

ENERGY FOR PEOPLE ENERGY FOR PEACE

RESULTS OF THE 18TH WORLD ENERGY CONGRESS
BUENOS AIRES, ARGENTINA
OCTOBER 2001

WEC STATEMENT 2002

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The World Energy Council (WEC) has reviewed the results of its 18th World Energy Congress on “Energy Markets: The Challenges of the New Millennium”, which was held in Buenos Aires, Argentina in October 2001. For WEC, the message is clear: Affordable modern energy services for everyone are a key to sustainable development and peace throughout the world.

At the 18th World Energy Congress, WEC released its 19th triennial *Survey of Energy Resources* and six new reports: *Energy Technologies for the 21st Century*; *Energy Markets in Transition: The Latin American and Caribbean Experience*; *Values Added: Ethical Experiences in the Energy Sector*; *Performance of Generating Plant*; *Energy Efficiency Policies and Indicators*; and *Living in One World*, all of which are available through WEC’s website: www.worldenergy.org. The recent WEC reports on *Pricing Energy in Developing Countries* and *Electricity Market Design and Creation in Asia Pacific* also served as useful background for the keynote addresses, roundtable debates and discussion sessions during the Congress.

WEC is preparing for two major events in 2002: the United Nations World Summit on Sustainable Development in Johannesburg in September, known as RIO + 10, and the follow-up to the recent agreement in Marrakesh, Morocco, on the rules and arrangements for the global governance of greenhouse gas emissions. The contribution of energy production, transmission and use to sustainable development, including the achievement of local, regional and global environmental goals, is at the center of the WEC Work Programme in 2002.

Strategic Energy Goals and Challenges

The 18th World Energy Congress strongly reaffirmed the goals of energy accessibility, energy availability and energy acceptability that were established in the WEC Millennium Statement, “*Energy for Tomorrow’s World—Acting Now!*” Because the achievement of these goals is essential to sustainable development, WEC has decided to focus its 2002-2004 Work Programme on the following targets, which were highlighted at the Congress:

- Achieving access to commercial energy for the two billion people in the world who do not now have it;
- Developing stable regional trade policies, clear legal frameworks and sensible regulations for energy development;

- Keeping all energy options open, including the safe use of nuclear power and the promotion of renewables;
- Increasing efficiency through competition and technology diffusion;
- Implementing advanced, cleaner technologies to reduce the impact of human-induced emissions on the quality of human life and the natural world around us.

These goals are closely related. Trade and technology drive economic growth, which is the prerequisite for addressing poverty and energy accessibility. This in turn is closely linked to energy availability and energy acceptability. Acting now to achieve these goals will contribute to a reduction in tension and will promote greater harmony in the world.

WEC's 2001 *Survey of Energy Resources* confirms that there are abundant energy resources throughout the world to meet growing global energy demand well into the 21st century. Fossil fuels will continue to be the most significant and stable component of the total primary energy mix for several decades to come. However, the challenge is to deliver these resources where and when they are needed, at affordable prices. It is essential for all countries to diversify their energy portfolios by keeping all energy options open, and to foster regional integration of energy markets.

A new power generation industry is rapidly emerging to face the broad and deep changes occurring in the way energy business is now conducted and to meet the requirements for competitiveness and environmental accountability. The traditional power plant is progressively turning into a more complex operation, trading not only energy and capacity as commodities but also green credits and other services.

In its Millennium Statement, WEC also proposed ten Policy Actions to achieve sustainable energy development by 2020. The 18th World Energy Congress was the first checkpoint for monitoring progress on these, and several practical challenges were addressed on which WEC will continue to work with its many partners:

- Market reform including trade and regional integration: Experience with energy market reform in most countries has been beneficial, particularly regarding energy acceptability and availability. Because conditions in developed and developing countries vary in terms of their political structure, the use of energy subsidies, or their resource base, each country needs to foster reforms consistent with its own structure and conditions; however, in all regions there is a need to accelerate energy trade and regional integration. Energy projects need to be planned on the basis of what makes economic sense for the region without undue regard

to political boundaries. It is market reform and impartial, transparent regulation that are the cornerstones for attracting private capital to energy projects. The elimination of producer subsidies is important, but well targeted consumer subsidies could be justified on a temporary basis to address accessibility and affordability issues related to market reform. Energy consumers in every country should support reforms that widen customer choice, improve the quality of service and make energy services affordable and sustainable.

- Appropriate regulation and institutions, particularly to address capacity and transmission bottlenecks: The number of independent energy regulatory agencies in the world is increasing as countries foster competition through unbundling policies. Regulators have to be aware of new challenges facing integrated energy markets, such as long-term planning and systems operation, trans-border infrastructure, dispute resolution and harmonisation measures. Recent experience in places like California suggests that since electricity cannot be stored, a market for capacity must be created as a substitute for storage (through negotiation or regulation), and the permits process must be streamlined. A similar problem exists for transmission infrastructure for both electricity and gas, where the constraints on transmission access and capacity can undermine the pace and success of market reform. Effective decisions on market design and industry unbundling must be taken rapidly to encourage new interconnection and transmission (for both electricity and natural gas) and to ensure that the costs of new capacity to achieve a greater degree of reliability are adequately recognized and covered. Because there is evidence in some cases that regulated financial returns have provided an inadequate incentive for new construction, regulators must introduce friendlier investment policies in order to keep pace with growing demand.
- New technologies and their rapid diffusion in new markets: There are no new technologies in the short or medium term that will reduce the significant share of fossil fuels in the world's primary energy mix. However, new technologies for power plants, facilities management, residential use and rural areas will help drive a continuous process of efficiency improvement; if such technologies are rapidly diffused, they will also help address environmental concerns on a global basis. The opening up of energy markets, their regional integration and global trade will accelerate the diffusion of technologies, especially in developing countries, to address the goals of commercial energy access, the quality and continuity of energy supplies and the environmental acceptability of energy production, distribution and use.

- Local, regional and global environmental goals: Accelerated technology diffusion and market reform, coupled with selective regulatory or legislative steps, are helping to reduce local and regional pollution from the production, distribution and use of energy services. Keeping all energy options open so that cleaner fossil fuel technologies, nuclear power, hydroelectric and other renewables maintain or increase their share of the global energy mix is the best way to address global environmental concerns in the short to medium term. The global governance of greenhouse gas emissions reductions should be pursued by governments in consultation with industry, so that the regulatory treatment of voluntary industry measures is consistent, and clear rules for emissions trading, Joint Implementation (JI) and the Clean Development Mechanism (CDM) are introduced swiftly, without upsetting national economies or excluding any energy option. CDM projects should be part of integrated energy planning to ensure that investments in new energy projects in developing countries, which link commercial energy access to quantifiable emissions reductions, can be increased. It is important to acknowledge that the effective mitigation of global warming is the joint responsibility of all citizens, energy companies and governments.
- Keeping energy options open to address safety and reliability: Criminal or other threats to energy infrastructure require long-term risk management and contingency planning by industry, but it is the responsibility of governments to cooperate in combating such threats. The best way to enhance the reliability of energy services is through strategic energy reserves, diversification, regional integration and trade in energy services.
- Ethics and the promotion of human dignity: The best way to address corruption and other ethical issues is to promote transparency and the rule of law. Energy companies care about social responsibility because, more and more, their shareholders, employees and customers care. Science and technology cannot be “above ethics”. It is energy market reform and regional integration that offer the most effective route to technology diffusion to address human suffering.

Key Energy Linkages

Several important linkages were discussed at the 18th World Energy Congress. The following linkages will be considered in WEC’s ongoing studies, technical services and regional programmes leading up to the 2004 World Energy Congress in Sydney:

- Oil and gas price volatility and decoupling: Security of supply and price stability are major concerns of all countries. Producing countries’ revenues depend on getting oil and natural gas to the main markets,

while the growth and prosperity of consuming countries depend on reliable and affordable supplies. With the rapid penetration of liquefied natural gas and the expansion of pipeline networks, a global natural gas commodity market will soon be established with prices partially decoupled from oil prices.

- Fossil fuels and the environment: The drive for economical ways to produce energy from fossil fuels with lower or manageable carbon emissions will lead to the rapid and wide diffusion of cleaner technologies. Fossil fuels have a long and sustainable future in combination with such technologies and/or carbon sequestration.
- Gas\electricity convergence and multi-energy services: Electricity transmission and natural gas transport are complementary in many regional energy systems, and their regulatory needs must be addressed together to foster liquidity and the delivery of efficient energy services.
- Energy and potable water: There is a potential linkage between energy development and other critical resources, such as potable water. In the Middle East, for example, much of the domestic potable water is supplied by gas-fuelled desalination plants, which also produce electricity. These cogeneration processes will extend to other regions as shortages of potable water develop.
- Nuclear power, large hydro and greenhouse gas emissions: For base-load electricity generation, the most effective means currently available to reduce CO₂ emissions are nuclear power and hydroelectric power. Countries with the highest proportion of nuclear and/or hydropower have the lowest CO₂ emissions per kWh. Nuclear energy and large hydro have advantages in terms of global warming, cost stability and high capacity factors that make them compatible with the goals of sustainable development for tomorrow's world. In particular:
 - Nuclear power offers a range of options, including plant life extensions, competitive new plants, reprocessing of spent fuel to maximise its use (where economically feasible) and innovative technologies that address design, licensing, fabrication, construction, performance, safety and effective waste management. Governments and industry should cooperate to build public support for nuclear energy so that this significant source of electricity can play its part in key markets now and in the future.

- New large-scale hydroelectric projects could make up a significant proportion of the renewable energy people need for a liveable world. The planning, design, construction, operation and maintenance of hydroelectric projects have been and can be further improved, in accordance with the best social and environmental practices.
- Renewables and distributed generation based on local resources and energy storage: Exploiting the technical potential of many renewable energy sources still has certain limits (such as integration with base-load distribution systems, the low capacity factors and lack of storage), so the timeframe for substantial penetration of new renewable technologies in the global energy mix is estimated to be 30-40 years. However, some renewables, including geothermal and biomass, are already suitable for base-load, distributed and rural power generation, while there has also been impressive growth of wind energy as a complement to, rather than a replacement for, large-scale generation. The development and use of renewables and distributed generation should be part of a global energy strategy. Government support of renewables RD&D, technology and skills transfer and effective private-public cooperation in developed countries is critical to advancing the potential for renewables in developing countries. National and international aid organisations should focus their grants on best available technologies for this purpose.
- Competition and efficiency: Modern power generation technologies lead to continuous improvements in power plant efficiencies, but they need to be properly managed to reach their full potential. Better management and operational decision-making account for about 75% of the potential improvement in overall power plant performance, with 25% coming from improved technology. If the current substantial gap between worldwide average performance and the top performing plants could be eliminated through the application of best practices, the result would be an estimated savings of up to US\$80 billion per year in building and operating capacity expansions and a reduction in CO₂ emissions of one Gt per annum, as well as a reduction in other pollutants. In energy end-use, competition and trade induce progress in efficiency (for example, for appliances). Prices do have an influence on consumption patterns, but this does not explain all the differences in energy efficiency among different countries. Standards and other framework conditions also play an important role and could foster efficiency gains of 20-30%.

Where Do We Go From Here?

Economic growth, social progress and environmental protection are the three interlinked pillars of sustainable development. It is important to put people at the centre of market reform, regulation and technology diffusion. More often than not, the financial requirements of energy projects are a bigger challenge than accessing the technology and know-how. Governments, regulators and energy companies have made progress in these areas, but there is more to do to address poverty, skills and working conditions and pollution. It is essential for all energy stakeholders to continue to work together on realistic market-driven solutions to specific problems.

Governments have a legitimate and essential role in energy policy and in shaping regulation, especially as market reform leads to regional or even global energy solutions. Governments can help the energy industry by complementing private RD&D investments with support for basic research and demonstration of new technologies and by providing adequate protection for intellectual property, increasing cooperation and regional market integration and strengthening competition and trade. It is important for governments to maintain their policy focus on market reform even in the face of economic difficulties. Skilled people, transparency and the rule of law are critical issues on which government policies must be well conceived and implemented. In the context of sustainable development, governments should renew their commitment to fund adequate basic energy research as well as to the development and demonstration of advanced technologies (for example, on carbon sequestration, renewables and the potential for hydrogen). This needs to be done in the context of an intergovernmental agenda aimed at reliable, affordable, sustainable energy services for all people in the world with the following specific goals:

- Bringing commercial energy services to the one third of the world's people who do not now have access and involving developing countries in the planning of this RD&D programme;
- Protecting the local, regional and global environment;
- Pursuing a long-term focus that takes into account the inertia of energy infrastructure and the impact of competition in shortening the horizons of industry;
- Diversifying the portfolio of technologies that are the only true hedge against the uncertainties of the future.

Regulation is central to the smooth functioning of energy markets at the local, regional and global levels. Although market mechanisms are essential in fostering efficient energy resource allocation, they are not always sufficient and require voluntary agreements or appropriate regulation, for example, to address transmission

capacity, affordability and environmental issues. At the regional level, where there are significant differences to be taken into account, especially on regulatory and institutional matters, there is a need for energy infrastructure to link electricity and natural gas markets based on harmonised regulations that address the issues of widening customer choice, fair competition, transmission, trade and investment in new capacity. Once governments have established clear energy policies, the day-to-day independence of regulators from government or industry interference is fundamental and must be respected.

Energy businesses, even with short-term pressures on performance, must renew their commitment to long-term and regional, if not global, solutions. Industry needs to reduce energy costs, increase efficiency and respect the environment. The internationalisation of energy services should and will continue. Increased competition will help accelerate private R&D innovation while clear energy price signals will foster more rapid technology diffusion from one market to another. A full life cycle approach to energy projects will allow for external costs, including environmental costs, to be taken into account in energy pricing.

Consumers need to be more aware of energy issues. Beginning with curricula in schools and universities, both governments and industry have a common responsibility for helping to increase consumer awareness. A better understanding of customer behaviour and needs is a prerequisite for more effective demand-side management. Education on the role of energy in sustainable development, capacity building in developing countries and better communication with the general public are important factors in this work.

WEC is in a unique position to sow the seeds of working together on a global, multi-energy basis. Through its Congresses, research studies, technical services, regional events and annual assemblies, WEC brings the leading energy planners, decision-makers, industry executives and their peers into face-to-face dialogue. WEC will:

- Update and reassess its prospective work on drivers of the energy scene;
- In further work on market reform, take a position advocating appropriate design of markets, including trading not just in kWh but also in capacity, with industry participants obligated to provide the needed capacity for a set margin and with a linkage between retail and wholesale prices. This work should promote a mechanism to bring generation and transmission infrastructure of electricity and gas online when needed;
- Carry out further analysis of end-use technologies, distributed generation and carbon sequestration;

- Analyse the impact of rules for emissions trading, JI, CDM and other aspects of global environmental governance on the energy sector, including their implications for the WEC's GHG Emissions Reduction Pilot Programme and its sustainable development goals;
- Identify, compile, compare and publish key data on the economic, environmental and social aspects of fossil fuels, nuclear power and renewables;
- Pursue broader, deeper best practices and efficiency improvements in energy production, distribution and utilisation, with a special focus on cleaner technologies and the more rapid diffusion of technology to developing countries;
- Enhance its regional efforts in developing countries to facilitate market reform, with appropriate regulation designed to attract adequate investment capital (under CDM) to address the goals of energy accessibility, energy availability and energy acceptability;
- Establish an outreach programme on the ethical dimension of the energy business based on specific case studies that cover the behavioural, social and environmental aspects.

With governments, regulators, energy companies and consumers working together, energy development will serve all people in the world and be a real catalyst for peace.