



Internationale Konferenz
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International Conference
for Renewable Energies, Bonn

BUSINESS AND INDUSTRY POSITION PAPER



ENERGY FOR SUSTAINABLE DEVELOPMENT

The International Conference for Renewable Energies, to be held in Bonn in June 2004 at the invitation of the German government, will take place nearly two years after the World Summit on Sustainable Development (WSSD) in Johannesburg in August 2002. At the WSSD, energy was a focal point of many discussions and was widely recognised as a cornerstone for achieving the goals of sustainable development. It was also recognised that all energy options should remain open, as a broad variety of energy resources and technologies would be required to meet the varying needs of individual countries or markets. Keeping all energy options open would enable every nation to address its energy needs in the most efficient way, in alignment with its resource base and long-term strategic development objectives. Businesses and industries around the world are willing to contribute to achieving these objectives by developing innovative delivery solutions for energy sustainability, and supporting private/public partnerships and other initiatives.

Some countries and regions have established renewable energy targets, and many others may follow. The European Union, for example, has adopted an indicative target for renewable energy of 12% of gross domestic energy consumption and 22% of electricity consumption by 2010 (Directive 2001/77/EC). The business community cautions against compulsory targets for any energy sources, since they can lead to market distortions.

For markets to work efficiently and effectively, it is important that proper economic prices are signalled, both to give customers a clear basis for their decisions and to ensure optimal resource allocation. In many energy markets, wrong signals are being sent out by government agencies that subsidise energy prices for a wide range of consumers instead of targeting direct financial support to those who need subsidies. This results in inefficiencies in the supply and use of energy, waste of energy resources, adverse environmental effects and distortion of the market.

Some economic models show that renewables, in certain circumstances, cost more than fossil alternatives. Other models, especially finance-oriented and portfolio-based models demonstrate that, when included in a fossil-generating mix, wind, geothermal and other fixed-cost renewables will *reduce* overall generating costs, even if their stand-alone costs are higher.

The fundamental issue, however, is that renewable energy sources, with the exception of geothermal, are largely intermittent and sparse — requiring backup base-load supply or matching with dispatchable loads. Integration of renewables into grids does come at a price.

The global business community, represented by leading international organisations — the International Chamber of Commerce (ICC), the World Business Council for Sustainable Development (WBCSD) and the World Energy Council (WEC) — sees the Bonn Conference as an opportunity to take stock of the progress and developments in the renewable energy sector in the two years following the WSSD. This position paper reflects business views on the role of renewable energy as a component in the overall energy mix and its contribution to sustainable development.

The Context: Energy Is Global, But Access to Energy Is Not

Access to energy is fundamental to our civilisation, and economic and social development is fuelling a growing demand for reliable, affordable and clean energy all over the world. At the same time, nearly 1.6 billion people today lack access to modern energy services. Most of these people live in developing countries, mainly in rural areas or isolated communities. Energy poverty is a primary — but not the only — factor in contributing to their poor living conditions and low prospects. In addition to energy, the transition from poverty will require concerted effort to address a wide range of difficult needs, such as clean water, healthcare, sanitation, education and communications.

Energy is global, and energy resources are abundant around the world. This is the conclusion of the *2004 Survey of Energy Resources*, the most comprehensive and authoritative global survey published by WEC¹. Energy production, conversion and transport technologies are improving rapidly. This makes it possible to transport energy more efficiently over longer distances and creates favourable logistical conditions that were unimaginable just a few years ago. Despite all this, energy accessibility has not improved.

“If You Do Not Know Where You Are Going, You May End Up Somewhere Else”

To ensure sustainable development, the energy sector needs a clear, long-term strategic vision and consistent policies based on due diligence, free markets, sound science and hard data, taking into account long planning and investment cycles. Over the last 25 years, renewable energies have been researched in depth, their potential has been assessed, and a number of viable, economically promising technological solutions have been developed. It has been recognised that renewable energies can help ensure a diversified fuel mix, contribute to price stability and energy security and provide social, economic and environmental benefits. This should be taken into consideration when developing national energy plans or long-term business strategies.

While in industrialised countries, renewable energy is often one of the available energy options and a matter of choice, in many developing countries it is a matter of access, affordability and availability. Renewable energy can offer an alternative to expensive extensions of the grid to sparsely populated or rural areas, and it can contribute to the grid-based energy mix to meet rapidly expanding electricity demand in urban areas.

¹ *Survey of Energy Resources*, 2004, World Energy Council

Developing Country Perspective

Rural electrification is a pressing challenge in many developing countries, as is providing electricity services to urban dwellers. In many cases, the easiest solution for rural electrification seems to be the installation of diesel generators (DG). This is, however, an unsustainable and costly solution that can be dependent on imported fuels and which produces undesirable emissions. Other options, including renewable energy options should be considered. Renewables could supply geographically dispersed villages through local mini-grids or stand-alone power generating solutions. Consumers in developing countries – just as any other consumers – will tend to prefer the best and most affordable available energy option. Only an objective assessment will determine whether it will be renewables or other energy options.

Modern energy services, including renewables, are among the key drivers for rural development. Access to energy facilitates local micro-economic development (agriculture, manufacture, small industry), creates vital community income-generating activities (such as water pumping, battery charging, ice making, crop drying, milk refrigeration, etc.), advances human development (accessibility to modern education, improved health services) and helps reduce the pace of migration to overcrowded cities, thus preventing social unrest.

Clearly, therefore, developing countries place great emphasis on securing reliable and affordable supplies of energy as a fundamental pre-requisite for sustainable urban and rural development. They also acknowledge the important role of practical and financial support in stimulating the integration of renewable energy options, including the recommendations in the outcome of this conference.

The first priority, as suggested in the Declaration to the Conference prepared by WEC's African Members, would be to take a fresh look at the financial issues by developing a direct and open dialogue between governments and companies in developed and developing countries.

Developed Country Perspective

In industrialised countries and economies in transition, with practically universal access to energy, renewables are seen primarily as a means of reducing or avoiding GHG and other emissions and diversifying the fuel mix. Moreover, national economies benefit from using indigenous energy resources, as this improves their trade balances and enhances security of supply. Small scale and modular renewable technologies are suited to the energy needs of remote, off-grid areas.

The Challenges

Despite expectations and numerous efforts by governments to promote and subsidise the use of renewable energy resources, their market share remains fairly small. There are many reasons for this, with the most important being the perceived poor economics of renewables compared to fossil fuels. This is often amplified by the traditional pricing structures, which do not internalise social and environmental aspects and other externalities of energy production and use. There are also financial and institutional issues related to the typically small size of renewable installations.

Most of the existing challenges can be overcome through the right combination of investment in R&D, public sector reform, and the rationalisation of pricing and subsidies. The establishment of stable and predictable legal and financial frameworks — particularly in developing countries is also needed. Current models of technology transfer need to be reassessed. The challenge of increasing energy access in developing countries is not primarily dependant on new technologies.

Financing Renewables

Financing energy development is a difficult challenge; in particular, financing the growing needs of developing countries will require new solutions. In today's markets, most forms of renewable energy cannot compete on price with conventional fuels, particularly in electricity generation. Decision-making in a market is often based on short-term planning. To ensure sustainable global energy development in the long-term, greater emphasis on full life-cycle and cost-benefit analysis is required, in balance with other societal priorities.

Internal cash generation is a first source of finance for many enterprises. Aid and multilateral financing institutions can only provide a fraction of the required capital, though such financing can be useful in reinforcing appropriate market reforms. However, mobilising private capital for energy projects is difficult, especially in those countries which do not satisfy investors' criteria for a stable economy, market transparency, a well-founded legal framework and a fair balance of risks and rewards. Appropriate risk allocation between parties can facilitate financing. Capital is directed to the better-organised markets and projects; countries that are slow to recognise and respond to these points will continue to lose out in the competition for funds.

Environmental and Technical Issues

A modern industrialised society depends heavily on stable, high quality power supplies to run computerised control processes and information technology. With the exception of biomass and geothermal technologies, there are basic physical and technical limits to deploying renewables on a large scale, such as the intermittent nature of wind and solar or, to a lesser degree, hydro, and the related problems of full integration with grids, low capacity factors and the need for back-up power. Electricity grids require power to be supplied at the rated frequency and voltage, free from harmonics, voltage surges and interruptions.

The exploitation of any energy resource by consumers, industries and societies gives rise to some forms of environmental challenge:

- **local** (mining spoils, "end of pipe" emissions, accidents, loss of amenity)
- **regional** (deforestation, air quality etc.)
- **global** (climate change).

At the same time, we can see that the lack of modern energy sources sets the stage for even more negative environmental human health impacts.

It should be emphasised that the reduction of primary energy consumption by improving efficiency in energy conversion, transportation and use is often the cheapest way of reducing GHG emissions. Any policy targeted at GHG reductions should consider the full range of options available, and thus always include an assessment of the feasibility and the cost of energy efficiency measures, also in relation to options for renewable energy supply.

Modest estimates of the energy savings potential in buildings, industry and transport in some countries indicate that at least one-third of the primary energy consumption could be saved, even without any change in end-use technologies.

Business is taking major steps through research, investment and voluntary initiatives to improve efficiency throughout the entire energy chain. Power generation, heat production and co-generation, advanced nuclear, insulation for buildings, hybrid and fuel cell powered vehicles and a variety of end-use technologies and products are becoming more efficient.

There is tremendous potential for efficiency improvements throughout the whole energy chain. For example, WEC estimates that the benefits, both economic and environmental, which can be achieved by improving the reliability of existing power plants world-wide are about US\$80 billion per year saved on construction and operation of power plant. This improvement in availability would also reduce global GHG emissions by 1 billion (10^9) tonnes CO₂ per year along with proportional reduction of other pollutants. This could be implemented at an average benefit to cost ratio of 4:1.

An integrated, multi-measure approach to energy, transport, and financial and economic policy is the most effective way to realise the energy savings potential in any country. Metering and a workable energy payments system are critical to the promotion of greater energy efficiency. Targeted public information campaigns and general education can help improve end-user awareness about energy efficiency. The greatest scope for reducing energy waste is in the individual decisions and behaviour in households.

Economic and Market Issues

The economic case for renewables has been improving rapidly over the past years, although with considerable support from subsidies. Hydropower is already an important and economical renewable source of commercial energy, supplying some 19% of the world's electricity. Some wind and geothermal energy installations are close to becoming competitive in wholesale electricity markets; others, such as solar PV, solar water heaters and biomass, are cost-effective options to provide services in off-grid areas in developing countries. In remote rural areas, particularly in geographically dispersed islands, renewables (even with full life-cycle assessment) might offer one solution to the challenges of affordable energy access.

Technology choices should not be made on political or ideological preferences but on facts. Picking "winning technologies" in advance can only hinder competition and effective long-term utilisation of the most appropriate technology for the countries where they are to be used.

Recommendations

1. *Institution-building*: Creating and maintaining institutions and frameworks that encourage the mobilisation of domestic and foreign capital is important. Governments have a key role to play in attracting investors, and in maintaining stability, transparency, and non-discriminatory, well-founded laws and regulations. Decisions on projects, in particular, approvals, permits and certification, need to be taken in a timely and consistent way, using procedures and standards that follow international good practice. This remains a problem in many of the developing countries and economies in transition.
2. *Balancing objectives*: Governments should find their own balance in the sometimes conflicting objectives of societal priorities, including competitiveness, security of supply, environmental protection and public service.
3. *Legal and regulatory decisions*: These should be based on sound science, cost effectiveness and full life-cycle assessment of costs and benefits (on which more research is required). Consultation with industry, consumers, scientists and technology experts is important to establish realistically achievable standards applicable to all.
4. *General guiding principles*: Actions in support of sustainable (including renewable) supplies of energy should observe the following principles:
 - Targets should be realistic.

- Regulation is best framed within the specific objectives sought. The means of achieving them are best left to the workings of competitive markets and diversity of approaches;
- Where possible, market-based and voluntary measures should be favoured over legislation and regulation. Governments should dialogue with industry to work out suitable and practical systems or even encourage industry itself to come up with practical solutions to meet the objectives set by governments. For example, commercial network operators, under appropriate incentive-based regulatory structures, can become active partners in promoting diversity and competition in electricity production and delivery and in developing new market-driven products and services.
- Fiscal measures (e.g., to promote R&D in renewable energy demonstration or pilot projects) should be subject to regular performance review, targeted and time-limited.

Opportunities - Partnerships

It is widely recognised that strong commitment and support is needed from both governments and industry to advance the cause for sustainable energy development, including promotion of renewable energies. This understanding is clearly reflected in the large number of various “partnerships” established at and immediately after the WSSD two years ago.

Business and industry are ready to work together with governments, NGOs, IGOs, overseas development agencies, local communities and other stakeholders to support sustainable energy development around the world, including a wide deployment of the full range of energy options and other initiatives for increasing access to modern energy services. It is now time to go beyond discussion and start real action.