Briefing Paper on Energy Activities of the United Nations

by the

Ad Hoc Inter-Agency Task Force on Energy

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I. Introduction

The United Nations undertakes activities in the area of energy with the overall objective of promoting sustainable development by overcoming problems related to. unsustainable patterns of consumption and production. Environmental, social and economic aspects of energy production and use are covered by the implementation of projects, provision of technical advice and the support of the intergovernmental process at the United Nations. Within this broad framework, efforts have been made to focus on the key issues of accessibility of energy, energy efficiency, renewable energy, advanced fossil fuel technologies, nuclear energy technologies, rural energy, energy and transportation, technology transfer, capacity building, mobilization of financial resources and international and regional cooperation.

The Ad Hoc Inter-agency Task Force coordinates these efforts and provides a vehicle for cooperation and coordination of work undertaken on energy throughout the United Nations system. In preparation for the ninth session of the Commission on Sustainable Development for which energy is a major theme, the Task Force has focused on coordinating activities and the preparation of case studies as recommended by the Ad Hoc Open-Ended Group of Experts on Energy and Sustainable Development. Case studies can be found at < http://www.un.org/esa/sustdev/csd9/csd9_energy_bp4.pdf>.
Detailed information on the activities of each agency has been arranged in a matrix form for use as a planning tool by the Task Force. It has been posted on the DESA website at http://www.un.org/esa/sustdev/iaenr.htm as a means of providing general information about UN activities in the area of energy to the public. The Task Force has also made some progress in elaborating on a common system-wide approach to energy within the UN-system and this has been used as an overall guide in its work

Activities are undertaken throughout the Secretariat and in UN programmes and agencies to address both consumption and production aspects of energy and cover a wide range of activities including those aimed at capacity and institution building, promoting energy efficiency, improving access to energy in rural areas, contributing to the knowledge base and dissemination of information, dissemination of and transfer of cleaner energy technologies, promoting international and regional cooperation and supporting the intergovernmental process.

Energy issues are considered by the United Nations Commission on Sustainable Development and the Committee on Energy and Natural Resources for Development. The United Nations Secretariat, agencies and programmes work together to provide background information and support to experts and delegates.

This briefing paper is intended to highlight the synergies and visions of the United Nations Secretariat and its agencies and programmes in the area of energy and provide information on the contributions made in promoting sustainable development in the area of energy. Information on individual entities, agencies and programmes as well as other cooperating institutions are provided as follows with this goal in mind.

II. United Nations Entities and Programmes

A. Department of Economic and Social Affairs (DESA)

The Department of Economic and Social Affairs (DESA) undertakes activities in the area of energy in support of the Commission on Susainable Development and the Committee on Energy and Natural Resources for development as well as implementing energy projects and providing technical advisory services. These activities are undertaken to promote sustainable development as outlined in Agenda 21 with a focus on energy, environment and social development and to furthering the development and use of new and renewable sources of energy, promoting efficiency of energy use as well as enhancing energy exploration and development in developing countries and developing national capacity for energy project evaluation and analysis of energy technologies.

Its activities include monitoring and analyzing global energy trends and prospects and their impact on the environment; monitoring and analyzing developments in new energy technologies for both conventional and new and renewable sources of energy; preparing studies on these topics for consideration by intergovernmental bodies; dissemination of relevant information; rural energy and energy and transport. These activities are aimed at increased understanding of the environmental and socio-economic impact of various policy options and strategies.

With the goal of operationalizing Agenda 21, DESA has an active program of technical cooperation with developing countries. With funding from UNDP, GEF, UNFIP, bilateral partners, the World Bank and others, the Department is implementing energy efficiency and renewable energy projects to help developing countries in their efforts to find more sustainable pathways of development. The strategic approach adopted for energy efficiency incorporates several key lines of action, including: cleaner production processes for industry, transportation energy efficiency, appliance and lighting standards, energy efficient building codes, integrated resource planning and demand-side management for electric utilities, and recovery of energy from the urban waste stream. The objectives of DESA's technical cooperation activities in renewable energy are: 1) to promote the commercialization of renewable energy systems through appropriate policies, incentives and market-based measures; 2) to promote the role of entrepreneurs and market intermediaries in the diffusion of renewable energy applications; 3) to engender community involvement, including women, in the management of decentralized energy systems; 4) to explore innovative credit arrangements for renewable energy applications; and 5) to share information on standards and best practises for renewable energy equipment and its use.

DESA is active in elaborating on key energy issues for on energy and sustainable development as well as on issues related to energy/transport. It coordinates UN entity/programme and agency activities in support of discussions on energy and sustainable development undertaken by the international community and facilitates coordination and cooperation on energy activities throughout the United Nations system in general.

B. Regional Commissions

1. Economic Commission for Europe (ECE)

Bearing in mind the specifics of the region, the current ECE programme in the field of energy is aiming to overcome two fundamental challenges; namely: (a) the transition to a more sustainable path for the production and use of energy; and (b) the fuller integration of the energy economies and energy infrastructures of countries in the region. In this respect, the activities will continue, in order of priority, to emphasize the development and implementation of sustainable energy policies and strategies; the improvements in energy efficiency, especially in economies in transition; the efficient extraction, transport and use of natural gas; the implementation of environmentally- sound coal mining and use technologies; and the further interconnection of electric power infrastructures. Increased emphasis is being now given to energy-related environmental issues, in particular with respect to the use of coal, as well as to increasing the use of new and renewable energy sources. Activities undertaken by ECE are being annually reviewed and updated by the Committee on Sustainable Energy.

The ECE Committee on Sustainable Energy play a catalytic role in ECE region by promoting regional initiatives, preparing conclusions and recommendations on sustainable energy policies and strategies and that for the benefit of all players in the market, at first to policy making. In this respect, the Committee decided to create a Task Force, with a mandate to provide a regional input to the preparation of CSD-9 and develop a programme for implementing the output of CSD-9 at regional level; the Task Force have already identified the Key Issues from regional perspectives and decided to further focus on two sustainable issues, namely: (a) energy intensity and efficiency; and (b) energy pricing, subsidization, internalization of externalities.

The purpose of the sub-programme on energy efficiency is to reduce the energy efficiency gap between actual practice and best technologies, in particular that, between transition countries and market

economies. That is technical assistance in nature and has focused on international cooperation, building institutional capacities and partnership in Central/Eastern Europe, and promotion of investment

The ECE also focuses on efficiency in extraction, transport and use of natural gas and the promotion of clean coal production by promoting an exchange of information and preparation of studies, elaboration of international maps, promotion of natural gas to non-power sectors; and the provision of technical assistance to countries with economies in transition. The ECE also promotes an extension of the European electricity networks by fostoring an exchange of information and undertaking feasibility studies.

The ECE Committee on Sustainable Energy is a Parent Body of all ECE activities in the field of energy. It was was set up in 1997 by the Decision of the Commission with a mandate to promote sustainable energy policies in the ECE region. The activities are being carried out through the United Nations regular budget and extra-budgetary resources in the field of gas and energy efficiency. The Committee has the following working organs: (a) Working Party on Gas, with two Ad hoc Groups of Experts, both on the regular budget, and a Gas Centre fully financed by Gas companies; (b) Steering Committee on Energy Efficiency 21 Project; (c) Ad hoc Group of Experts on Coal and Thermal Power; and Ad hoc Group of Experts on Extention of European Electricity Interconnection. The activities of last two Ad hoc Groups are also supported by the regular budget. Most of normative activities are being carried out under the Committee on Sustainable Energy.

2. Economic and Social Commission for Western Asia (ESCWA)

The energy sector has a vital importance for the economic and social development in the ESCWA member states, particularly due to its effective contribution to GDP as well as to the energy supplies to all economic sectors. However, there is an urgent need in the ESCWA member states to move towards more sustainable development since the energy sector is characterised by unsustainable energy use patterns with high-energy intensities. Several adverse environmental impacts from the energy sector exist and are due to the exploration, production and distribution processes. Thus, the energy sector has to meet two policy challenges: the first is the need for a transition to more sustainable production and use of energy; and the second involves the building and strengthening of links in the field of energy among ESCWA member States by promoting cooperation in the areas of energy efficiency, renewable energy and the harmonisation of the relevant legal, regulatory and policy frameworks.

To achieve such challenges, energy sector policies and plans should be developed directed to 1) upgrading energy use efficiency; (2) promoting the use of cleaner fuels and technologies; (3) promoting a cost effective mix of fossil and renewable energy sources; and (4) mitigating to the maximum possible the environmental impacts of the energy sector.

Since 1996 ESCWA has emphasised the need for more sustainable energy patterns and current and future programmes are placing particular emphasis on the issue of sustainability. The main themes and programme activities are 1) Promotion of Renewable Energy Applications, 2) Options for Energy Conservation, Efficiency and Greenhouse Gas Abatement, and 3) Energy Supply Options For Water Desalination. Future areas of focus are envisioned as achieving better management of energy, water and environment through integrated approaches that can positively impact sustainable development in the region. This will be accomplished by promoting policies and measures that enhance the role of energy resources in the regions' sustainable development through the use of environmentally friendly technologies; enhancing institutional and human resources capacities in the related areas; assessing and/or updating structural reform for the management of energy; and assisting member countries in their efforts to enhance intra-regional cooperation in the field of energy and the protection of the environment.

ESCWA also publishes technical and analytical reports on an annual and ad hoc basis and undertakes expert group meetings on specific energy topics as deemed necessary. It is guided in its activities by the ESCWA Committee on Energy which meets periodically to review work and determine priorities.

3. Economic and Social Commission for Asia and the Pacific (ESCAP)

Access to adequate, reliable and affordable energy remains of utmost importance and priority concern in the Asian and Pacific region both for economic and social development including poverty alleviation. This conclusion came out very strongly from the High Level Regional Meeting on Energy for Sustainable Development, held in Bali, Indonesia, 21-24 November 2000 in preparation for the regional perspectives as an input to the CSD-9. The Meeting was organized by ESCAP in partnership with DESA, UNDP and the Government of Indonesia. The Ministers and the Heads of the delegations attending the Meeting issued the Bali Declaration expressing their renewed commitments to and calling the attention of the CSD-9 on the region specific issues and priorities pertaining to sustainable energy development. The Meeting also adopted the Sustainable Development Action Programme, Strategies and Implementation Modalities for the Asia and the Pacific Region. As there is no regional or international agency that covers the entire region to deal with energy matter, ESCAP will continue to play a catalytic role in the promotion of regional cooperation in the field of energy in partnership with other sub-regional energy agencies, such as the ASEAN Energy Centre, Asia Pacific Energy Research Centre, South Asia Association for Regional Cooperation and the (Pacific) Forum secretariat.

In the area of energy resources the strategy is to strengthen national capacity in sustainable development and management of energy through appropriate policy and planning; energy conservation and efficiency; and enhanced use of new and renewable sources of energy. The main thrust of the activities has been on technical assistance activities provided to developing countries in the form of advisory services and group training activities (national and regional workshops, symposium, training courses) for capacity building. Activities focus on promoting sustainable energy development policies and strategies with a emphasis on capacity building in strategic planning and management of natural resources in an integrated way.

ESCAP also undertakes efforts to promote new and renewable sources of energy by disseminating information through case studies, workshops and seminars. Efforts in promoting energy efficiency and conservation are facilitated by rendering advisory services and energy mangers training programmes as well specific activities to promote investment. The Secretariat's activities have often been successful in terms of generating bi-lateral follow-up cooperation such as pre-feasibility and feasibility assessment or even investment on efficiency improvement potentials in energy intensive industries, such as cement and steel industry carried out in a few countries by teams of experts comprising the ESCAP expert and Japanese specialists. Special attention is given to the participation of non-governmental organizations (NGOs) and places high priority on collaboration and cooperation with other UN and relevant regional organizations.

Over the next 3-5 years the focus will remain on the promotion of sustainable energy development through assisting developing members and associate members of ESCAP in building and/or strengthening their national capacities in adopting and implementing a rational policy towards a sustainable energy path. Programme areas will include a shift from high carbon to low or no carbon energy resources, such as natural gas, new and renewable sources of energy, and on energy efficiency and conservation. Since fossil fuel will remain the predominant source of energy in the region, there will also be a need to adopt clean fuel technologies as a part of the national energy policy. Appropriate funding mechanisms will also be explored.

4. Economic Commission for Latin America and the Caribbean (ECLAC)

ECLAC provides advisory services to member states on energy and sustainable development matters; in particular for a) strengthening the capacity of national institutions in energy policies; b) providing technical support to develop national capacity for energy project evaluation and economic regulations; c) preparing sector studies on energy panorama and perspectives for the specific country or the Region; and d) organizing regional and interregional seminars on energy development & planning. Specific areas of focus have been on restructuring of the energy industry in member states, the potentials and use of new and renewable sources of energy in the region, promoting the development of specific energy sources such as geothermal, energy development and management, planning and regulation the design and application of energy plans and policies in the hydrocarbon & power sector.

C. United Nations Development Programme (UNDP)

New approaches to using energy as an engine for equitable economic growth and sustainable development are needed. Two billion people lack access to electricity and rely on traditional fuels for cooking, entrenching poverty and compromising women and girls' health and opportunities. Access to energy services is essential to improve livelihoods and increase productivity. These services must be affordable and produced in ways that protect health and the environment, both locally and globally. Without secure, affordable and environmentally sustainable energy supplies and services, poverty cannot be overcome.

Integrated strategies are required to "get energy right". UNDP's experience in integrated development solutions enables it to address the multiple social, economic and environmental aspects of sustainable energy approaches. Solutions involving public and private stakeholders, energy producers, distributors and consumers require new models in development assistance, as most new energy investment is financed by the private sector. UNDP must focus its assistance on policy support to deliver sustainable energy services equitably using market mechanisms, while addressing the unique energy needs of the poor. Sustainable energy activities can be used as an entry point to address multiple development objectives including job creation, poverty reduction, the advancement of women and the protection of the local and global environment.

UNDP's corporate policy on sustainable energy is reflected in the UNDP Initiative for Sustainable Energy (UNISE) finalized in 1996 and available through all country offices. This framework guided the preparation of core and non-core funded energy efforts in the 1996-2000 period. It emphasizes three intervention areas:

(i) support for indigenous capacity building to identify new approaches, technological opportunities and partnership modalities to support sustainable energy;
(ii) supportive legal, institutional and regulatory climates for sustainable energy development, including investment climates to attract private capital;
(iii) support for technology leapfrogging through innovative demonstration projects to promote the adoption and dissemination of modern clean energy technologies for sustainable development.

UNDP's approach to energy is supported by the policy and analytic work of the Energy and Atmosphere Programme and significant non-core support for country level project efforts have been mobilized through the UNDP Global Environment Facility work programme in line with UNISE.

To help countries expand the provision of sustainable energy services - meaning improved end-use energy efficiency, use of renewable energy and introduction of modern, clean energy technologies – UNDP policy support services focus on:

- Integration of sustainable energy objectives in national development and poverty reduction strategies.
- Capacity building for energy planners.
- Market-based energy policy innovations.
- Cross-sectoral dialogue and participatory processes for national energy planning.
- New energy financing mechanisms and public-private partnerships.
- Sustainable energy project advisory services through the Global Environment Facility

D. United Nations Environment Programme (UNEP)

From its earliest days UNEP has been concerned about energy because energy production and use cause such a wide range of serious environmental problems at the local, national, regional, and global scales. Directly and indirectly today's energy systems contribute to various types of air pollution, acidification of ecosystems, contamination of marine and inland waters, deforestation and land use change, loss of biodiversity, and global warming. In sum, human demands for energy – or more accurately the services it provides – place great strains on the environment. At the same time energy 'poverty' hinders the economic and social development of billions of people.

Energy issues are more prominent now than they were a decade ago. Global warming and climate change have thrown a spotlight on the links between energy use and the global environment, and energy is receiving greater attention in development assistance efforts because of its critical role in alleviating poverty through rural job creation, education, and improved health and living conditions. Improvements in technology and a willingness by governments to experiment with new economic approaches to energy pricing are fundamentally changing energy markets, opening new opportunities.

In most cases more efficient production and use of energy and increased investment in cleaner or renewable energy sources yield environmental benefits that span UNEP's concerns. It is within this context that UNEP's efforts aim to help move the world to a 'sustainable energy path'.

UNEP's goal is to increase awareness among a range of decision-makers that present patterns of energy production and use have many, and often serious, environmental impacts. We try to foster different approaches to providing energy services. With partners in governments, industry, academic institutions and NGOs, UNEP helps develop and implement straightforward, rigorous and scientifically-sound approaches for analyzing energy policies, climate change mitigation, energy sector reform, industrial energy efficiency, and the environmental implications of transport choices. Approaches to help improve energy policy analysis are complemented by tools that help decisionmakers achieve solutions to energy problems.

UNEP's efforts are primarily directed at developing countries. A special effort is made to help financial institutions understand better the investment opportunities available through renewable and energy efficiency projects in developing countries, activities that build off UNEP's close links with the financial sector.

One of UNEP's strengths in the energy field is the UNEP Collaborating Centre on Energy and Environment (UCCEE). Created in 1990, the Centre's international group of scientists, engineers, and economists provides technical and analytical support to UNEP and partners in developing countries.

Building off its close working relationship with energy-environment-development institutes in developing and developed countries, UNEP is strengthening this network of 'centres of excellence'. The goal is to build a tighter global community of sustainable energy practitioners, where creative solutions to energy–environment problems are more easily shared.

UNEP's projects and activities focus on the promotion of renewable energy, with an emphasis on Africa, renewable energy investments and improved technologies, promoting energy efficiency, enhancing energy policy capabilities, promoting innovative financing for sustianable energy projects, and joint action with automotive manufacturers.

III. United Nations Agencies

A. United Nations Educational, Scientific and Cultural Organization (UNESCO)

UNESCO's work in the area of energy is primarily in the promotion of renewable, environment-friendly sources of energy, while contributing to the implementation of the World Solar Programme 1996-2005 (The term "solar" is used in a generic sense, as the Programme concerns all forms of renewable energy, such as solar thermal and solar photovoltaic, wind, biomass, micro-hydro, tidal, ocean thermal, etc.; geothermal energy is also included).

The World Solar Programme 1996-2005, is a recognized and well-established instrument at the service of the world community, for the promotion of renewable energies and the dissemination of the related technology given that renewable energies are not only important from the environmental point of view and, more significantly, from the social point of view. Action to improve the quality of life in rural areas is one of the most important commitment of the Programme. The world today has enough resources and know-how to provide all those living in rural and remote areas the possibility of having energy. It is envisioned

that in the medium-term future, this can be accomplished through the installation of decentralized energy systems, that are not harmful to the environment, using renewable energies.

The World Solar Programme 1996-2005 implements a plan of promoting information, research, education and training activities geared to facilitating the wider use of renewable energy sources and technologies adapted to improve living conditions and promote sustainable development. Efforts have been made by programmes and agencies throughout the United Nations system to undertake concrete action and to work in close co-operation to ensure that the World Solar Programme 1996-2005 is fully integrated into and brought in the mainstream of the efforts of the United Nations system to attain the objective of sustainable development. It is also intended that the World Solar Programme will promote awareness about the importance of renewable energy education, including engineering education, and mobilize resources to that end. UNESCO has undertaken specific programmes to enhance capacity in renewable energy education especially in Africa. Other areas of activity include direct financing and execution of projects, development of the "solar village" concept, and assistance in securing financing from donor countries, as well as drawing the attention to the need for legislative action to eliminate the barriers to increased utilization of renewable energies and dissemination of the relevant technologies.

UNESCO works to strengthen the national, regional, and international bodies and networks responsible for technological training and research and for collecting and disseminating technological information and innovations, and will work towards broadening international cooperation in engineering sciences. Joint ventures will be encouraged between member states, assisted by non-governmental organizations, with a view to devising appropriate solutions to technological development problems such as clean production technology, regulation of transport, water supply and sanitation, risk management. Best practices will be developed and disseminated for advancing innovation in these areas, in a manner best suited to the needs and available resources.

B. United Nations Industrial Development Organization (UNIDO)

The deployment of sustainable energy technologies and services in developing countries constitutes a major global challenge also due to its financial dimension. Although official development assistance to developing countries will continue to be important, those financing needs in developing countries and countries with economies in transition are increasingly shifting from multilateral financial institutions to domestic and international private financial firms and energy companies. This shift is primarily attributable to the global trend of energy sector privatizations and market openings. Governments are expected to play an increasing role in setting policy and developing laws and regulations for the sector, while the private sector is expected to increase financing, and build and manage the energy infrastructure. The international community, in turn, shall play a vital role in assisting developing countries in the reform process by providing demonstration projects, policy advice, capacity building support and technology transfer promotion. Particularly, the need is clear to provide economic predictability to energy investment in the developing world, mainly through deregulation and effective legal and regulatory frameworks.

Access to energy is crucial to economic and social development, and alleviation of poverty, as well as to finding an appropriate response to environmental concerns. Improving accessibility of energy implies finding ways and means by which energy can be delivered reliably, affordably and in an environmentally sound and socially acceptable manner. Our experience at UNIDO is that the more cost-productive and sustainable way to achieve it is by creating an enabling environment for the private sector or energy cooperatives to engage in the generation and distribution of electricity on a commercial basis, including decentralized electrification solutions based on renewables (solar, wind, biomass, biogas, bio-fuels, small hydro, etc). Adequate energy policy and regulatory framework are certainly pre-requisites to it.

UNIDO's experience indicates that developing countries require not only macro-economic changes, but also targeted social policy actions in order to make commercial energy more widely available in rural areas. Satisfying the energy needs of rural areas with modern fuels and technologies not only has

the potential to create new industries, jobs and business opportunities, but also to improve standards of living and health. Centralized energy for isolated areas tends to be not only lesser sustainable, but also economically inferior, due to its own philosophy of incremental extension, conducive to unplanned development, power quality problems and poor capacity utilization and efficiency.

UNIDO's underlying principles of energy for sustainable development are embodied in an approach that seeks to promote the efficient production and use of energy, wider-scale use of renewable energy sources, and transition to the next generation of advanced energy technologies. Given the interdependencies and complexities inherent in dealing with energy issues, a broad range of different specific strategies are needed at the national, regional and international levels to address energy for sustainable development.

UNIDO's technical cooperation programme focuses on two major issues: Improving the energy services in developing countries, and Improving the energy efficiency (or lowering the energy intensity) of the industries of developing countries.

UNIDO's Energy Programme is based on the following competitive advantages of the Organization: a) accumulated sectoral experience in energy intensive sectors in particular cement, brick making, metallurgy, chemical, pulp and paper, glass, as well as in the manufacture of energy equipment; b) experience in the promotion of international cooperation in energy technology; c) vertical integration under the same roof of all services required in a typical project cycle: identification, formulation, implementation and monitoring; and d) sound track record of energy projects in developing countries and in countries with economies in transition. Particular experience in the LDCs is worth mentioning.

UNIDO's approach to energy issues within the multilateral system and in all regions is to support capacity building of both technical and governance institutions. In this respect, UNIDO facilitates the development and implementation of projects addressing climate-friendly, energy-efficient industrial technologies through assisting developing and transition-economy countries to identify and remove barriers to the introduction and transfer of such technologies.

In order to achieve this, UNIDO provides the following services:
Expert advice, including knowledge-based assistance
Training
Dissemination of information
Technology transfer, including through networking and partnership
Procurement and contracting
Energy audits
Demonstration projects

Parallel to Technical Cooperation projects, UNIDO's Energy Programme also addresses the relevant issues of the energy field through global forum activities whereas specific broad issues are/can be addressed such as impact of globalization on energy sustainability, GHG reduction strategies.

C. United Nations Framework Convention on Climate Change (UNFCCC)

An overwhelming majority of scientific experts believe that the rise in emissions of greenhouse gases (GHGs) such as carbon dioxide, methane, nitrous oxide, and the chlorofluorocarbons, resulting from important human activities, are changing the composition of the atmosphere which will cause the earth's climate to change. In the absence of policies aimed at reducing such GHG emissions, global mean surface temperatures are projected to increase by about 1.5 to 6°C by 2100. As climate warms, evaporation will be enhanced thus increasing precipitation as well as the frequency of intense rainfall.

A number of intergovernmental conferences focusing on climate change were held in the 1980s and early 1990s. In 1979, the First World Climate Conference recognized climate change is indeed a serious problem. The scientific gathering called on the world's governments "to foresee and prevent potential man-made changes in climate that might be adverse to the well-being of humanity." The UN

Framework Convention on Climate Change (UNFCCC), adopted in 1992 during the UN Conference on Environment and Development at Rio de Janeiro, sets an "ultimate objective" of stabilizing atmospheric concentrations of GHGs at safe levels. Such levels should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

To achieve this objective, Parties to the Convention have a general commitment to publish national inventories of GHG emissions, to develop national programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals of sinks, and to cooperate in the development and transfer of technologies in the sectors of energy, transport, industry, agriculture, forestry, and waste management

The Convention aims at ensuring that the sacrifices to be made for protecting the climate system will be shared fairly among Parties in accordance with their "common but differentiated responsibilities and respective capabilities and their social and economic conditions." It recognizes two groups of countries: Annex I Parties are those (developed countries and most of those with economies in transition) that have the largest share of historical and current emissions. Non-Annex I Parties are basically countries from the developing world. Annex I Parties have committed to adopting national policies and measures with the non-legally binding aim of returning their greenhouse gas emissions to 1990 levels by the year 2000. They must also submit regular reports, known as national communications, detailing their climate change policies and programmes, as well as annual inventories of their greenhouse gas emissions. Other activities and issues under the Convention such as in-depth reviews of national communications, provision of financial assistance, facilitation of technology transfer and development of relevant methodologies, are also of critical importance to forging an effective response to climate change.

At the first Conference of the Parties in 1995, Parties decided that in order to achieve the objective of the Convention the specific commitments for Annex I Parties needed to be strengthened. A new round of talks was therefore launched to decide on stronger and binding commitments for these countries. In 1997, the Kyoto Protocol to the Convention was adopted by consensus. It commits Annex I Parties to individual, legally-binding targets to limit or reduce their GHG emissions, adding up to a total cut of at least 5% from 1990 levels in the period 2008-2012.

The Protocol also establishes three innovative "mechanisms," known as joint implementation, emissions trading and the clean development mechanism, which are designed to help Annex I Parties reduce the costs of meeting their emissions targets by achieving or acquiring reductions in other countries than at home. The clean development mechanism also aims to assist developing countries in achieving sustainable development by promoting environmentally-friendly investment in their economies from industrialized country governments and business.

The above mechanisms were agreed to in principle in the Protocol. However, their operational details must still be fleshed out and this is a key task for the COP6. Parties must also develop the compliance system outlined in the Protocol, and further work is also needed in provisions for land-use change and forestry sector, methodologies for estimating emissions and removals, and reporting obligations. How to address the vulnerability of developing countries is another issue being addressed. Some developing countries in low-lying areas, are highly vulnerable to the impacts of climate change. Others feel more threatened by potential economic repercussions of mitigation action.

In order to enter into force, the Protocol must now be ratified by 55 Parties to the Convention, including Annex I Parties accounting for 55 per cent of carbon dioxide emissions from this group. Although some countries have already ratified or acceded to the Protocol, no Annex I Party has yet done so. The resumption of the COP6 is planned for the first half of 2001.

The Climate Change Secretariat supports the Parties in furthering the negotiations concerning the implementation of the Convention and toward the ratification of the Protocol. It prepares technical and policy papers related to a range of issues many of which have energy implications; summarizes and synthesizes information on GHG mitigation measures and policies in the energy sector provided in the

national communications of the Parties; facilitates the development of a framework for technology transfer, which includes defining priorities in the area of renewable energy and energy efficiency; as well as the development of the capacity building framework, which includes defining priorities for capacity building in developing countries in the area of reducing GHG emissions including those of the energy sector. The UNFCCC Secretariat cooperates with other UN bodies and with other conventions on a range of issues ensuring that these bodies can use optimally their expertise and capacities to assist in the further development and implementation of the Convention.

D. World Health Organization (WHO)

Energy, being key to economic development and its impact on poverty alleviation, has great importance and relevance to WHO as the lead agency on health. Energy considerations, broadly defined, form an important component of many differing activities and programmes of WHO. Several key policy and strategy documents have guided, and continue to guide, the work of the World Health Organisation in regard to energy-related activities. These include the renewed Health-for-All policy (HFA in the 21st Century), Agenda 21 (Chapter 6, for which WHO is task manager), and other policies and strategies relevant to the newly restructured WHO, especially its cluster on Sustainable Development and Healthy Environments. These establish a range of differing objectives which are directly or indirectly related to energy activities. WHOs work is conducted in collaboration with other agencies in the UN system, regional and international organisations, collaborating centres, research and academic institutions, NGOs and others.

The following are examples of activities that have constituted part of WHOs programmes related to energy development and use, some indirectly through broad planning initiatives concerned with health in sustainable development and poverty reduction:

* Assessing impacts on health of development policies and projects, including energy- related aspects, promoting and supporting research and capacity-building in health impact assessment, for example in relation to dams/reservoirs for hydropower generation;
* Contributing to health risk assessment of different energy sources, technologies and systems;
* Monitoring and assessing linkages between development, health and environment impacts, incorporating an energy dimension; this includes also the development of indicators and methodologies;
* Promoting and conducting assessments of health impacts and intervention strategies related to various forms of household energy (emphasis on biomass burning), as well as capacity-building, awareness-raising and policy development (A strategic initiative on household energy, fuel poverty and the indoor environment has been promoted at WHO - case studies on policies and strategies to to address the problem have been initiated);
* Strengthening capacity at national and sub-national levels in policy and planning for health in relation to sustainable development and poverty reduction, through mechanisms such as A21, HFA, Healthy Cities, PRSPs, national planning and related initiatives.This involves many sectors, including energy;
* Conducting activities in the area of radiation protection, including health risk assessment, follow-up on the health effects of Chernobyl, developing preparedness and response mechanisms in radiological emergencies through a radiation emergency medical preparedness and assistance network of collaborating centers;
* Conducting activities in the area of EMF, including health risk assessment, identification of research needs, development of criteria and standards, studies of risk perception and communication, and support and advice to national authorities;
* Assessing air quality and health implications in urban areas, relating to emissions from motor vehicles, industries and energy sources; providing monitoring data and information;
* Promoting the assessment of health benefits (near- and long-term) in relation to various energy-related sectors which derive from changes in energy efficiency and energy use;
* Supporting climate-related activities in terms of international frameworks and conventions, and initiatives such as IPCC and the Climate Agenda process, incorporating a health and development perspective;
* Supporting programmes to protect the health of workers and communities by promoting clean energy and clean technologies in various sectors, including the informal sector;

* Promoting the use of alternative technologies in the rural health sector, focussing on the provision of vaccine refrigerators for the EPI cold chain; and
* Assessing health impacts on end-users of services provided by energy, such as of cooking, heating, lighting, provision of water and sanitation.

E. World Meteorological Organizaton (WMO)

The WMO provides the authoritative intergovernmental voice in scientific matters relating to atmosphere, water and climate as outlined in the WMO Long Term Plan. The WMO programmes address relevant chapters in the Agenda 21 and act in the implementation of the decisions taken by the Conference of the Parties to the Framework Convention on Climate Change. In 1988 the WMO established with UNEP the Intergovernmental Panel on Climate Change and continues to provide significant support. Coordination and linkages with other international energy related organizations and programmes are assured through the process under the Climate Agenda.

WMO promotes sustainable energy production and use in several programmes. WMO's energy-related activities include:

(i) provision of guidance material and implementation of several training seminars, focusing on use of climate information in development of new and renewable sources of energy such as biomass, hydropower, solar and wind energy.

(ii) support to development of energy-related assessments within the frame work of the UNEP/WMO Intergovernmental Panel on Climate Change.

(iii) contribution to the development of methods for comparative assessment of environmental impacts of different energy sources within the framework of the inter-agency DECADES project.

Different forms of energy production, including hydropower, biomass energy, solar and wind energy, draw on resources which are significantly dependent on climate conditions. One thrust in WMO programmes is the provision of guidance material and capacity building in the needs and requirements for services to the energy sector.

WMO provides guidance material and support to training in energy conservation, especially in urban and building development within the framework of a Tropical Urban Climate Experiment (TRUCE).

F. United Nations Fund for Population Activities (UNFPA)

UNFPA promotes a greater understanding of the interrelationships between population and environment, including energy, in all its programmes, in accordance with the interface goals and objectives of UNCED and ICPD. UNFPA promotes fair and equitable access to the use and management of resources, within an enabling environment. The eradication of poverty will not be possible without the recognition of a shared culture of access to every individual of basic energy resource and basic social services, including health and reproductive health and rights; gender equality, equity and the empowerment of women.

The International Conference on Population and Development (ICPD), in affirming these relationships, noted that sustainable development implies, *inter alia*,long-term sustainability in production and consumption relating to all economic activities, including industry, energy, agriculture, forestry, fisheries, transport, tourism and infrastructure, in order to optimize ecologically-sound resource use and minimize waste. It called for the integration of population issues into economic and development strategies to speed up the pace of development and alleviate poverty. As lead agency in the follow-up of ICPD and as task manager for population to the goals of UNCED, UNFPA seeks to assist countries in their goals of sustainable development and poverty eradication, population and environment.

UNFPA promotes coordinated and holistic approaches to energy assessments and impact, energy development, energy supply and use that take into account the many and changing population needs – its composition, distribution, scope and basic needs for all. UNFPA seeks to use new opportunities, in particular, through the UN reform initiatives such as the Common Country Assessment and United Nations Development Assistance Framework and other appropriate comprehensive development frameworks, at all levels of policy and planning. UNFPA promotes integrated planning to enhance the capacity of countries to address their own goals through strengthened policy planning and analysis using improved data and methods to track the complex and dynamic relationships between population and energy.

G. Food and Agriculture Organization (FAO)

FAO's views on energy focus on the necessary transition towards more sustainable energy systems, particularly in relation to the rural energy situation in developing countries. FAO views this transition as a move from the present energy supply and inefficient use of mainly fuelwood and other biomass fuels and of animal and human power, to a more diversified resource base, increasingly utilizing renewable energies and a more modern use of biomass. This transition is key to attaining sustainable livelihoods, food security and improving the living conditions of rural populations. The role of renewable energy sources and, in particular, of bioenergy in both developmental and environmental terms is an important element in FAO's vision of energy matters. Carbon sequestration and substitution by bioenergy is also of increasing interest in the context of the Climate Change Convention.

Most developing countries need to strengthen their institutional and human capacities to implement rural energy programmes. Useful in these efforts are the Nairobi Programme of Action on New and Renewable Sources of Energy and Agenda 21 adopted at UNCED. FAO's view and ultimate objective is that the energy transition leads to enhanced rural and agricultural productivity. International environmental conventions, the World Food Summit and the Commission on Sustainable Development (CSD) process and the recently established Global Forum for Sustainable Energy open opportunities to fulfil that objective.

FAO's energy activities emphasize the need to develop and promote technologies and strategies for the use of renewable energy sources adapted to the socio-economic needs of rural populations. FAO's technical assistance activities recognize that agriculture, forestry and fisheries have a double role and potential, as both consumers and producers of energy in the form of renewable bioenergy. These activities take an integrated approach to the assessment, planning and implementation of energy and sustainable rural development. All steps in the food chain require energy and a systematic approach is taken to its "energization". Renewable energy applications are promoted, especially in relation to enhanced agricultural productivity and other income-generating activities. Networking is also promoted and realized through initiatives such as the Latin American and Caribbean Working Group on Rural Energization for Sustainable Development, the Regional Wood Energy Development Programme in Asia and the Sustainable Rural Environment and Energy Network for the European Region. The interrelationships between agriculture and energy have been assessed in the context of the preparations for CSD 9: a document entitled: The Energy and Agriculture Nexus has been recently published.

Special emphasis is placed on bioenergy, which plays a key role in the present energy scenario in rural areas and has a high potential as a modern energy carrier. Wood energy data and projections are an important component of FAO's energy activities. FAO has gathered information on the dynamics of bioenergy flows and has been providing multidisciplinary approaches and technical expertise in this field. FAO has gathered experience in the development of methodologies and definitions, management and analysis of databases, policy advice and development of national and regional specialized bioenergy studies. Attention is given to the energy function of the sugar industry, as one of the diversification strategies of that sector, and to the production of low-cost transport fuels. FAO also promotes awareness and better use of work animal technology. The Organization has also implemented field projects aimed at:

- increasing the supply of biofuel (through multipurpose tree plantations and sorghum species, agroforestry schemes, community forestry, utilization of agricultural residues);
- reducing woodfuel consumption and increasing energy efficiency;

- promoting renewable energy applications (to enhance agricultural productivity and for rural services such as electricity);
- improving market and trade mechanisms;
- fostering gender equality;
- addressing health problems;
- promoting bioenergy for combined heat and power.

A significant number of projects have been implemented in areas such as wood energy, bioenergy, biogas, solar drying, illumination and water lifting. Agricultural engineering solutions to promote fuel-saving cropping systems (conservation tillage, zero tillage), human and work animal energy, efficient energy and water use in irrigation, and energy-efficient fishing vessels are other focus areas. In the crop-specific area, technology transfer of new drought- and saline-tolerant sweet sorghums for alcohol production is being pursued. The particular characteristics of links between energy and environment in rural areas are being assessed. Animal and agro- and agro-industrial residues, their valorization and the protection of local environmental quality are also topics given particular attention and network support.

Outstanding challenges to achieve the necessary energy transition are the development and implementation of rural energy policies and programmes with concerted action of all interested parties: farmers, local and national governments, the private, financial and academic sectors and international institutions. The physical and economic accessibility to sustainable energy forms by the poorest rural and peri-urban populations for income-generating and subsistence activities remains an urgent and critical matter.

H. International Atomic Energy Agency (IAEA)

The IAEA is the agency in the UN system responsible for the safety and peaceful uses of nuclear energy. The major challenge ahead is the role of nuclear energy in sustainable energy development and includes a broad set of issues including technology transfer, nuclear and radiation safety, physical protection of nuclear materials and measures to halt illicit trafficking.

Taking account of economics, protection of the environment and security of supply, nuclear power will continue to be harnessed to meet the rapidly growing global demand not only for electricity and heat but also for chemical fuel production and fresh water supplies. Access to affordable energy services supplied in an environmentally benign manner is a prerequisite for sustainable development. Improving the energy supply situation especially in developing countries is, therefore, one major focus of IAEA energy activities.

Nuclear Energy: The IAEA assists Member States in developing national or regional electricity and energy supply strategies, in assessing future energy needs, in nuclear power planning and decision-making, and in defining sustainable energy policies. Assistance offered by the IAEA includes transfer of planning and analysis methodologies (models), access to conversion technology and energy resource data, and training of representatives from Member States in model application, analysis, result interpretation and strategy formulation (capacity building). The objective is to increase the capability of Member States to carry out their own energy and electricity sector analyses and investment planning, including the objective assessment of nuclear power and its alternatives. The methodological approach encompasses the comparative assessment of all relevant energy supply options from resource extraction to the provision of energy services and waste disposal, the analysis of energy-environment interactions (local air quality, regional acidification, climate change) and impacts on human health, the quantification of externalities, greenhouse gas mitigation options (including the flexible mechanisms under the Kyoto Protocol), financial and cash-flow analyses as well as liability management in increasingly deregulated/liberalized energy markets. Energy and electricity demand analyses including detailed load projections and optimal load dispatch strategies are further areas of IAEA assistance and capacity building.

As regards nuclear power, fuel cycle and waste technology, the IAEA facilitates the exchange of non-commercial information on improved new and advanced nuclear power plant designs, advances cooperative research in the field of nuclear power engineering and technology development, provides support to developing countries in planning and implementing nuclear power programmes, provides best practices for improvements in design, construction, maintenance and operations of nuclear facilities, promotes nuclear

power engineering and technology know-how and transfer, provides for the training and development of personnel for nuclear facilities, works towards the preservation of knowledge and competence in the areas of nuclear power and engineering and technology, and provides technical cooperation and support on nuclear fuel cycle and waste technology (covering raw materials for reactor fuels, spent fuel and radioactive waste). This includes assessments of programmes and activities in Member States, upon their request, through ad hoc expert group meetings, technical assistance projects, advisory services and peer reviews and assistance in building up and strengthening national nuclear regulatory structures and mechanisms, national nuclear research organizations, and technical and organizational infrastructures for radioactive waste management.

The IAEA carries out assessments of uranium resources and develops strategies for their exploitation and utilization and develops forecasts for raw material requirements with regard to various fuel cycle and nuclear power evolution scenarios.

Safety:. The IAEA establishes or adopts in consultation and, where appropriate, in collaboration with the competent organs of the United Nations and with appropriate specialized agencies, standards of safety for the protection of health and minimization of danger to life and property. The safety standards cover the safety of nuclear installations, radiation safety and the safety of radioactive waste. The IAEA provides for the application of safety standards through the provision of assistance under technical cooperation agreements; fosters safety-related information exchange; promotes safety-related education and training; coordinates safety-related R&D; and renders nuclear safety-related services to Member States.

Nuclear Applications: In the area of renewable energy, the IAEA provides technical cooperation and support in the exploration of geothermal energy resources using isotopic tracer techniques.

Safeguards: The Treaty on the Non-proliferation of Nuclear Weapons (NPT), first signed in 1970 and made permanent in 1995, is the global legally binding agreement which aims to prevent the further spread of nuclear weapons. To ensure that the 185 countries that signed the NPT are complying with their commitment to use nuclear energy for peaceful purposes only, the international community has mandated the IAEA to verify - through its safeguard system - that a State is not diverting nuclear material or equipment to develop or produce nuclear weapons. Peace is essential for sustainable development. The NPT and IAEA safeguard system, therefore, are crucial elements for alleviating security concerns, especially should more countries adopt nuclear power in their national energy supply mix.

III. Other Organizations

A. Global Environment Facility (GEF)

The Global Environment Facility (GEF) leads the world in promoting energy efficiency and renewable energy for developing countries, and it is the financial mechanism of the U. N. Framework Convention on Climate Change. Through end 2000, GEF approved grants of $1.09 billion and mobilized $6 billion more for 132 projects and 140 enabling activities addressing climate change in more than 130 countries. Co-financing comes from governments, non-governmental organizations, other international institutions, and the private sector.

GEF support of strategic exercises known as “enabling activities”, capacity building measures linked to projects, and targeted training strengthens national capacities to assess and address climate change risks and clean power generation opportunities.

GEF energy projects foster markets and policies for a diverse set of technologies addressing the wide range of needs and circumstances – from efficient light bulbs and household-size solar systems to large-scale wind farms, solar thermal power plants, and efficiency improvements in steel and other industries. Nearly $570 million in GEF funds and $2.5 billion in co-financing have gone to 48 renewable energy projects in 47 nations. GEF funded projects include:

-- 600,000 solar home systems for rural energy, practically doubling the installed base in developing countries.

-- Roughly 300 megawatts (MW) of wind power, 430 MW of hybrid solar thermal/gas turbine power plants, 440 MW of geothermal power, 85 MW of small-scale hydroelectric power, and electricity from biomass, like sugar cane residue, in several countries.

-- More than 3 million efficient compact fluorescent lights installed in homes in three countries.

-- Biogas captured from agricultural, industrial, and municipal wastes providing power and lighting in eight countries.

Municipal programs for sustainable transportation, employing such innovations as fuel cell buses.

Key aspects of GEF projects include:

Equipment installations and demonstration. Many GEF projects install and demonstrate equipment, such as solar home systems, compact fluorescent lamps, and energy-efficient motors. The directly installed capacity and energy savings from these projects can be significant. However, these installations are fundamentally intended as demonstrations and must be replicated in order to achieve large-scale, indirect impacts.

Capacity building. This central feature of most GEF projects assists beneficiaries in understanding, absorbing, and diffusing technologies. Projects develop the skilled personnel and institutional capacities that are widely recognized as important for technology diffusion. Projects strengthen the capacities of public agencies, private sector firms, financiers, consumers, community organizations, and non-governmental organizations. For example, many projects assist public agencies to regulate, promote, finance, and sustain technologies. Projects may also provide technical and commercial information and training/advisory services to private sector firms.

New institutions and financing services. Projects are demonstrating a variety of new institutions and financing services for promoting technology diffusion. For example, financing is provided to local community organizations, private sector financiers and financial intermediaries, local entrepreneurs, public or private revolving funds, private debt/equity funds, and private-sector renewable energy project developers. Projects pilot industrial sector energy service companies known as ESCOs, rural energy service concessions, and utility-based programs that address energy demand. They also provide combinations of different types of financing for private sector activities, such as grants, concessional (no- or low-interest) loans, and contingent loans (forgivable under specified conditions).

Market transformation. Projects assist manufacturing firms to develop and market energy-efficient products as part of so-called "market transformation" approaches in which supply and demand sides are stimulated simultaneously. These approaches can include technical and financial assistance to producers, new equipment standards and certification, consumer information and education, regulatory changes, and other incentives.

Engaging the private sector in projects. The private sector participates directly in GEF projects as manufacturers and dealers, local project developers, financial intermediaries, recipients of technical assistance, technology suppliers and contractors, and project executors. In addition, several GEF projects are designed to directly mobilize private-sector financing. The International Finance Corporation is executing five projects (update?)in which managed investment funds are designed to leverage $375 million in financing from the private sector with $95 million in GEF grants. Other projects competitively solicit financial contributions from manufacturers to reduce retail equipment prices.

Roles of non-governmental organizations (NGOs). GEF projects involve international and national NGOs, community-based organizations, industry associations, consumer groups, and educational institutions. These organizations may help design and prepare projects, execute projects, advise implementation committees, train project beneficiaries, supply services and equipment, conduct social research, or provide technical or policy support.

Although most approved projects are still being implemented, project experiences, impacts, and lessons are emerging. Impacts are particularly visible from projects involving solar home systems, grid-connected wind and biomass power, energy-efficient lighting, and fuel switching and production/recovery. Completed or continuing projects have fostered new national policy and regulatory frameworks, international technology transfer through the private sector, growth of domestic industries for energy efficiency and renewable energy technologies and services, increased sales and investments, and provision of environmentally sound energy services to end-users. In addition to these development benefits, projects have directly and indirectly reduced greenhouse gas emissions.

Replication of direct impacts to produce indirect impacts is integral to GEF climate change strategies. Replication may occur, for example, from local to national markets, from one private-sector firm to others, from one local government to another, and from one country to another. Although there are a variety of mechanisms to promote replication that can be incorporated into projects, replication ultimately depends on actions of governments, consumers, NGOs, and/or the private sector after a project is completed. Achieving and demonstrating programmatic benefits from the GEF project portfolio will depend on continued dialogue and understanding of project designs and impacts by all stakeholders.

B. World Bank

The vision of the World Bank is a world free of poverty. Its actions in the energy sector – whether through loans, investment, financial guarantees, advisory activities or sector study - support this vision. Its energy sector program has three central themes that form the basis of its actions –(a) access – extending energy services to the poor (b) sector reform: the development of efficient energy markets (c) environment development of clean energy systems that are environmentally sustainable. The World Bank is also an implementing agency of the Global Environmental Facility (GEF) and the Multilateral Fund for the Montreal Protocol (MFMP).

The World Bank provides loans and technical assistance to developing countries in all aspects of the energy sector, including power supply and power sector restructuring, gas system development, rural electrification, hydropower development and regional electric interconnection. It also prepares studies on related technical and policy issues, including energy efficiency and energy conservation measures. It supports economic development of alternative energy sources such as mini-hydro, wind and solar energy, as well as geothermal and biomass.