

ENERGY FOR TOMORROW

THE WORLD ENERGY COUNCIL CALLS FOR GLOBAL ACTION

BY GERALD DOUCET

Since the World Energy Council (WEC) published its 1993 report Energy for Tomorrow's World – The Realities, the Real Options and the Agenda for Achievement, much has happened in the global energy sector.

In April 2000, the WEC issued a Statement that re-examined the world's energy situation, revisiting its Energy for Tomorrow (ETW) report. The WEC Statement 2000 critically reviews the earlier scenarios and proposes a new set of goals and policy actions. The objective was to draw on actual experience during the last eight years, both in terms of analysis and a clearer set of policy actions. The WEC dedicated its Statement to help overcome energy poverty wherever it occurs; enhance the quality and reliability of delivered energy; and minimize negative environmental and health impacts of energy development.

The WEC Statement 2000 sets the energy goals and defines the policy actions which, if taken now, would provide grounds for reasonable optimism in facing the task ahead. This article is based on the Statement's Executive Summary and highlights the main points in the

Mr. Doucet is Secretary General of the World Energy Council, a global organization based in London with activities in more than 100 countries.

context of major developments over the past eight years.

Over the past eight years, some of the drivers of economic growth and energy consumption have changed. ■ World population growth has slowed but urbanization, especially in developing countries, has accelerated. The UN medium-term projection for 2020 now stands at 7.4 billion people, compared to the forecast of 8.1 billion in the early 1990s.

■ Economic growth has been slower in the last eight years than assumed in ETW. The ongoing economic problems in economies in transition and subsequent crises in parts of Asia and Latin America could not have been predicted in 1993 and have had a downward impact on energy consumption.

■ Energy intensity has not fallen as rapidly as ETW anticipated.

■ Financial cooperation between developed and developing countries has not improved since 1993. The key for many countries is still to establish the legal, financial, and market reforms which will attract the necessary domestic and foreign capital for new energy projects.

■ One of the most fundamental shifts has been the extent of deregulation and restructuring of energy

markets, coupled with a strong trend toward regional integration and energy trade.

■ Another key issue relates to the international environmental agenda. It has been led mainly by the United Nations Framework Convention on Climate Change (UNFCCC) beginning in 1992 and subsequent rounds of the Conference of the Parties (COP) meetings, but also linked to the ninth UN Conference on Sustainable Development which will take place in 2001. Local and regional pollution, as well as greenhouse gas emissions, have received wide political attention, and the contribution of energy development to these problems and to health and well-being in general is under great scrutiny.

In 1993 there were nearly 1.8 billion people in the world without access to commercial energy. Despite efforts to connect roughly 300 million people to electricity grids or to provide them with modern biomass and other commercial energy over the last eight years, there are still an estimated 1.6 billion people in such a situation. Four to five hundred million people out of the 1.4 billion to be born between now and 2020 will join them. Most of these people are in rural areas and shanty towns in developing countries. The trickledown effects of eco-

conomic growth and baseload energy infrastructure are not necessarily the answer to their energy poverty problems.

THREE ENERGY GOALS

WEC considers economic growth together with national and international institutional reforms essential to energy accessibility for everyone, including the poorest two billion people in the world. When only some individuals or regions of the world benefit from energy development and others are left behind, the ensuing political and social instability can pose a significant threat to world peace and, in turn, to energy availability through supply disruptions. In addition to the impact of accessibility on energy availability, it is also linked closely to energy acceptability. Investment partnerships to achieve energy accessibility and availability could also address social and environmental issues.

■ **Accessibility** is the provision of reliable and affordable modern energy services for which a payment is made. It depends on policies specifically targeted to meeting the needs of the poor, in the context of increasing reliance on market signals. The best way to ensure that a growing number of people will be able to afford commercial energy in line with their needs is to accelerate economic growth and pursue more equitable income distribution. This requires increasing reliance on the market, while addressing cases of market “failure” with special policies.

An energy tariff reflecting all costs, including external costs

such as emissions or waste management, is necessary to secure adequate investment and encourage energy efficiency and environmentally preferred technologies, but such a tariff would be unaffordable for many people. At the same time, a tariff subsidized down to a socially affordable price would not attract sufficient investment, consequently in the long-run working against the interests of those who are in need of commercial energy infrastructure. There may be a need, in some cases, to subsidize energy technology and delivery for a period of time without creating price distortions or at least by keeping them to a minimum.

■ **Availability** covers both quality and reliability of delivered energy. The continuity of energy supply, particularly electricity, is essential in the 21st century. While short-term interruptible supply may be feasible in certain circumstances as long as the conditions are known and understood by customers, unexpected power cuts bear a high cost for society that cannot be ignored. The world’s growing reliance on information technologies makes reliability even more critical than eight years ago. Energy availability requires a diversified energy portfolio consistent with particular national circumstances together with the means to harness potential new energy sources. Most WEC Member Committees agree that all energy resources will be needed over the next fifty years and there is no case for the arbitrary exclusion of any source of energy.

■ **Acceptability** addresses environmental goals and public attitudes. Local pollution is a cause of harm to billions of people, especially in developing countries. Global climate change has become an important concern. Mindful of these two facts, developing countries are concerned about both the rising levels of consumer-based household emissions which create local (urban) and regional pollution (e.g. such as acid rain’s impact on crops and forests), and the potential impact of climate-change-related response measures on their economies.

The energy sector is one area in which new and readily available technologies have already reduced emissions and hold out prospects for future improvement. Of course, environmentally friendly technologies have to be developed, diffused, maintained and expanded in all parts of the world. Hence, there is a need to foster adequate local capacity to ensure that the technologies can be used and maintained by local people. Energy resources must be produced and used in a manner that protects and preserves the local and global environment now and in the future.

Addressing these three goals of energy accessibility, availability and acceptability is fundamental to political stability worldwide, to energy business strategy in the 21st century, and to achieving a sustainable future for the world.

TEN POLICY ACTIONS

Energy is an important part of a sound development agenda,

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The World Energy Council is the leading global multi-energy organization with membership vested in Member Committees in approximately 100 countries. The WEC analyzes and reports on global, regional, and local energy and energy-related issues, often in conjunction with international partners. The WEC uses three-year work cycles, each culminating in a World Energy Congress open to its members, energy industry leaders, governmental officials, international organizations, academics, the media, and other interested parties. The next Congress is scheduled for 2001 in Buenos Aires, Argentina.

More information about the full range of WEC programmes and activities -- including the WEC Statement 2000 on global energy conditions and related publications and reports -- is available on the organization's Internet site at www.worldenergy.org. The WEC Secretariat is located in London, at 1-4 Warwick Street, 5th Floor, Regency House, W1R 6LE, UK.

which includes macro-economic policies as well as non-energy sector policies. Equitable financial, fiscal and social policies are needed. Low inflation, balanced budgets, social transfer policies including health and retirement benefits, education, and other programmes are the key to creating the right economic and social fabric for economic growth. In cases where national markets are too small, regional policies are needed to provide broad and attractive prospects for domestic or foreign direct investment and expanded trade.

WEC recognizes the overriding importance of creating such framework conditions for overall development and the alleviation of poverty. In order to provide more precision in WEC's area of competence, we have chosen to concentrate on ten priority actions for the energy sector. There could be more, there could be less, but we think the following ten actions cover the most

important issues in sustainable energy development between now and 2020.

1. Reap the Benefits of Market Reform & Appropriate Regulation. As a general rule, governments need to withdraw from directly managing energy markets and should restrict their role to setting sound rules administered by impartial regulators. The key words are liberalisation, trade, privatisation, and more generally customer choice. Market reforms should take into account the growing link between gas, liquids and electricity. The agenda for reforms needs to be clear and implemented within a reasonable timeframe in order to lower the transaction costs, in particular because of the increased uncertainty that market reforms imply. Appropriate and balanced regulations set and implemented by impartial bodies independent of short-term political interference are essential.

The WEC has published an exhaustive summary of the benefits and risks of energy sector liberalization in 33 countries and regions. It is now being updated to cover over 100 countries, with all the information available electronically in WEC's global energy information system. A special report on energy sector legislation in Central and Eastern Europe is also available. At the 18th World Energy Congress in Buenos Aires in 2001, a special study on Energy Markets in Transition in Latin America and the Caribbean will be discussed, as well as the update on the worldwide assessment of energy sector liberalization.

2. Keep All Energy Options Open. The adaptation of energy systems to new price realities is either slow or costly. There must be room for the development of new energy forms that would compensate for the finite nature of some types of existing energy supplies or would use technologies in new ways to reduce harmful side-effects of current energy production or utilization. Energy diversification, regional integration of energy systems, and enhanced trade in energy services are relevant strategies.

It is a foregone conclusion that up to 2020 global reliance on fossil fuels and large hydro will remain strong, albeit with special emphasis on the role of natural gas and efficient cleaner fossil fuel systems. However, total reliance on these energy sources to satisfy the growing electricity demand is not sustainable, especially if every person in the world has adequate access.

While some WEC members question the future of nuclear power, most believe the role of nuclear power needs to be stabilised with the aim of possible future extensions. The latter think efforts to develop intrinsically safe, affordable nuclear technology need to be encouraged.

In view of the characteristics of energy systems, policies to develop and finance the use of hydropower, new renewables, and hybrid energy systems should be implemented in those regions where significant potential exists. Ultimately, market criteria must prevail in the development of all energy resources.

3. Reduce the Political Risk of Key Energy Project Investments.

Past experience with arbitrary currency devaluation, changes in fiscal regimes, and barriers to benefits repatriation, among others, create a political risk that increases the cost of capital investment, especially in developing countries. Non-commercial risk insurance is available on a bilateral basis at a maximum level which is insufficient for most energy-related investments.

These risks make foreign and sometimes domestic investment more expensive in a poor country than in a rich country. While market reforms will play a positive role in creating a friendlier environment for investment, existing schemes for dealing with non-commercial risk are tailored to manufacturing and are much too small to undertake the scale of risk associated with major energy investments. The modalities of a global co-insurance scheme dedicated to cov-

ering the political risk of new commercial energy projects in developing countries which also reduce local and greenhouse gas emissions should be examined carefully by all governments and the banking community. Such a scheme could be funded by developing and developed countries and implemented by the World Bank in association with other international developmental lending agencies.

The WEC has completed a study on financing the global energy sector, which will guide it in working with the World Bank and regional development banks on the design and criteria of a global co-insurance scheme for energy investments. It will also work with the Organization for Economic Cooperation and Development on the criteria for a renewed commitment by industrialized countries to energy accessibility and acceptability.

4. Price Energy to Cover Costs & Ensure Payment.

Energy of any sort is not a social, free public good. Its price must reflect all variable, maintenance and extension costs, and there must be a reliable system for customers who use the energy to pay for it.

End-user prices are a key parameter driving energy consumption. Unless such prices reflect long term marginal costs (variable, maintenance and capital expansion costs), including wherever possible the cost of well-identified externalities like energy security or environmental protection, they will distort individual behaviour, have perverse impacts on the standard measurement of gross domestic product (GDP), and the whole economy may

suffer. Removing energy subsidies and cross-subsidies, e.g. in the transport and electricity sectors, should be a priority along with establishing a consistent energy taxation system. Together with cost reflective prices, a workable payment system for commercial energy is essential.

The WEC has completed a special regional study on electricity trading mechanisms for the Asia-Pacific region and is holding workshops or regional forums in Central and Eastern Europe, in Latin America and in Africa on pricing and payments systems. A major study on pricing energy in developing countries will be released at the end of 2000.

5. Promote Greater Energy Efficiency. Energy intensity is directly related to price signals whereas energy efficiency depends more on the diffusion of the most cost-effective technologies. The introduction of minimum legal standards in energy equipment and service is critical. The presence of metering and an energy payments system is essential to the goal of decoupling energy consumption from GDP growth.

Energy efficiency policies that use direct or indirect price mechanisms (e.g. removing subsidies, incorporating externalities) are the most effective in lowering energy consumption trends. However, even without changing the overall price environment, energy efficiency policies should be pursued to correct market failures. Energy efficiency standards also contribute to increased GDP growth by enhancing the marginal productivity of energy or because they provide the basis, with the same energy,

for an increase in well-being both in economic and environmental terms. Here again, legal standards and an adequate payments system for energy are central to energy efficiency goals.

6. Foster Financing Partnerships Linked to Environmental Goals.

Domestic actions to reduce greenhouse gas (GHG) emissions, especially in industrialised countries, merit attention in their own right. Indeed, in the context of climate change mitigation, industrialized countries are encouraged to take domestic action first and foremost. However, given the enormous need for new capital stock in developing countries, international mechanisms with the potential to stimulate capital flows linked to clean and safe energy projects in developing countries are valuable supplementary approaches which should be a high priority of governments. The largest low-cost potential for abating energy-related GHG emissions lies in developing countries.

Joint ventures on specific energy accessibility and acceptability programmes should be fostered. Global mechanisms to foster international cooperation between developed and developing countries are under discussion and need to be established in a workable manner without delay. Clear and simple rules for certifying emissions reductions linked to such projects, as well as an explicit compliance-incentive scheme working as a price signal and as a cap to the cost, need to be designed. Such

partnerships should ideally aim at favouring market reforms as well as developing new clean-energy infrastructures or promoting individual projects which lower greenhouse gas emissions.

The WEC's Pilot Programme on GHG Emissions Reduction has developed information, available electronically, on key energy projects around the world which will address energy accessibility and acceptability goals between now and 2005. The methodology and criteria of this database may, if approved for public use by WEC, serve investors, bankers, public utilities and energy companies in attracting financing and gaining regulatory approvals. As confidence in the database builds up, the programme could be extended to energy-related sectors such as agriculture and transportation. An extension beyond 2005 may be considered once results of existing projects have been verified by independent authorities.

7. Ensure Affordable Energy for the Poor. Economic and social policies aimed at equitable income distribution are the most effective means of helping the poor. Past experience shows that such policies contribute to the economic growth of the country as a whole. However, such policies need to be complemented by adequate sectoral programmes.

In the energy sector, to make energy affordable for the poor, governments should accept responsibility to absorb part or all of the sunk costs of energy infrastructures needed to serve

the poor; design cost-reflective price signals for baseload power at low cost for essential service using limited capacity meters; favour decentralized renewable energy systems for rural areas where their lifecycle cost is comparable to or lower than the extension of the grid; and build the capacity of local energy enterprises by training managers and other personnel, technically and commercially, to run the different aspects of the business, including local maintenance.

8. Fund Research, Development & Deployment (RD&D). RD&D which addresses a "common good", or shared benefits for all, calls for adequate government funding. Such spending will be more efficient if done under competitive conditions. At the international level, cooperation among governments to minimize overlap while maximizing competition should be promoted. At the national level, impartial authorities including academics, industry and the public, should oversee budget sharing and spending.

There ought to be well funded energy R&D programmes in the following priority domains: energy efficiency, both production and end use; all renewables at the development stage; carbon sequestration in underground reservoirs/aquifers or at a depth into ocean storage; cleaner fossil fuel systems; nuclear power, where spending should concentrate on evolutionary plants (LWR), on inherently safe revolutionary designs which may be suitable in developing country markets, and on storage, waste

treatment and disposal; superconductivity to lower transmission and transformation losses and to store electricity; and integrated decentralized energy systems, as well as buffer systems designed to accommodate short power variations.

The WEC has undertaken a major study on advancing energy technology in the 21st century which will be reported at the 18th World Energy Congress in 2001.

9. Advance Education & Public Information. Education and public information need an open, transparent, independent, lively and provocative debate. There is a need to fund effective energy institutions at national or international levels (including both developed and developing countries). WEC's initiative to establish a global energy information system, with regional database linkages, and its decision to revisit *Energy for Tomorrow's World* are steps in the right direction. The Student Programme of WEC's triennial World Congress is another worthwhile effort to advance education.

10. Make Ethics a Strong Component of Energy System Governance. In a globalized society, companies operating internationally should act as world citizens. They should not only respect national laws and regulations, but also move the global energy and environment agenda forward. Fundamental business ethics, including honesty and the avoidance of corrupt practises, are essential, but the need for ethics goes beyond these. Voluntary energy and/or environment audits, their

widespread publication in civil society, common standards for safety, performance, best industrial practices, and respect of energy workers should be fostered in all plants in all countries in which a company operates. These are the additional ingredients of the global institutional and corporate governance recommended here.

The WEC has carried out special research on energy case studies related to the ethical dimensions of business which will be the subject of a roundtable discussion at the 18th World Energy Congress in 2001.

ACTING NOW

In its Statement, the WEC has deliberately kept the focus on the two decades to 2020. This was to anticipate change more reliably and to see specific policy actions more clearly. We offer this analysis of recent evidence and our recommendations contained herein to governments, business leaders and to the wider public. We hope we have made a contribution to the better understanding of energy in the political and social fabric of individuals, societies, regions and countries throughout the world.

It is important to note that the timing and extent of action by governments or companies will vary from country to country depending on the maturity and stability of their economies. We have tried to think globally about sustainable energy development in a way which fosters local action.

The energy industry is obviously the key provider of wider accessibility to

commercial energy services, of the availability of uninterrupted supply, and of more socially and environmentally acceptable energy products. The speed, scale and nature of these developments depends in part on enabling frameworks, the wishes and support of other social actors, and the deployment of the required technologies and financing.

Lack of awareness, education and commitment relating to clear energy policy goals, as well as the basic requirements for achieving them, are among the largest barriers to success. These barriers affect policy-makers, public authorities, industry and the general public. They increase the reluctance to support innovative policies geared to promoting more sustainable energy development. They discourage consumers from changing attitudes and habits. They inhibit shareholders and other investors from supporting change.

The WEC scenarios now go out to 2050 and beyond. None of us can ignore the long-term perspective within which modern energy services will develop. To the extent that our views and recommendations contribute to the sustainable production and use of energy for the greatest benefit of all, what we accomplish between now and 2020 will hopefully be decisive for a sustainable world for many decades thereafter. The World Energy Council is, therefore, determined to focus its efforts on the Energy Goals and to help implement all of the Policy Actions contained in this Statement. □