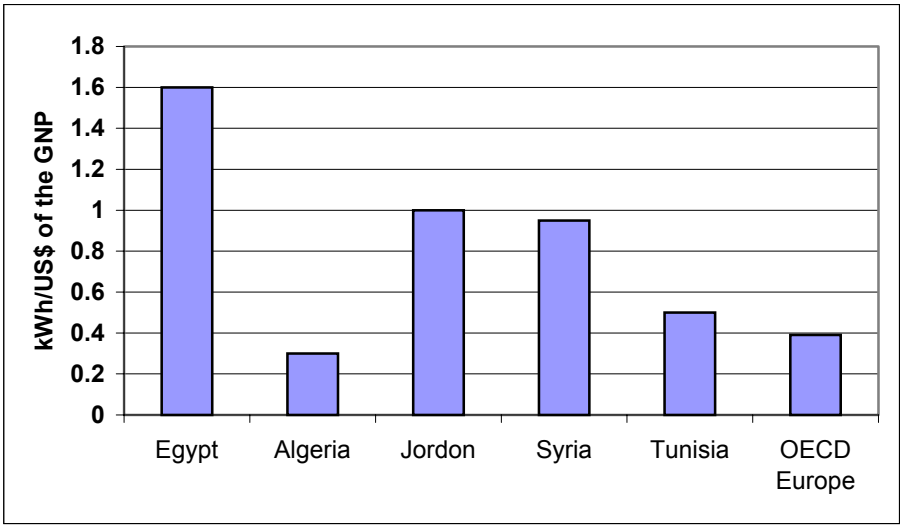
Energy Efficiency in Egypt

The Energy Efficiency Improvement and Greenhouse Gases Reduction (EIGR) project was designed to maximize the potential of the Egyptian energy market and address some of the barriers to energy efficiency. The project is being executed and partially financed by the Egyptian Electricity Holding Company (EEHC). Technical support for the project is provided by the Energy and Transport Branch of the Department for Economic and Social Affairs (DESA). It is also partially financed and technically supported by the United Nation Development Programme (UNDP) and the Global Environment Facility (GEF). The project started in January 1999 and is expected continue for a period of four and half years.

Most Egyptian industries have a higher rate of energy consumption than the international norm. Electricity use in Egypt is 1.6 kWh per US$ of the gross national product, four times that of OECD countries in Europe and double that of some other developing countries. On the other hand, electricity consumption per capita is around one fifth of that in OECD countries in Europe. Unless action is taken to improve energy efficiency, the potential increase in energy demand with growth in the national product will be excessive.

Reforms in the energy sector in Egypt have focused on: encouraging private sector involvement in power generation; reforming generation, transmission and distribution companies; and establishing an electric utility and consumer protection regulatory agency. The regulatory agency has a mandate to establish a benchmarking scheme for electricity companies which takes into consideration energy conservation efforts and demand-side management. Environmental legislation (adopted in 1994) established limits for emissions from industrial and commercial enterprises. Egypt has also developed its national action plan for the mitigation of greenhouse gases. The action plan has adopted the following seven energy conservation measures: switching to natural gas, cogeneration, high efficiency lighting, combustion improvement, waste heat recovery, condensate return and use of wind energy as technologies for clean development.

Egypt began its economic reform programme focused on liberalization and deregulation, in the 1990s. The programme concentrated on privatization of industrial and commercial sectors and higher private sector involvement in the telecommunications and electricity sectors. Following the recession in 1998, privatization and deregulation programmes were accelerated.



Efficiency of Electricity Use in Egypt Compared with Other Countries

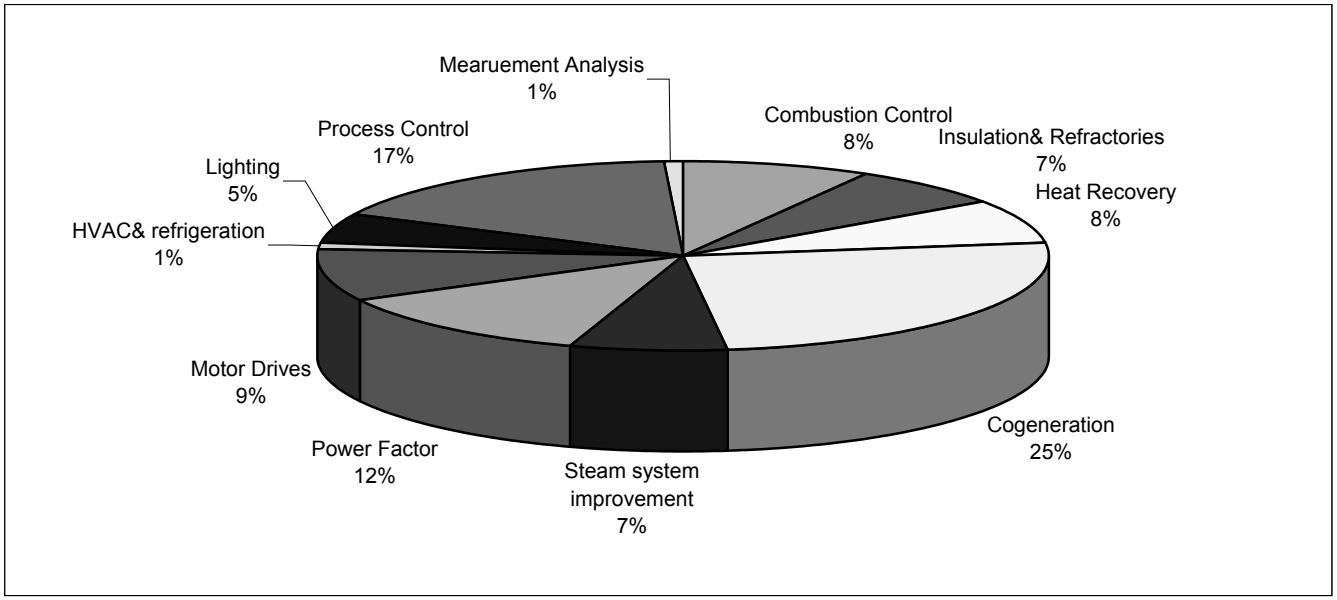
The energy efficiency market is estimated at US$ 1.1 billion, and cogeneration, process control and power factor correction present the highest opportunities for efficiency measures. When cost per unit is taken into account, power factor correction and lighting have a higher potential for implementation of energy efficiency measures. The industrial sector accounts for 95 % of the total market opportunities, while the commercial sector accounts for the remaining 5 %.

Regardless of the high potential for energy efficiency, the market also suffers from many negative forces. While efforts have been made to improve awareness on these issues, further efforts are still needed. A lack of operating and calibrated energy measuring instruments, as well as an absence of records for energy consumption add to the problem. The absence of national codes and standards for energy consumption as well as limits for the efficiencies of industrial processes, create limits in the market. There is no incentive or rebate policy for energy conservation projects, except bonuses offered for power factor correction. The electricity tariff has not been changed since 1993 and prices of fuels such as #2 oil and LPG are subsidized.

In terms of economic barriers, the exchange rate has increased by 37 %, which has affected the appeal of energy conservation projects. Public sector companies in the process or waiting for privatization, are prevented from making new investments. These companies include several large industrial complexes where energy conservation opportunities are available. Regarding project financing, the financial sector lacks alternative financial instruments while the legal structure makes it very difficult and risky to do asset-backing lending. Financial institutions lack knowledge and experience on the true risks of financing energy conservation projects. All these factors limit the amount of debt and equity, which can

(Continued on page 11)

Egypt continued...



The Energy Efficiency Market in Egypt

(Continued from page 10)

be generated for energy-saving projects at the present time.

One of the major components of the DESA project is energy efficiency business development through which the project has helped establish eight energy service companies (ESCOs). These companies include energy efficiency equipment suppliers, electro-mechanical contractors, utilities and consultants. Through the project, technical as well as business training was provided to these companies, which were supported and promoted through a programme for 200 partially financed energy audits. By the end of May 2002, more than 75 % of these audits had been conducted, covering industrial and commercial sectors in all geographical regions of Egypt.

The audits were used to develop business opportunities for the companies, as well as an awareness campaign among the companies for energy efficiency. Of the completed 154 audits, 19 projects have been implemented and four other projects are in the implementation phase. The implemented projects are mainly related to power factor correction and high efficiency lighting. However, ongoing projects also include two cogeneration projects, a demand side management project, a peak shaving project, and an energy conservation project.

Implemented projects have been conducted using the Guaranteed Saving Model of performance contracting. The Shared Saving Model has not proved attractive to most of the ESCOs in Egypt. To encourage implementation a loan guarantee programme, which provides performance contracting-guarantees for the ESCOs was established.

Several techniques to increase the number of energy service companies and to strengthen their capacity were developed under the project. These mechanisms include targeting specific companies to help them establish their energy efficiency department as well as encouraging public-private partnerships. Under the project, a memorandum of understanding was signed with one of the largest contracting companies in Egypt, offering the company both office and hands-on training. Ten sites within the company have been identified for conducting energy audits. A public-private partnership between a private sector ESCO and a utility company was also successfully established. Five energy audits have been conducted through this partnership.

Technology verification services were provided under the project through contracts with professional centres to conduct assessments for energy conservation equipment. The project has also encouraged the energy service companies to provide services such as furnace and boiler tune up. A comprehensive study for customs duty reduction on selected energy conservation equipment, namely compact fluorescent lamps and high efficiency motors, has been forwarded to customs authorities for approval and implementation. Energy codes (currently under revision) for both commercial and residential buildings were also developed.

In spite of the many project initiatives, challenges remain. Most ESCOs are under-capitalized and lack trained personnel. The market will be more promising once economic reforms are completed and the recession period is bridged. While indicators for the EIGR project are promising, continuing efforts at both the institutional and business levels are still needed.

Transport: Inspection & Maintenance Policy in Asia

As part of its work related to transport under the Global Initiative on Transport Emissions (GITE) and in line with recommendations of the ninth session of the Commission on Sustainable Development, the Department of Economic and Social Affairs (DESA) organized the Regional Workshop on Transport Sector Inspection and Maintenance Policy in Asia in Bangkok, Thailand, 10-12 December 2001. The workshop was sponsored by DESA and the Economic and Social Commission for Asia and the Pacific, and was held in conjunction with the Japanese Automotive Research Institute. More than 50 experts and professionals from Asian Governments, the private sector, NGOs and international and regional institutions participated.

The workshop highlighted policies and measures relevant for Asia to reduce emissions from vehicles, since vehicle use and transport demand increases pose a major challenge to efforts at promoting sustainable development in the region. Vehicle maintenance can play a role in efforts to reduce per kilometre emissions of pollutants, and, although emission and fuel-efficiency performance deteriorate with age, good maintenance practices can greatly reduce the rate of this deterioration. Often, such maintenance involves simple, inexpensive periodic attention to aspects of motor vehicle operation that can significantly affect vehicle performance, such as oil and filter cleaning and replacement, spark plug replacement, spot checks for leaks in the fuel and other fluid delivery systems, and maintenance of correct tyre pressure.

Participants identified appropriate policies to encourage inspection and maintenance programmes at the national level, and in addition: 1) opportunities for regional cooperation in the area of inspection and maintenance, fuel standards, and exhaust pipe and safety regulations were explored; 2) country experiences in the design and implementation of vehicle inspection and maintenance programmes were shared and evaluated; 3) legal, organizational and cross-sectoral issues relating to vehicle inspection and maintenance in Asia were considered; and 4) inputs to the inspection and maintenance comparative study of ESCAP member countries undertaken by the Japanese Automobile Research Institute were provided. Measures to enhance the Asian region's ability to enforce vehicle safety standards, promote transport energy efficiency and reduce emissions from vehicles were discussed, as well as actions needed to ensure that effective inspection and maintenance programmes are an integral part of transport strategies in Asia.

Transport emissions experts from the World Bank, the Asian Development Bank, the Japanese Automotive Research Institute and the Tata Energy Research Institute contributed to in the workshop.

Towards Cleaner Fuels continued...

(Continued from page 2)

goals in line with sustainable development by reducing transport-related emissions and adverse impacts on public health and the environment through coordinated government and stakeholder processes. The partnership is inclusive and will work with NGOs, the private sector, interested countries and other interested parties and will encourage participation from developing countries in all regions.

The specific goals of the Partnership Toward Cleaner Fuels are to:

- Build capacities to improve fuel quality and eliminate lead from gasoline by:
  - ⇒ Providing a platform for the exchange of experiences and successful practices in developed and developing countries related to setting fuel quality and vehicle emissions standards and regulations in a comprehensive and coordinated approach;
  - ⇒ Providing technical assistance to developing countries to effectively implement such policies and strategies;
- Set up a database of regulatory and technical case studies and information to enhance the effective coordination of fuel quality and vehicle emissions control improvements;
- Set up a network of experts from both the international automobile, oil and technology industries to advise on refinery reformulation, related technological progress in the vehicle and fuel sectors (conventional and alternative), costs and means financing to ensure cleaner fuel production, as well as from Governments and academia to provide technical expertise in the drafting of vehicle emissions/fuels legislation, and economic/fiscal measures to assist in the introduction of sound passenger and freight transport solutions; and
- Secure commitments by Governments and industry for the elimination of lead, the reduction of sulphur and other fuel quality, and for vehicle-related measures that are tailor-made to the air-quality improvement needs of the specific developing country.

Car Free Days continued...

School Children at the Car Free Day in Freemantle, Australia

(Continued from page 5)

in developed countries, Fremantle is dominated by a dependence on private vehicles. In fact, while car use is lower than in most US cities, it is greater than in any other Australian city, double that of most European cities and five times that of wealthy Asian cities. Although some public transport exists, it is not on a scale that could meet the requirements of all citizens. Fremantle uses Car Free Days as a method of promoting awareness of alternatives to car use and involving citizens in activities that directly contribute to the improvement of the air quality and reduction of noise in the city.

A wide variety of activities and events are held to promote participation in the CFD including a Work Place Challenge that consists of a competition among businesses for the greatest number of employees who pledge not to use their car, street parades, bicycle rides, drawing contests in schools and site visits for school children - just to name a few.

The planning of the CFD involves a wide range of stakeholders including city officials, local environmental groups, bus operators, local businesses and industry, local media, and a large number of volunteers. This wide spread participation provides a feeling of ownership of the event to the people involved in its planning and is useful in creating strong advocates for future efforts to create a more sustainable transport system. By promoting a positive, incremental approach to reduction in the use of private vehicles, the city of Fremantle avoids naming the automobile as the culprit while inviting people to experience how different a cityscape can be without cars.

The city encourages citizens to think differently about the way in which they use their cars, promoting a more diversified approach to mobility. As in Bogotá, the event serves as a catalyst for dialogue among citizens about the future growth of the city and how the transport system could be improved to provide greater access while diminishing deleterious environmental and health impacts. The CFD, in conjunction with other sustainable transport programmes such as the TravelSmart programme, has been effective in demonstrating that, for many people, behaviour change is possible without any significant change to existing infrastructure.

Bilbao, Spain

In July, the city of Bilbao, Spain implemented their Virtual Car Free Day. As a first step toward a fully implemented CFD, Bilbao will model the impact of a reduction in the use of private vehicles and devise methods for providing alternative modes to citizens to meet transport demand.

Bilbao's modeling exercise will serve as an example of how a city can use transport planning techniques to plan for and accommodate the shift in demand that would arise in a fully implemented CFD. It is hoped that the Bilbao CFD will provide the foundation for a growing number of city-wide, mid-week Car Free Days.

All three Car Free Days share a common vision of reducing private vehicle use while providing viable alternatives yet each is tailored to meet the needs and local circumstances of the individual city. Although there are a number of cities throughout the world that have expressed an interest in holding their own city-wide Car Free Days, many are weary of the capacity of their existing transport infrastructure to meet demand if private vehicles are not used.

CFDs can be a very effective tool in planning for a more sustainable transport system as well as promoting the use of public and alternative transport. They create a break in the normal pattern of behaviour, pushing citizens to take a step back and re-consider the trajectory of their city's development. A successful CFD will affect the perspective of citizens, encourage the long-term use of alternatives to the private vehicle, and create a mandate for the city to pursue the creation of a more sustainable transport network. It is hoped that the UN Car Free Day series will contribute positively to the increasing use of Car Free Days as a tool for building more sustainable transport systems around the world.

Somalia continued….

Model Unit and Water Tank, Burao, Somalia

(Continued from page 2)

In addition to the production of sand-cement tiles, the project called for the production and comparison of three types of brick: kiln-baked clay bricks, sun-dried clay bricks and stabilized soil bricks composed of clay, sand and 5 % cement. Although the kiln-baked bricks turned out to be the most expensive for housing, they nevertheless proved essential for certain specialized uses, such as in the construction of baking ovens. The most cost-effective strategy proved to be the use of stabilized soil bricks for walls and sun-dried bricks for dome and vault roofing. Curved bricks were produced for water tank construction and for smaller housing units. As the project evolved, the best mixture and proportions for brick making were found, curing techniques were refined, variations in roofing construction design were developed, and the refinement of housing designs have made them more suited to local environmental, cultural and social conditions. Moreover, the project provides a basis for costing the different housing construction techniques for selection and propagation as a low-cost housing solution for the urban poor.

During the 12-month period of United Nations support for the project, 10 local unskilled workers were trained in all aspects of brick making from soil selection and mixing to firing and sun-drying. In the later stages of their training, they received a one-month course in dome and vault roof construction. Also six bricklayer/masons were trained in the dome and vault construction. Thus, the project has built a skilled manpower capacity for brick production and housing construction. An unplanned benefit of the project is its job creation dimension, which provides those who are trained in the building of their houses with the skills needed to seek employment at construction sites.

The project has attracted considerable interest both from the local community and international organizations engaged in refugee settlement, including Habitat and UNDP. The project team has been contracted under a UNDP-funded pilot project to construct 72 homes for returning refugees in the village of Kossaar. Under the new project, the newly trained workers will train the refugee homeowners in the production of bricks and the construction of houses using dome and vault techniques. The CC Horn of Africa and UNDP hope to expand the refugee housing scheme beyond the pilot phase after a sufficient number additional builders have been trained.

Other towns in the region have expressed an interest in this technology for housing their returning refugees and urban poor, indicating a certain degree of acceptance of the techniques and designs developed under the project. However, a significant expansion of the project will require investments in more equipment and training.

The environmental benefits of the project's approach are significant. Not only are houses no longer built of wood, but also very little wood is even used in housing construction. This reduces to some extent stress on the region's meagre vegetation. The next step is to reduce the need for firewood. Thus, an area for future expansion of the project includes the introduction of windmills to provide brackish water desalination and electricity for the inhabitants of the new passive solar homes.

Other images of passive solar architecture can be found on Page 20

Construction of a Model Unit, Burao, Somalia

Electricity Sector Rehabilitation in northern Iraq

In 1997 UNDP was officially entrusted by the UN Security General with the rehabilitation of the electricity network in three northern Governorates of Iraq; and for observation activities in fifteen Governorates of south and central Iraq. UNDP in turn appointed the United Nations Department of Economic and Social Affairs (DESA) as its Executing Agency.

A key contribution of DESA to this effort has been the timely assessment of the worst affected segments of the network, and the replacement or refurbishing of the most urgently required infrastructural components. The following list covers the major activities undertaken by DESA from 1997 to 2002 (US$ 78 million)

1. Technical Studies Undertaken
- Inspection and framework implementation plan for safety works: Derbandikhan Dam and Dokhan Dam (Binnie and Partners, UK)
- Inspection of Derbandikhan Hydropower Station turbines, generators and ancillaries and 132 kV GIS Substation (Tata Consulting Engineers, India)
- Condition assessment of Dokhan Hydropower Station turbines, generators and ancillaries (Technopromexport, Russia)
- Transmission and distribution survey covering all 3 Governorates (SMEC, Australia)
- Feasibility study on the options for the addition of generation capacity in the northern Governorates of Iraq (SMEC, Australia)

2. Repairworks on Dams and Hydro Power Stations
- Derbandikhan draft tube gate hoist column repairs and replacement of crane
- Repairs to Derbandikhan Dam spillway gate including replacement of spillway gate anchor rods (Black and Veatch, UK)
- Overhaul of Derbandikhan Dam erosion prevention wells
- Supply of tools and equipment for restoration of damaged Derbandikhan control room
- Repairs to Derbandikhan Dam turbine runners and upper draft tube liners (HECEC)
- Overhaul and upgrading of Dokhan Dam generators and turbines (ongoing)

3. Diesel Power Stations (2.15 MW)
- Supply and commissioning of North Erbil, Badawa, Azadi and Kori Diesel Power Stations

4. Major Substations
- Turnkey construction of North Erbil 132/33/11 kV Substation (on-going)
- Integrated package supply with supervision for construction of Azmar 132/33/11 kV Substation (on-going)
- Supply of 14 power transformers for 10 major substations in Suleimaniya
- Supply of 132, 33 and 11 kV switchgear and ancillaries for substations in Suleimaniya
- Supply and commissioning of three 33/11 kV Mobile Substations (2x5 MVA, 1x10 MVA) in Dohuk and Erbil Governorates

5. Transmission and Distribution
- Supply and erection of 31 km of double 33k V transmission line for Irfraz Water Project
- Repair of damaged 132 kV transmission towers in Dohuk
- Supply and installation of over 500 distribution transformers in the three Governorates
- Supply and installation of several kilometers of 11 kV and 0.4 kV overhead lines to feed off-grid rural communities
- Reconductoring and rehabilitation of damaged or deteriorated 11 kV and 0.4 kV overhead lines
- Supply of state-of -the-art Distribution Planning software
- Supply of transformer oil and oil treatment units
- Supply of tools, measuring instruments and safety equipment for erection, commissioning and maintenance works by the local electricity authorities

6. Equipment Procurement
- A total of $40 million worth of equipment related to power generation, transmission and distribution for installation by the local electricity authorities has been procured and delivered to northern Iraq.

North Erbil 132 kV Substation Under Construction

New Delhi Communiqué

A Multi-Stakeholders Round Table on Energy for Sustainable Development was held in New Delhi from 21 to 23 January 2002. It was attended by representatives of governments, the private sector, civil society groups, the United Nations, and other international organizations and agencies from around the world. During the deliberations several suggestions were proposed for concrete action and partnerships to promote energy for sustainable development. These options and strategies are also intended to contribute to the realization of the United Nations Millennium Declaration that calls for halving by 2015 the proportion of people whose income is less than one dollar per day.

The participants strongly emphasized the crucial role of energy in achieving the goals and objectives of sustainable development. The main challenge lies in providing access to energy services to the 2 billion people who currently do not have such access. The participants recognized that any effort at global, regional and national levels towards using energy for sustainable development has to focus on two aspects – long term human well-being and ecological balance.

The participants acknowledged that different countries faced different challenges with regard to energy and may therefore require different options and strategies to suit local needs. Some participants highlighted the special circumstances of small island developing states and their vulnerability to climate change.

While renewing their commitments to the Rio Declaration on Environment and Development and the provisions of Agenda 21, the participants built upon the key issues identified during the ninth session of the United nations Commission for Sustainable Development, taking into account the findings of the World Energy Assessment.

At the national level:

Governments have the authority to:

- Carry out policy changes in the energy sector in order to increase access to energy supply markets and energy services in rural areas and urban poor, and include improving access to energy services as a component of its poverty reduction strategy;
- Institute a legal framework to implement mandatory energy efficiency norms, standards, labelling and targeted energy-capacity addition based on renewable energy;
- Establish independent regulatory mechanisms for introducing market-based instruments to foster competition;
- Establish appropriate frameworks for public-private partnerships involving Government, private sector, local communities, community-based organizations and NGOs, in planning, decision-making and implementation of energy initiatives for sustainable development;
- Establish a dedicated fund to promote and support research, development, demonstration and commercialization of indigenous energy technologies;
- Develop guidelines and carry out mandatory sustainable development impact assessment for all energy projects;
- Adopt a holistic approach for integrating economic, social and environmental considerations for effective planning, coordination and implementation of energy activities for sustainable development through appropriate institutional coordination mechanisms; and
- Build and enhance institutional and human resources capacity for all of the above through specially designed programmes including programmes for women, as well as for people at the local level.

At the regional level:

Regional and sub-regional organizations/agencies are urged to assist national governments and other stakeholders to:

- Strengthen existing forums for enhanced inter-governmental cooperation while encouraging the participation of civil society in such forums;
- Strengthen existing or establish networks of institutions of excellence at regional and global levels;
- Promote and strengthen regional and interregional dialogue forums involving producers and consumers of energy;
- Strengthen and promote cross-border energy exchange, to fully utilize sub-regional and/or regional energy potential; and
- Establish mechanisms for facilitating the transfer of technology and cooperation on the sharing of information and experience, including through South-South cooperation as well as partnerships among similarly placed groups of countries.

At the global level:

Global institutions/organizations/agencies including the United Nations system and donors are urged to form partnerships to support global initiatives to:

- Provide technical and financial assistance for developing and harnessing local renewable resources and promoting energy efficiency;
- Support region-specific programmes on energy for poverty alleviation;
- Establish a risk management fund to mitigate the risk of private sector investment in new and emerging clean energy technologies;
- Establish market transformation initiatives in developing countries with support from the international community, based on innovative energy supply market and energy service delivery mechanisms through small and medium enterprises;
- Establish a global partnership for financing energy for sustainable development, to assist developing countries by mobilizing, providing, and coordinating financial resources to them with the participation of relevant international organizations and

Marshall Islands: Solar Energy for Health Centres

The Energy and Transport Branch (ETB) of the United Nations Department of Economic and Social Affairs is currently engaged in a technical cooperation project with the Government of the Marshall Islands, begun in 1999, to provide solar photovoltaic power units for electrification of designated health centres in the Marshall Islands. The project is financed by the United Nations Trust Fund for New and Renewable Sources of Energy and implemented by the ETB in close cooperation with the Ministry of Health and Environment and Ministry of Resource and Development Works of the Marshall Islands.

Only a few of the more populated islands in the country have access to electricity. The Government expressed a desire to provide electricity to the non-electrified areas using a suitable form of renewable energy instead of relying on diesel fuel. Considering the remoteness of these islands, their unique ecosystems and limited power demands, solar photovoltaic systems seem to be the most viable options for providing electricity.

This turnkey project envisages the supply and installation of solar power equipment in twelve non-electrified health centres in the Marshall Islands. Of the twelve health centres, all except one belong to the "small category" and the same type of electrical load has been adopted for specifying the needed systems. The eleven small health centres will be provided with :

- Indoor light points to be operated for 6 hours daily,
- An outdoor streetlight to be installed in front of the health centres and powered from dusk to dawn,
- A medical refrigerator (40 W),
- A 100-W capacity solar PV pump to lift water from the well,
- A power supply for continuous operation of a radio.

All the devices will operate in stand-alone mode with a 12-V DC system.

In the case of the Rong Rong Island health centre, a different approach has been adopted where a "centralized" solar power unit will provide grid quality electricity not only to the health centre but also to the small community on a commercial basis. This unit is intended to demonstrate the usefulness of solar power plants for the overall development of the village.

Rong Rong Island is located near the Majuro atoll. It is a small island comprising a church, a few houses, a health centre, a school and a boys' and a girls' hostel. All are located within 300 m of each other and therefore construction of a solar PV micro-power plant can provide grid quality power to all the consumers. The solar power plant will provide electricity to the health centre, church, school, hostels and houses on a sustainable commercial basis. At present, expensive kerosene is being used in Rong Rong for lighting. The operation and maintenance of the power plant will be the responsibility of the local authorities. The equipment supplier will provide the necessary training and manuals for operation and maintenance. If the Rong Rong pilot project is successful, similar solar power plants will be installed on other small islands.

New Delhi Communiqué continued...

(Continued from page 16)

entities active in the financing of energy activities for sustainable development;

- Encourage innovative partnerships to facilitate fuel switching in support of cleaner fuels and technologies;
- Establish a clearinghouse mechanism for exchanging information and experiences worldwide on available energy technologies and good practices in policies and measures for achieving the goals of sustainable development.

Energy is linked to major global issues such as poverty, health, education, gender and environment. Existing mechanisms address certain aspects of these issues. To facilitate the adoption of a holistic approach, new partnerships and linkages are needed for bringing about greater coordination for planning and implementation of energy activities for sustainable development.

In this context, the actions, mechanisms and partnerships proposed above could constitute building blocks for a world initiative on energy for sustainable development. A combination, or a selection of these mechanisms, could provide the basic elements for designing the framework for such an initiative. The Delhi Round Table, recommends that steps be taken towards that end.

Ratification of the Kyoto Protocol Remains a Challenge

By Mohammad Reza Salamat
Guest Contributor

The agreements reached in the seventh session of the Conference Of the Parties (COP-7) to the United Nations Framework Convention on Climate Change (FCCC) in Marrakech, November 2001, marked the end of 4 years of multilateral negotiations on the Kyoto Protocol and Convention. These Marrakech Accords finalized and sealed the political agreements on all issues.

Industrialized countries and the Umbrella Group (a negotiating block including Australia, Canada, Iceland, Japan, Norway, Russia and USA) in particular, were mostly satisfied with the content of the agreements on guidelines for the three market-based mechanisms, namely the Clean Development Mechanism (CDM), Joint Implementation (JI), and Emissions Trading under the Kyoto Protocol. This was in part due to the "uncapped mechanisms" which make use of the three mechanisms more cost-effective, along with the scope of "land use, land-use change and forestry" (LULUCF) sink issues. The concerns of the European Union (EU) and the group of developing countries (G-77) over the ineffectiveness of the implementation of commitments by Annex-I Parties were accommodated in the Compliance Regime and the guidelines for Reporting Requirements of the Protocol. Overall, developing countries were mostly content with the agreements reached on issues important to their development such as capacity-building, technology transfer and financial mechanisms. Another major achievement was the establishment of the CDM Executive Board to ensure a prompt launching of the CDM.

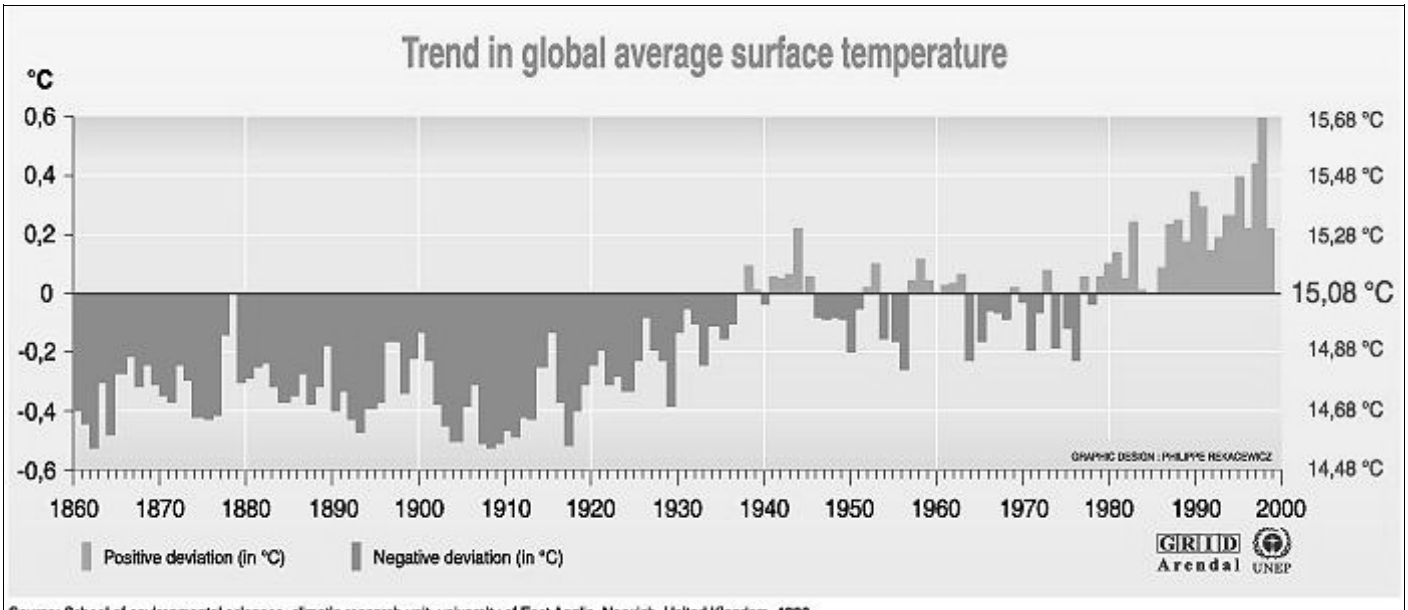
The Marrakech agreements have already made a substantive contribution to the ongoing preparatory process for the World Summit on Sustainable Development, and the linkage between climate change issues and sustainable development hardly needs to be underlined. The political challenge, therefore, is the ratification of the Kyoto Protocol by Annex-I Parties to bring the Protocol into force. In order for the Protocol to enter into force, it must be ratified by 55 Parties to the Convention (including Annex-I Parties accounting for 55 % of that group's carbon dioxide emissions in 1990).

The EU and its member states ratified the Protocol on 31 May 2002, and Japan officially announced its ratification on 4 June 2002. These new ratifications, plus those of Iceland (23 May) and Norway (30 May), bring the total number of countries that have ratified the Protocol to 74, including 20 Annex-I countries accounting for 35.8 % of the required CO_2 emissions. Ratification by the Russian Federation remains critical to the Protocol's effective entry into force.

Certain important issues remain to be discussed and agreed at COP-8, to be held in New Delhi in late October 2002. They include:

1. New Funds

Three new funds, namely the Special Climate Change Fund, the LDCs Fund, and the Adaptation Fund, were created by COP-7. The Special Climate Change Fund will finance activities and projects relating to energy, transport, industry, adaptation, etc. in developing countries. The LDCs Fund will finance the National Adaptation Programmes of Action (NAPA) in least developed countries. The Adaptation Fund will finance projects on adaptation in the most vulnerable developing countries. In order for these funds to be established, a pledge of financial contribution by developed countries is required. The GEF, designated by COP-7 to ad-



Source: School of environmental sciences, climatic research unit, university of East Anglia, Norwich, United Kingdom, 1999.

Kyoto Protocol continued...

(Continued from page 18)

minister and operate these funds, will report to COP-8 on the arrangements necessary for the establishment of these new funds.

2. The Clean Development Mechanism

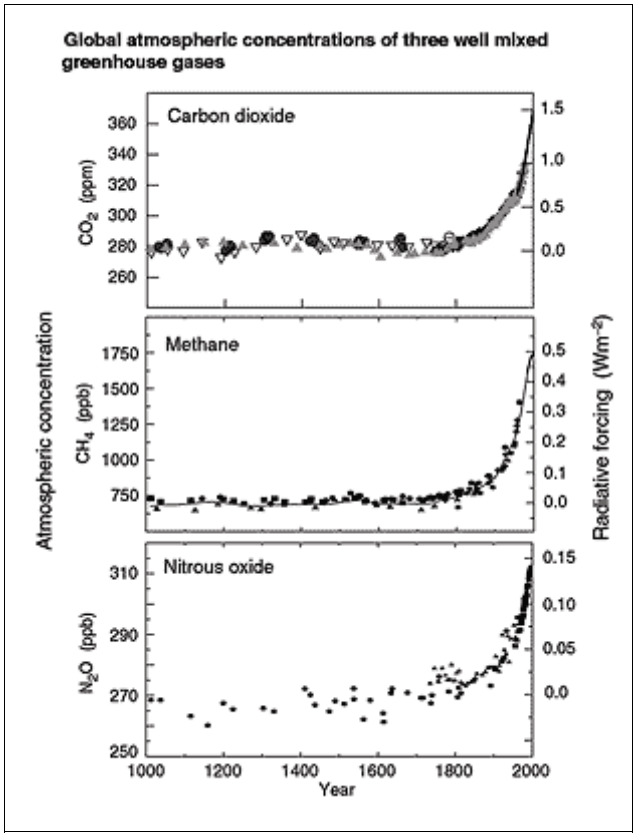
A number of technical and methodological issues related to the operation of CDM remain to be resolved by the CDM Executive Board. They include: accreditation procedures for operational entities; simplified modalities and procedures for small-scale CDM projects; guidelines for methodologies for baselines and monitoring plans; and procedures for registries. Some of these issues including the definition of modalities for afforestation and reforestation activities (sink projects) under CDM, will have to be worked out through the Subsidiary Body for Scientific and Technological Advice (SABSTA) of the FCCC.

It is expected that prompt launching of the CDM would result in early action by Parties on energy projects. A COP-7 decision has identified three areas for these fast-track energy projects:

a. Renewable energy projects with a maximum output capacity equivalent of up to 15 megawatts (or an appropriate equivalent);
b. Energy efficiency improvement projects which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 15 GWH per year; and
c. Other projects that both reduce anthropogenic emissions by sources and directly emit less than 15 kilotonnes of carbon dioxide equivalent annually.

3. Policies and Measures (P&M)

Ongoing discussions on policies and measures to achieve mitigation targets by Annex-I Parties are expected to be enhanced. In order to attain Kyoto Protocol targets, polices and measures need to be identified globally by Parties and coordinated and harmonized among them. A number of Annex-I Parties have expressed concerns that in the absence of such coordinated and identified policies and measures, industrialized countries striving to achieve their mitigation targets might have their economic competitiveness compromised. The Umbrella Group, on the other hand, does not support internationally identified and coordinated prescriptive policies and measures, but rather stress the different national circumstances of each Annex-I Party.



4. Third Assessment Report

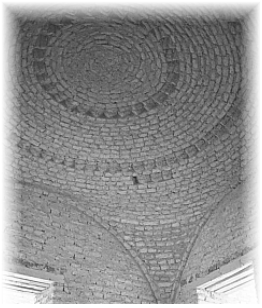
The information contained in the Third Assessment Report of the International Panel on Climate Change (IPCC) and its conclusions have yet to be considered by the international community. The report, the result of a 5-year analytical process by the international scientific community on climate change through the IPCC, shows that there is new and stronger evidence of "a warming world and other changes in the climate system" under the business-as-usual scenarios. The first comprehensive assessment report by the IPCC resulted in the development of the FCCC. The second assessment report led to the emergence of the Kyoto Protocol. The initial discussion on Third Assessment Report revolves around issues such as the need for participation by developing countries in undertaking commitments in order to achieve the ultimate objective of the FCCC, and the modalities for the negotiations on the second commitment-period targets for Annex-I Parties. It is anticipated that the process for negotiations on the second commitment-period targets might be established by COP-9 in 2003. Developing countries, emphasizing the imperative of meaningful action on emissions mitigation first and foremost by the industrialized countries (which account for most of the greenhouse gas emissions), strongly oppose any discussion at this stage on mitigation commitments and targets for Third World nations.

COP-8 is expected to be a significant step forward in the operationalization of the Marrakech decisions. Parties will have to deal with all issues analysed above, as well as with a number of other technical and methodological issues on its agenda. The international community is anxiously waiting to see if the current promising trend in ratification of the Kyoto Protocol will result in its entry into force by the Johannesburg Summit and before COP-8.

Diversions

Images of passive solar architecture

Fayoum, Egypt



Dome interior, Egypt

Fayoum, Egypt

Burao, Somalia

Burao, Somalia

Fayoum, Egypt

Fayoum, Egypt

Burao, Somalia

Fayoum, Egypt

Photographs courtesy of Adel Fahmy

The Energy and Transport Branch

The Energy and Transport Branch of the Division for Sustainable Development (DSD) of the Department of Economic and Social Affairs (DESA) services the intergovernmental processes of the United Nations in the fields of energy and transport, prepares analytical studies on these subjects, and provides advisory services to governments and technically supports energy projects at the field level.

These services focus on increasing the supply of energy services in developing countries, particularly in rural areas, and managing the demand for energy, largely through energy efficiency efforts. Such technical assistance is directed toward capacity building, institutional strengthening, promoting increased energy investments, and expanding the role of the private sector and local communities.

With a core staff of fourteen in-house energy experts and with over 200 associated consultants, the Branch has the capacity to technically backstop projects dealing with all aspects of this highly diverse sector.

For more information on the projects outlined in this newsletter, please contact:

Mr. Kui-Nang Mak, Chief
Energy and Transport Branch
United Nations, DC2-2050
New York, NY 10017, USA
Fax No.: (1) 212-963-9883 or 9886
Tel. No.: (1) 212-963-8798
e-Mail: makk@un.org