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A SUMMARY REPORT FROM THE INTERACTIVE THEMATIC SESSION ON ENERGY AT THE THIRD UNITED NATIONS CONFERENCE ON THE LEAST DEVELOPED COUNTRIES (LDCS)

SUMMARY OF THE INTERACTIVE THEMATIC SESSION ON ENERGY AT THE THIRD UNITED NATIONS CONFERENCE ON THE LEAST DEVELOPED COUNTRIES 17 MAY 2001

The Interactive Thematic Session on Energy at the Third United Nations Conference on the Least Developed Countries (LDCs) was held on 17 May 2001 in Brussels, Belgium. The Session was organized in parallel with the Third UN Conference on the LDCs held at the European Parliament from 14-20 May 2001. The Session was organized by the United Nations Industrial Development Organization (UNIDO), and the United Nations Conference on Trade and Development (UNCTAD) with the support of the Government of Austria, and was attended by over 300 government delegates, including ministers and energy experts. The Session followed a preparatory process that included a High Level Meeting on Energy held at UNIDO headquarters in Vienna from 14-16 March 2001.

Participants at the Session heard opening speeches and addressed issues relating to three key themes: access to energy, enhancing energy efficiency, and efficient oil and gas pricing and procurement. They reviewed and endorsed a list of proposed key outputs or deliverables developed and "field tested" during the preparatory process. These deliverables include: promoting pilot projects at the regional scale utilizing the "Multifunctional Platform" for power generation; promoting local assembly/manufacture of renewable energy equipment; developing rural capacity to manage integrated water and energy projects; implementing a pilot rural energy programme in Bhutan; establishing national and regional energy efficiency centers; promoting development of energy services companies (ESCOs); implementing a pilot energy conservation and efficiency programme in Zambia; developing investment strategies and feasibility studies for financing of regional energy projects; building capacity of LDCs for efficient oil pricing and procurement of hydrocarbons; supporting the exchange of successful experiences and best practices in the use of renewable energy technology; and promoting natural gas exploration and development in African LDCs.

At the end of the session, the co-chairs and the moderator drew conclusions from the discussions, noting apparent consensus among participants with regard to the deliverables, and proposing that UNIDO take further action towards their implementation.

Saturday, 19 May 2001

REPORT OF THE MEETING

The Interactive Thematic Session on Energy at the Third United Nations Conference on the Least Developed Countries convened on Thursday afternoon, 17 May. Carlos Magariños, Director-General of UNIDO, served as moderator. The Session was co-chaired by Bacari Kone, Minister of Economy and Finance of Mali and Wilhelm Molterer, Austrian Minister of Agriculture, Forestry, Environment and Water Management.

Carlos Magariños opened the Session by stressing that improving access to energy is a priority for UNIDO and by highlighting the links between energy, industrial development, economic growth, environmental management and poverty eradication. He emphasized LDCs' need for more efficient use of energy, a transition to advanced energy systems and capacity building and investment in their energy sectors. Highlighting preparatory activities for this Session, he drew attention to the High Level Meeting on Energy held in March 2001 in Vienna, as well as to the ninth session of the UN Commission for Sustainable Development (CSD). Noting that the International Energy Agency's (IEA) World Energy Outlook 2000 forecasts a 57% increase in global primary energy demand as well as a 60% increase in carbon dioxide emissions between 2000 and 2020, he pointed out that developing countries would account for 70% of the demand increase during this period. He also summarized the conclusions of the World Energy Assessment, which was published by the United Nations Development Programme (UNDP), the United Nations Department of Economic and Social Affairs (DESA) and the World Energy Council in September 2000, highlighting energy's central role in sustainable development and the needs of the two billion people who are currently without access to modern forms of energy.

He noted the importance of international cooperation in efforts to achieve sustainable energy development. He reiterated the global energy goal of halving the number of people without access to reliable and affordable modern forms of energy by the year 2015, and expressed confidence that solutions can be found through energy efficiency, renewable forms of energy and advanced technologies. Noting the need to provide reliable and affordable energy as a particular challenge for rural areas, he said LDCs have significant resources and potential, and called for constructive discussion and suggestions for concrete actions.

Recalling the comprehensive outcomes and policy-relevant guidance from the High Level Meeting on Energy and from the ninth session of the CSD, Wilhelm Molterer stressed that current patterns of production and consumption are unsustainable. He underscored that

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access to energy, especially in rural areas, is one of the most important issues for LDCs, and supported a focus on renewable forms of energy. He noted access to energy as a precondition for economic development and poverty eradication, and highlighted small-scale, decentralized solutions and local/regional approaches. He introduced a publication containing good practice examples of the introduction of energy technologies for sustainable development carried out by Austria and its developing country partners. He supported capacity and institution building, and public-private partnerships. He drew attention to the activities of the Global Forum on Sustainable Energy, which held its first meeting in December 2000 with the aim of providing a multi-stakeholder platform to address key sustainable energy issues. He informed participants that the Forum will convene again in November 2001 in Vienna, and proposed that the Forum increase its activities focusing on LDCs. He then encouraged participants to provide guidance to LDCs and their development partners on energy issues for the next decade.

Bacari Kone drew attention to energy issues in landlocked countries, and stressed that LDCs are vulnerable to oil price fluctuations and environmental issues such as climate change, and their economies are fragile because of low levels of diversification. He said oil price fluctuations have had adverse effects on the terms of trade of many LDCs, including Mali, and much of the effect of the debt reduction provided under the Heavily Indebted Poor Countries (HIPC) initiative has been offset by higher oil prices. Outlining the primary characteristics of the energy sector in LDCs, he noted the predominance of fossil fuels, problems such as deforestation and desertification as a result of unsustainable use of traditional biomass, and the poverty of many energy users. He called for: programmes and strategies to improve oil and gas supply in landlocked countries; diversification with regard to energy sources; increased development of national renewable resources; and regional energy cooperation. He highlighted positive experiences in rural villages in Mali emerging from implementation of the Multifunctional Platform, a locally manufactured and assembled diesel engine system that can be used to supply power for a range of tasks including milling, dehusking and welding, as well as generating electricity for pumping water for lighting and for battery charging. He called for follow-up to this Session and the Third UN Conference on the LDCs in general, and urged support by the international community for sustainable energy development in LDCs.

Rubens Ricupero, Secretary-General of UNCTAD and Secretary-General of the Third UN Conference on the LDCs, encouraged participants to respond and react to ideas emerging during the Session, and called for practical, tangible deliverables. He said the problems related to energy in LDCs are well known, and solutions should be the focus. He highlighted the difficulties faced by both LDC exporters and importers of oil due to the volatility and uncertainty of oil markets, in which high oil prices have undermined debt relief efforts. He encouraged the international community to come up with social and economic safeguards for price fluctuations and said UNCTAD is cooperating with the Organization of Petroleum Exporting Countries (OPEC) in this regard. He suggested risk management to respond to the vagaries of oil market prices. He noted the need to define the role of the public sector in providing an enabling environment, highlighted public-private partnerships as offering particular opportunities, and called for innovative financing solutions. He also welcomed regional collaboration. He concluded that "oil should be used as a seed for future richness," allowing LDCs to develop and diversify their economies.

THEME ONE: ACCESS TO ENERGY

Carlos Magariños introduced the first theme on access to energy, particularly in rural areas, by defining "energy access" as the provision of reliable and affordable energy. He stressed that increasing consumption of energy is vital for income generation and the achievement of social goals.

PRESENTATIONS: Andre Nalke Dorogo, Minister of Mines, Energy and Water in the Central African Republic, described his country's situation as being characterized by a significant land area relative to its population, and a lack of access to the ocean. He noted that only a small proportion of its population has access to modern energy, and that this relatively small group is concentrated in its urban capital. However, because the country has substantial hydroelectric potential and extensive river systems, decentralized electrification could provide a foundation from which to resolve the energy access problem. While drawing attention to his government's establishment of a commission on energy issues, he called on all participants at the Third UN Conference on the LDCs to, *inter alia*: take action to increase access to energy in LDCs, especially in landlocked countries; take into account environmental considerations in developing energy access; promote interconnection of energy systems at the regional and sub-regional levels; enhance the security of supply corridors and energy storage infrastructure; and provide capacity building for risk management to respond to energy price fluctuation. Nalke Dorogo concluded by urging that this Session set out specific actions and timetables, and stressed the need for this to happen quickly in order to help LDCs improve welfare and combat poverty, and to prevent additional countries from becoming LDCs.

Musah Sillah, Secretary of State for Trade, Industry and Employment for the Gambia, began his presentation noting that while most discussions at the Third UN Conference on the LDCs have focused on trade, energy is a prerequisite for trade, and also for sustainable development. He said gaps in energy access contribute to desertification, deforestation, and the loss of employment and income generation opportunities. Women in rural areas are particularly affected, as their activities are most constrained by the need to gather fuel wood. The performance of rural schools is also dependent on electricity. He stated that the Gambia's situation, like that of most LDCs, is one where the majority of its population, largely rural, lacks access to electricity. Its 1.3 million people are served by only 25 megawatts of installed generating capacity. He said the Gambia has focused on the potential of the private sector to solve this challenge and has therefore opened its energy sector to international electricity companies.

Musah Sillah further stated that his country is seeking to introduce independent power producers that will supply the grid. A national provider will handle distribution. He also noted the need for development of a regulatory framework to supervise the companies. He stressed the high cost of petroleum products and said the Gambia is seeking alternative energy sources, especially renewables. The Gambia sees the Multifunctional Platform as a worthwhile tool that deserves the support of all LDC governments, as it involves the sub-regional manufacture and assembly of alternative energy generation platforms. Noting that the international donor community has until now concentrated its support on the use of petroleum and imported energy sources, he suggested that it needs to focus on alternatives and build the capacity of LDCs in achieving efficient and affordable pricing of hydrocarbons. He concluded by stressing the importance of energy to trade and development in LDCs, calling on development partners to facilitate the provision of reliable, affordable and clean energy, to enhance income and welfare in LDCs.

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Pedro De Sampaio Nuñes, Director of Transport and Energy, European Commission, reviewed the Commission's efforts in promoting energy access in developing countries. He noted that the Commission had provided 450 million Euros for the implementation of centralized power generation, the introduction of photovoltaics, and enhancement of energy efficiency. The Commission also devoted 250 million Euros to energy technology research and development programmes that seek to advance energy production in a more clean and efficient manner and to support capacity building. He noted that these projects have not always been a complete success, due to problems of governance and energy price instability. According to Pedro De Sampaio Nuñes, the Commission sees climate change as a serious threat. Giving economic value to carbon dioxide reduction is important in making alternative energy programmes work. As a result, the European Commission will continue seeking ratification of the Kyoto Protocol. He noted the convergence between consumers and producers on a sustainable price for oil at around US\$20 per barrel. He concluded that high oil prices, rising interest rates, and high foreign debt all work against development interests.

Sonam Tshering, Director, Department of Power of Bhutan, presented as a deliverable a proposed pilot programme on rural energy for Bhutan. He said a UNIDO mission had visited Bhutan prior to the Session to prepare the programme proposal, which involved the exploration of potential areas of cooperation between development partners and Bhutan. On broader energy issues in LDCs, he said energy has far reaching impacts with regard to issues such as health, education and the status of women. He noted the global energy goal of halving the number of people lacking access to modern forms of energy by 2015. Drawing attention to the fact that most people in LDCs cannot afford energy access, he called for the identification of novel solutions. Providing examples from Bhutan, he noted that most energy is derived from biomass in its primary form. He said Bhutan is well endowed in terms of hydropower, but noted physical constraints to energy development and access, including the mountainous geography, scattered population, limited number of roads and power lines and high costs of their development, as well as a lack of capacity, skilled labor, and finance. He highlighted the role of governments in energy development in LDCs and suggested that public utilities need to be restructured to become more efficient and transparent. He recommended the development of sustainable energy master plans and regional cooperation. He called for establishment of a trust fund to ensure that energy is provided to all LDCs, noting that universal energy access in developed countries was achieved with the help of government loans and grants.

Thomas Johansson, Director, Energy and Atmosphere Programme, UNDP, noted that access to energy is a prerequisite for sustainable development in LDCs. Drawing attention to the fact that one third of the people in the world lack access to energy and one third use traditional fuels for cooking, he said feasible solutions exist to address the problems, and supported a combination of grid extension and decentralized solutions such as the Multifunctional Platform. He also favored modern, efficient uses of biomass. He said sound policies are the key to change and stressed that, while markets are important, they cannot deliver results if used in isolation or as a stand alone policy, but need to be part of a broader package of solutions. He cautioned that liberalization of the energy sector may lead to adverse results in rural areas in LDCs where grids are limited. He said capacity building and international cooperation are important and that clean energy and cooking should be integrated into rural development strategies. Stressing the importance of mainstreaming energy for sustainable development, he suggested this message should be delivered to the Financing for Development process and the World Summit on Sustainable Development in 2002.

Chris Mottershead, Vice President of Technology at BP Amoco Plc, began his presentation by stating that while he represents one of the world's largest oil companies, he would stress the role of renewables and of local entrepreneurs in addressing the energy needs of LDCs. Mottershead noted the importance both of energy efficiency and of improvements in conventional energy access. However, he argued that renewables offer a means to change paradigms that could allow the successful electrification in the next decades of the two billion people, largely in rural areas, who today lack access. Referring to BP's experience providing photovoltaics to two million people in rural markets, Mottershead underscored that the global energy goal of halving the number of people without access to reliable and affordable modern forms of energy by the year 2015 is achievable. He highlighted the critical role for multinational companies in providing infrastructure, but also for small to medium sized enterprises that understand local and regional market dynamics. He suggested that small operators must increasingly be the face of energy supply in developing countries. Mottershead also urged a change in capital investment decisions. Remarking on the US\$10 billion investment in global energy development by BP each year, he pointed out that much of this goes to LDCs with hydrocarbon reserves. He said it is essential that some of this be redirected towards alternative energy development. On behalf of BP, he invited a dialogue on how to work in collaboration with donors and countries to support alternative energy development. Mottershead concluded by recognizing the importance of local entrepreneurs in customizing the energy solutions developed by multinational companies for application at the local level.

DISCUSSION: Cahit Gürkök, Director of Energy Efficiency and Climate Change, UNIDO, summarized the proposed deliverables relating to energy access. These included, *inter alia*: promoting decentralized village-level energy generation through expansion of the Multifunctional Platform project across Africa; developing rural capacity for the management of low-cost solutions for safe drinking water and renewable energy; and promoting domestic assembly/manufacture of renewable energy equipment in LDCs.

In the ensuing discussion, Saudi Arabia noted that all OPEC countries are developing countries. He said the earnings derived from oil are the source of funds for development, and stressed the need for stable oil prices, which he said are in the interest of producers and consumers alike. He said that because oil is a strategic commodity all countries are jointly responsible for maintaining the stability of prices. He highlighted a Saudi Arabian initiative for the creation of a World Energy Forum fostering dialogue between producers and consumers, with a permanent secretariat to be hosted in Riyadh. He stressed that oil exporters are assisting LDCs, and provided examples of concrete initiatives.

Chad highlighted the special problems in landlocked countries with regard to energy access, and called for international assistance to provide rural communities with access to energy in order to allow them to enhance their productivity and find new ways to earn revenue.

Noting that energy access is a prerequisite for development, Norway cautioned that if access is left to the private sector there is no guarantee that poor and rural populations will be provided with the energy supplies they need. He emphasized the links between energy and environment, and said Norway aims to prioritize support to LDCs related to the development of environmentally-sound energy solutions based on advanced technologies and high environmental standards. He noted that much can be learned from middle income countries that have substantial experience with regard to renewable energy solutions.

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Côte D'Ivoire suggested that means be sought to enhance energy system integration between countries. He noted that while many LDCs have hydroelectric dams or major sources of natural gas, power cannot be distributed to those who need it without the necessary interconnections in and between countries. He urged connecting the different networks to promote sharing between those with abundant energy sources and those without, both nationally and regionally.

A representative of the International Labour Organization stressed the role of energy in job creation, and how inadequate energy access contributes to environmental degradation, displacement and progressively deepening impoverishment. He urged greater investment in renewable energy production, as these sources remain expensive compared to the alternatives.

The Democratic Republic of the Congo stressed the importance of peace in attracting investment in energy supply and distribution, and of the potential for "energy highways" and joint energy supply projects between countries, with international mechanisms to ensure security. As an example, he outlined an international hydroelectric project and distribution system that is currently in the planning stages and involves several African countries.

THEME TWO: ENHANCING ENERGY EFFICIENCY

Carlos Magariños introduced the issue of rational use of energy, defining it in terms of a reduction in the amount of energy consumed for a given purpose. He stressed that while there is potential for efficiency gains to be seized by LDCs, market and institutional barriers to their realization are considerable.

PRESENTATIONS: Godfrey Simasiku, Deputy Minister of Finance and Development of Zambia, stressed the need to enhance energy efficiency and highlighted an energy conservation and efficiency programme in Zambia carried out in cooperation with the country's development partners. He said the programme aims at achieving deliverables that have a direct impact on poverty alleviation and seeks to increase efficiency among the majority of the people of Zambia, who are still largely dependent on traditional fuel sources. He said the programme has increased the energy options for low-income populations, and serves capacity building and awareness raising functions. He highlighted a deliverable in this area prepared for the Session in cooperation with UNIDO, and hoped that the programme would be supported. Stressing that short-term gain should never come at the expense of long-term benefits, he noted that Zambia has created a special Ministry of Energy and Water Development whose mandate includes addressing environmental impacts.

Ruzvidzo Shakespeare Maya, UNIDO consultant, Zimbabwe, noted the compatibility of considering energy efficiency and energy access, as it makes sense to use energy efficiently in situations where access is limited. He introduced as deliverables the establishment of energy efficiency centers and partnering with private energy service companies (ESCOs). He said energy efficiency centers should be set up in selected LDCs, or at the regional level as appropriate, to function as a resource for governments by providing expertise and policy support. He noted environmental and climate change benefits from energy efficiency, and said the energy efficiency centers would provide governments with advice on issues related to, *inter alia*, assessment of energy expansion, process efficiency, power development and general policy formulation. Regarding ESCOs, he said they allow industry in LDCs to cut costs and turn energy savings into revenue. This would not be possible without ESCOs, as industry's ability to pay upfront for requisite investment is limited. He stated that ESCOs would also serve an awareness-raising function.

Andreas Ranet, Verbundplan, Austria, highlighted some successful projects in the areas of energy efficiency and renewable energy implemented as part of Austrian development cooperation in Cuba and Ethiopia. He suggested that special emphasis should be given to human resources development, including skills development. He noted the need to consider cultural aspects and attitudes regarding energy and human resource use.

Bernard Jamet, UNIDO consultant, France, said energy saving is fundamental to energy development and is possible and necessary even where access appears to be the problem. He said financing is a key issue, and called for long-term, replicable, sustained funding derived from sources beyond subsidies. He supported the use of market mechanisms and involvement of the private sector, and the application of approaches that have already proven successful, such as the involvement of ESCOs.

DISCUSSION: Cahit Gürkök noted that all key deliverables within the energy efficiency area had been touched on in the presentations. In the ensuing discussion, Venezuela supported market stability and reasonable oil prices. Noting Venezuela's current chairing of OPEC, he highlighted activities by oil producing countries and by the OPEC fund to support LDCs.

Benin stressed the need for investment in energy production in Africa, noting the continent's substantial potential. He called for the creation of an inventory of this potential.

Afghanistan provided a suggestion in support of South-South cooperation with regard to price setting for oil, and called on UNCTAD to study the potential for inter-regional agreements between oil exporters and LDC importers.

Mali drew attention to the Multifunctional Platform, which she said addresses concerns of energy access, especially in rural areas. Noting the lack of sufficient funding for the Multifunctional Platform pilot phase in Mali, she called for additional support from donors.

THEME THREE: EFFICIENT OIL AND GAS PRICING AND PROCUREMENT IN LDCS

Carlos Magariños introduced the final theme by defining "efficient pricing and procurement" as the management of energy price trends and market volatility, as well as the resolution of problems in energy distribution, in particular among landlocked LDCs.

PRESENTATIONS: Yvette Stevens, Special Coordinator for Africa and the LDCs, UNDESA, began by outlining the role of hydrocarbons in the development of LDCs. She noted that a UNDESA study of energy and LDCs in Africa had found consumption of commercial energy to be very low, with most energy coming from traditional non-market sources, particularly biomass. Commercial energy consumption is a key indicator of a country's level of development. She stressed that LDCs could benefit from cross-border sharing of energy and of energy-related experience. In addition, she noted that while experience with renewable energy generation projects is widespread, this experience is not being shared between projects. She said that while renewable energy generation technologies do exist, costs are still unaffordable for rural communities. She pointed out that fossil fuels are used mainly in the transport sector, and that LDCs in Africa use a high proportion of hydropower to meet their energy needs relative to those African countries that are not LDCs. Among the factors UNDESA believes impede greater use of hydrocarbons in LDCs, Yvette Stevens noted oil price fluctuation, transportation and storage problems because of poor road and infrastructure conditions, and inadequate refining capacity. She said solutions included further regional cooperation, as well as the

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harnessing of natural gas supplies, much of which is being flared yet could be productively used for power generation. She concluded by stating that LDCs cannot develop without greater use of fossil fuels.

Joe Klemesu, Chair of the Project Implementation Committee, West African Gas Pipeline Project, described this natural gas pipeline project and some of the issues it faces in using natural gas currently being flared in Nigeria for affordable energy production in the region. The project is being sponsored by Benin, Ghana, Nigeria, and Togo, in partnership with an industry consortium led by Chevron and Shell. He said the project is at definition phase, with the concession to be awarded soon. An Environmental Impact Statement is currently being prepared. The issues the project must resolve include: harmonization of legal regimes based on different colonial models under one concession agreement; convertibility of currencies; barriers to government support and consent in each country; and international consensus on tariff rates.

Fatih Birol, Head of the Economic Analysis Division, International Energy Agency (IEA) of the Organization for Economic Cooperation and Development (OECD), explained that although its members are developed countries, their interest in improving LDC energy access arises because the projected growth of LDC energy use in coming years will have important global environmental and economic impacts, and because of the growing investment in new generating capacity in these regions. He noted that one person in an OECD country today consumes 15 times the electricity of someone in an LDC. The IEA believes that under current trends, the proportion will only barely improve by 2020. At the same time, LDCs need to use twice as much energy per unit Gross Domestic Product (GDP) as an OECD country. He said that improving energy efficiency will therefore make a substantial contribution to equity. Noting that LDCs are particularly vulnerable to economic shocks from energy price variation, he said that while most LDCs will be unable to affect the international price of hydrocarbons, many can develop efficient pricing practices in their own countries. He stressed that efficient energy pricing is necessary to provide market signals to consumers and promote efficiency. He noted that in many LDCs, energy prices are heavily subsidized, which leads to inefficient energy use, barriers to new investment, and a failure to provide real assistance for those they are directed at. Energy subsidies are often justified on social grounds, yet only 20% of energy used in LDC is produced commercially, the remainder coming from non-commercial sources. This implies that most energy subsidies are going to middle income groups. He said the IEA therefore advocates reforming energy subsidies in LDCs to ensure that they are better targeted, administratively achievable, and more transparent.

George Gero, a member of the Board of the New York Mercantile Exchange, noted that the price of energy today is no longer a simple function of supply and demand, but includes such considerations as the risks of shipping, political shifts, and extreme weather events. LDCs can better insure themselves against shock through use of financial tools, including through bonds against resource assets to raise money, and through options against future energy prices to ensure they will get a reasonable price delivery. He noted that while energy prices will continue to fluctuate, LDCs can take action to minimize the harmful consequences of such changes, and concluded by offering to help countries in developing the tools necessary to address this issue.

DISCUSSION: On the deliverables, an UNCTAD representative mentioned, *inter alia*, new initiatives on gas, support for regional deliverables, improvement of pricing policies, capacity building, and risk management. He noted the need for support from the international community.

In the ensuing discussion, Saudi Arabia stressed that the oil producing countries are doing what they can to maintain the stability of oil markets. On the components of the oil price, he highlighted the impact of non-OPEC speculators on the price, and the high profit margins of such speculators.

France questioned the claim that renewable energy forms are expensive, and stressed that while initial investment costs are high, renewable energy is competitive in the long term. He said renewable energy is inexpensive when compared with importing fuel, and that many LDCs have significant renewable sources and would become more independent by exploiting these sources. Regarding public-private partnerships, he said relying only on such arrangements is unrealistic in LDCs and rural areas where consumers cannot afford to pay. He said investment is necessary in renewable energy sources but cannot be recovered in LDCs, and suggested that a market should emerge in developed countries. This would create economies of scale allowing inexpensive technologies for developing country energy supplies. He said ratification of the Kyoto Protocol would provide incentives for the creation of such a market in developed countries.

Tanzania proposed that UNIDO add the list of deliverables from the ninth CSD session to the current list of deliverables and be entrusted with their implementation. Mali supported joint efforts as the most effective way of providing a sustainable energy solution for LDCs, including gas and oil pipelines. He called for support by developed country partners. The Democratic Republic of Congo supported an international strategy for energy supply within which the resources of individual countries could be fitted in a suitable and consistent way.

Yvette Stevens said energy policies are lacking in LDCs, and said technical cooperation could be useful in this area. She also supported the development of better energy statistics in LDCs.

CLOSING OF THE SESSION

At the end of the session, the co-chairs and the moderator drew conclusions from the discussions and noted apparent consensus among participants with regard to the deliverables. The deliverables are briefly outlined below.

Multifunctional Platform: The first deliverable would involve the promotion of pilot projects at the regional scale utilizing the "Multifunctional Platform" for power generation. This would build on initial work by UNIDO, with key activities including peer review of existing experiences, development of national strategies, promotion of a transition to bio-diesel, and dissemination of the concept to new countries. The deliverable would be the responsibility of UNIDO.

Local assembly/manufacture of renewable energy equipment: This deliverable would be promoted in two phases. First, awareness-raising with regard to renewable energy technologies in LDCs would be supported, along with identification of markets and local technical training. At a later stage a local assembly plant would be established. The deliverable would involve three programmes between LDCs and donors, yet to be identified.

Integrated water and energy projects: This deliverable would involve developing rural capacity to manage integrated water and energy projects through the identification of a general approach applicable to all LDCs, applied in 60-100 villages in three countries. It would involve local capacity building for the technical, financial and institutional management of low cost technological solutions for access to safe drinking water and renewable energy. The deliverable would be promoted by UNDESA and UNIDO.

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Rural energy pilot programme: This deliverable would involve implementing a pilot rural energy programme in Bhutan, including national level energy planning and institution building. The pilot programme would be coordinated by UNIDO and would include a three-year rural energy initiative.

Energy efficiency centers: This deliverable would involve establishing national and regional energy efficiency centers in selected LDCs to function as a resource for governments by providing expertise and policy support. UNIDO would take the lead, involving relevant government institutions and private sector entities over a four-year implementation period.

Energy service companies (ESCOs): This deliverable would include a first phase involving the building of awareness with regard to the ESCO concept among LDC governments, identifying local market opportunities and establishing local capacity. ESCOs would be established in the second phase, possibly with partners from donor countries. The deliverable would be the responsibility of UNIDO with a local project management team made up of the local government, donors, and energy efficiency organizations.

Pilot energy conservation and efficiency project: This deliverable would involve implementing a pilot programme in Zambia, through awareness building, capacity building for economic analysis, and strengthening of energy markets. It would be coordinated by UNIDO with participation of the private sector and local communities.

Regional energy projects: This deliverable would involve developing investment strategies and feasibility studies for financing of regional energy projects. This would entail building LDC expertise to develop and obtain investment for large-scale energy projects requiring complex financing arrangements, including from donor countries and multilateral institutions such as the Global Environmental Facility. The programme would be the responsibility of UNIDO, with project management teams made up of LDC and donor governments and financial institutions.

Capacity building on oil pricing and procurement: This deliverable would involve building capacity of LDCs for efficient oil pricing and procurement of hydrocarbons. Beginning with a pilot project for landlocked Sahelian LDCs, this would entail organizing an expert conference, launching an integrated training and capacity building programme and promoting a policy dialogue on energy policy and strategy development. This programme would be undertaken by UNCTAD, UNIDO and OPEC.

Exchange of experiences with regard to renewable energy technology: This deliverable would entail supporting the exchange of successful experiences and best practices in the use of renewable energy technology through the creation of a website with information on the research, development and application of renewable energy technologies for application in LDCs. The activity would be undertaken by UNDESA and UNIDO.

Natural gas development: This deliverable would involve promoting natural gas exploration and development in African LDCs through the establishment of a revolving fund for developing, designing and managing natural gas projects. UNDESA, UNIDO and UNCTAD would undertake this activity.

At the end of the Session, Wilhelm Molterer thanked Session participants and noted agreement that access to reliable and clean energy sources is a precondition for sustainable development in all economic and social sectors. He said access to environmentally sound, affordable energy is especially important for sustainable development in rural areas, which face specific problems. He underscored that sustainable energy management is closely related to poverty eradication and to

addressing people's basic needs. He said that from a sustainable development perspective, rational and efficient energy use warrants special consideration. He noted agreement during discussions on the fostering of capacity and institution building, and on innovative ways forward, such as the Multifunctional Platform, as well as on the need for private sector involvement and partnering. He said the proposed deliverables seemed to receive broad support, and personally supported the importance of the Kyoto Protocol for sustainable development. He said that energy should be seen as a seed for future richness.

Carlos Magariños thanked the Session participants for their input and said UNIDO would take up the energy deliverables discussed. He noted comments on the global energy goal of halving the number of people without access to reliable and affordable modern forms of energy by the year 2015, stressing that this is a prerequisite for other development goals and for achieving sustainable development. He highlighted the need for further efforts with regard to efficiency and to address climate change, when dealing with traditional, renewable and fossil energy sources. He emphasized UNIDO's willingness to coordinate efforts by LDCs and their development partners in the area of sustainable energy, and said he would seek the mandate from UNIDO's governing bodies to strengthen the organization's energy programme.

Bacari Kone thanked participants for their contributions to the discussions, and said consensus seemed to have emerged on the need to make energy available in LDCs through regular energy provision and affordable prices. He stressed the need for basic energy infrastructure as well as capacity building. He called for: the development and dissemination of the Multifunctional Platform; power distribution networks and connections; waterpower stations; and oil and gas pipelines for "unlocking" the landlocked countries in terms of access to energy. He supported a pricing mechanism for energy and a balance between the need for access to energy and for efficiency and energy savings, for partnership between the public and private sectors and regional integration. He appealed to all technical and financial development partners to help LDCs resolve their energy problems, and stressed the need for a follow-up structure both to the current Session and the Third UN Conference on the LDCs in general. He said the IMF and World Bank should be closely involved in resolving energy problems in LDCs, as most of these countries are committed to programmes under the auspices of these institutions. He then thanked the organizers and closed the meeting at 6:20 pm.

THINGS TO LOOK FOR

SIXTH ANNUAL THIRD MILLENNIUM PETROLEUM

CONFERENCE: This conference will be held from 21-22 May 2001, in London, UK. It will examine themes such as energy issues in the 21st century, global exploration and production, and new frontier and growth zones. For more information contact: Global Pacific & Partners; tel: +1-281-597-9578; fax: +1-281-597-9589; e-mail: dgclarke@global.co.za; Internet: <http://www.petro21.com/international>

CONFERENCE ON GLOBAL TRANSFER OF RENEWABLE ENERGIES:

This conference will be held from 8-10 June 2001 in Berlin, Germany and will present governmental and non-governmental initiatives for the transfer of renewable energy technologies. For more information contact: Eurosolar; tel: +49-22-836-2373; fax: +49-22-836-1279; e-mail: inter_office@eurosolar.org; Internet: http://www.eurosolar.org/conferences/2001/solarenergy_main.html

FIRST EUROPEAN CONFERENCE ON GREEN POWER MARKETING:

This conference will be held from 28-29 June 2001 in St. Moritz, Switzerland. This forum will address international trading and marketing of renewable energy. For more information contact:

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Nicole Giger or Sabine Spoerri; tel: +41-1-296-8709; fax: +41-1-296-8702; e-mail: info@greenpowermarketing.org; Internet: <http://www.greenpowermarketing.org/>

2001 EUROPEAN WIND ENERGY CONFERENCE AND EXHIBITION: This conference and exhibition will take place from 2-6 July 2001 in Copenhagen, Denmark. It will review progress and discuss wind energy developments in business, policy making, and research and development. For more information contact: EWEA; tel: +49-89-720-1235; fax: +49-89-720-1291; e-mail: wip@wip-munich.de; Internet: <http://www.ewea.org/src/2001ewec.htm>

FUEL CELL 2001: This conference will be held from 2-6 July 2001 in Lucerne, Switzerland. The conference consists of a structured technology presentation, a scientific conference and a general exhibit of fuel cell products and technologies. For more information contact: European Fuel Cell Forum; tel: +41-56-496-7292; fax: +41-56-496-4412; e-mail: info@efcf.com; Internet: <http://www.efcf.com/conferences/fc2001/>

RESUMED COP-6/14TH SESSIONS OF THE UNFCCC SUBSIDIARY BODIES: The resumed COP-6 (as outlined under COP-6 decision FCCC/CP/2000/L.3) and the 14th sessions of the Subsidiary Bodies of the UN Framework Convention on Climate Change will be held from 16-27 July 2001 in Bonn. For more information contact: the UNFCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.int; Internet: <http://www.unfccc.int>

CONFERENCE ON SUSTAINABLE APPLICATIONS FOR TROPICAL ISLAND STATES - SATIS 2001: This conference will be held from 29-31 August 2001 in Kingston, Jamaica, and will aim to provide a forum for dissemination of information on the use and development of renewable energy technologies and systems in tropical islands, particularly in the Caribbean. For more information, contact: Raymond M. Wright; tel: +876-929-5380; fax: +876-926-3928; e-mail: rwright@pcj.com; Internet: <http://www.pcj.com/whatsnew.htm>

INTERNATIONAL CONFERENCE ON GLOBALIZATION OF RESEARCH AND DEVELOPMENT - CHALLENGES AND OPPORTUNITIES FOR DEVELOPING COUNTRIES: This meeting will take place in Trieste, Italy, from 11-13 September 2001. It is being co-organized by Harvard University's Center for International Development and Belfer Center for Science and International Affairs, and the Third World Academy of Sciences. For more information contact Derya Honca, Programme Coordinator, Center for International Development, Harvard University; tel: +1-617-495-1923; e-mail: m_derya_honca@harvard.edu; Internet: <http://www.cid.harvard.edu/cidbiotech/r&dconf/description.htm>

SOUTHERN NGO SUMMIT: This summit will take place from 8-10 October 2001 in Algiers, Algeria, to prepare for the World Summit on Sustainable Development. For more information contact: Esmeralda Brown, Southern Caucus Chairperson, New York; tel: +1-212-682-3633; fax: +1-212-682-5354; e-mail: ebrown@gbgm-umc.org

INTELEC 2001 INTERNATIONAL TELECOMMUNICATIONS ENERGY CONFERENCE: This conference will be held from 14-18 October 2001 at the Edinburgh International Conference Centre, UK. For more information contact: Simon Edwards, tel: +44-20-2709-2000; e-mail: intelec@iee.org.uk

18TH WORLD ENERGY CONGRESS: This meeting will take place from 21-25 October 2001 in Buenos Aires, Argentina. For more information contact: World Energy Council, United Kingdom; tel: +44-20-7734-5996; fax: +44-20-7734-5926; Internet: <http://www.mbdeni.co.za/wec/contact.htm>

17TH EUROPEAN PHOTO-VOLTAIC SOLAR ENERGY

CONFERENCE AND EXHIBITION: This conference will be held from 22-26 October 2001, in Munich, Germany. Subjects to be addressed include: fundamentals, novel devices and new materials; crystalline silicon solar cells; photo-voltaic systems technology; and use of photo-voltaic by developing countries. For more information, contact: WIP; tel: +49-89-720-1235; fax: +49-89-720-1291; e-mail: wip@wip-munich.de; Internet: http://www.wip-munich.de/conferences/pv/munich_2001/munich.html

SOLAR WORLD CONGRESS OF THE INTERNATIONAL

SOLAR ENERGY SOCIETY (ISES 2001): This congress will be held from 25 November - 2 December 2001 in Adelaide, Australia. The technical programme will cover all aspects of renewable energy and energy sustainability, including research and development, industry, applications, demonstrations, education, and socio-economic and political issues. For more information contact: ISES 2001, c/o Hartley Management Group Pty, Ltd.; tel: +61-8-8363-4399; +61-8-8363-4577; e-mail: ises2001@hartleymgt.com.au; Internet: <http://www.unisa.edu.au/ises2001congress/home.html>

INTERNATIONAL SYMPOSIUM ON THE MANAGEMENT AND TECHNOLOGY OF ENERGY & ENVIRONMENT (MTEE-2001):

This conference will be held from 7-8 December 2001 in Vancouver, British Columbia, Canada. The symposium will address energy, environmental management and technology issues, and is a forum for information exchange among executives and professionals from industry, government, and academic institutions. For more information contact: ICEEE; tel: +1-714-898-8416; fax: +1-714-898-8416; e-mail: inquiries@iceee.org; Internet: <http://www.iceee.org>

INTERNATIONAL CONFERENCE ON RENEWABLE

ENERGY FOR RURAL DEVELOPMENT: This conference will be held from 19-21 January 2002 in Dhaka, Bangladesh. The technical scope will include power generation from offshore wind, waves, current and tidal schemes. The conference will also consider future technologies, in the medium- to long-term time frame, to address the technical issues for future development of these renewable energy sources. For more information contact: A.K.M. Sadrul Islam (Secretariat), Convenor; fax: +880-2-861-3046; e-mail: sadrul@me.buet.edu

INTERNATIONAL CONFERENCE ON FINANCING FOR

DEVELOPMENT: The UN International Conference on Financing for Development will be held in February/March 2002. It will bring together high-level representatives from governments, the United Nations, and other leading international trade, finance and development-related organizations. For more information contact: Financing for Development Coordinating Secretariat, United Nations Headquarters, New York, Harris Gleckman, tel: +1-212-963-4690; e-mail: gleckman@un.org or Federica Pietracci, tel: +1-212-963-8497; e-mail: pietracci@un.org; Internet: <http://www.un.org/esa/ffd>

WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT:

The World Summit on Sustainable Development will take place in Johannesburg, South Africa, from 2-11 September 2002. For more information contact: Andrey Vasilyev, DESA, New York; tel: +1-212-963-5949; fax: +1-212-963-4260; e-mail: vasilyev@un.org; Internet: <http://www.un.org/rio+10>; Major groups contact: Zehra Aydin-Sipos, DESA; tel: +1-212-963-8811; fax: +1-212-963-1267; e-mail: aydin@un.org