

OVERCOMING OBSTACLES TO RENEWABLE ENERGY SOURCES IN MEXICO: LESSONS FROM THE NAFTA PARTNERS

PROCEEDINGS

7 FEBRUARY 2003, MEXICO CITY

INTRODUCTION

Renewable energy (RE), including large hydro, currently represents only 9% of total production and 15% of total consumption of primary energy in Mexico. However, due to its geographical location and climatic conditions, Mexico has abundant RE sources practically throughout its territory. As a result, renewable sources of electricity show great potential to complement and replace fossil fuels.

To explore ways of taking advantage of RE potential in Mexico, the Commission for Environmental Cooperation of North America (CEC), the Center for Private-Sector Studies on Sustainable Development (*Centro de Estudios del Sector Privado para el Desarrollo Sostenible*—CESPEDES) and the National Commission for Energy Conservation (*Comisión Nacional para el Ahorro de Energía*—Conae) held this meeting jointly on Friday, 7 February 2003 at the Club de Banqueros in Mexico City.

This trilateral meeting featured the participation of 56 representatives of all three NAFTA countries from industry (including electricity developers, industry associations and a dozen transnational companies) the public sector (including representatives from environmental, energy and regulatory agencies), academia, as well as representatives of nongovernmental organizations.

9:30 WELCOME SESSION

Chantal Line Carpentier, Head of the CEC Environment, Economy and Trade Program opened the meeting by thanking CESPEDES and Conae for their support in organizing the event, thanked the representatives of the various sectors, Zachary Patterson for his leadership in preparing the meeting itself, and called for an open exchange of ideas and opinions. She said that the CEC's interest in the meeting was on increasing the awareness of the environmental effects of free trade in North America, as well as to identify the opportunities for the integration of environmental and trade policies, specifically with reference to the energy sector.

Ing. Gabriel Quadri, General Director of CESPEDES, then commented briefly on the political context in which RE projects are being undertaken worldwide and offered his view for the coming years. There are approximately 25,000 MW of installed capacity for wind-generated electricity throughout the world; Germany has more than 8,000 MW, the United States has 4,200 MW, Spain has 3,400 MW, and India has 1,500 MW, while Mexico has only 3 MW.

Quadri noted many factors making Mexico promising for RE development, and noted that given international experience and the maturity of technologies, REs offer an important source of electrical energy that is indispensable in covering the growing demand that Mexico will see in the coming decades. Further, he noted operational advantages in terms of the distributed nature of RE resources, their environmental and societal benefits, could potentially allow Mexico to meet its growing electricity demands domestically.

He expressed concerns that Mexico is far behind in RE, which he attributes to the existence of a state monopoly and a legal and regulatory framework that hinders power generation using these clean and virtually undepletable energies. He concluded by asserting that the development of

renewable energies in Mexico would also give rise to economic and environmental opportunities opening under the Kyoto Protocol, strengthening Mexico's ability to participate constructively and for its national interests in the efforts to stabilize the global climate.

Ing. Odón de Buen, Director General of Conae concluded the opening address by expressing his appreciation for the participation of the CEC and CESPEDES.

Session One: SETTING THE MEXICAN CONTEXT

10:10 GALLUP FOLLOW-UP SURVEY RESULTS

Miguel Breceda described the results of a Gallup survey sponsored by the CEC, which followed up on a prior survey carried out in 2001. This second poll surveyed companies that in the first survey had expressed interest in renewable energies. The purpose was to follow-up on the earlier survey to get answers to questions such as: Are these companies still interested in renewable electricity? Have they ever tried to purchase or produce renewable electricity, and if not, why not? Moreover it sought to ask what would be necessary, either externally (i.e. by government) or internally (within the company) to purchase or generate electricity from renewable sources?

He reported that 94% of respondents in 2001 and 92% of respondents in this most recent survey responded that they remain interested in purchasing renewable electricity. However, renewable electricity is viewed as expensive and inaccessible.

External factors that were regarded as key for encouraging the use of renewable electricity, included the need for government to:

- broaden the availability and competitiveness of renewable electricity;
- promote research and development in support of renewable electricity; and
- help develop a "green electricity market" through supply-side policies like renewable portfolio standards (RPSs), and demand side policies, such as subsidies for renewable electricity production.

Key factors that would need to take place internally included: the modification of procurement policies, obtaining more information on renewable electricity technologies, and increasing training of those responsible for acquisitions.

Discussion following the presentation focused on the consistency of the results with other similar surveys. Namely, that response is normally quite positive and in favor of the use of renewable energy and electricity, but that very few people or companies use renewable sources, often because of concerns about reliability and cost. As such, some cautioned about being too enthusiastic about these findings.

10:45 MEXICAN COMPANY EXPERIENCE WITH RENEWABLES

Four presentations were given by the general directors of various companies that promote RE-based projects in Mexico: Arturo Whaley of Deproe, S.A.; Luis Héctor Valdéz of Vinsa; Héctor Fidel of Heliocol de México S.A. de C.V.; and Carlos Gottfried of Fuerza Eólica S.A. During their presentations they described their businesses as well as the processes and hurdles they have had to overcome to produce renewable energy in Mexico.

These industry leaders described the multiple barriers they have faced, including the economic energy policy of the Federal Electricity Commission (*Comisión Federal de Electricidad*—CFE), fossil fuel subsidies (which make REs relatively more expensive and less competitive), and the

lack of specific renewables policy, such as RPSs used in the United States. They indicated that the interconnection contracts for intermittent sources of electricity, granted by the Energy Regulatory Commission (*Comisión Reguladora de Energía*—CRE) in 2001 had been beneficial and had enabled the viability of some projects.

The leaders describing their wind projects—namely Carlos Gottfried (with his 540 MW project) and Arturo Whaley (with his 180 MW project)—mentioned that their projects are finally moving ahead. During their presentations and in discussions with the attendees, they indicated that there is broad potential for REs in Mexico. Others referred to a study that is underway—with the sponsorship of the US Agency for International Development (USAID) and Conae's support—that is investigating the potential of small-scale hydroelectricity in the central region of the state of Veracruz. However, they also noted the long processing periods that are usually required for such projects to take shape, in this case from three to five years, tend to inhibit such initiatives.

12:45 Session Two: US AND CANADIAN COMPANY EXPERIENCE WITH RENEWABLE ENERGY

John Carberry of DuPont USA (also representing the Green Power Market Development Group), Patrick Gillette of the Canadian Renewable Energy Corporation, and Glenn Hamer of the Solar Energy Industries Association spoke of the factors that have led to the development of renewable electricity projects in their respective countries, how the projects have been undertaken, and approaches for funding and selling the power.

John Carberry of Dupont stated that from his company's standpoint, it has been difficult to find renewable sources of electricity that are competitive with respect to conventional fossil fuels, and that investments in energy efficiency improvements tend to be less costly than investments in attempts to develop or secure renewable electricity. In addition to costing more, RE is difficult to find in large enough quantity and reliability for Dupont's needs. He also said that he thought RPSs are an appropriate policy for the development and the growing use of REs. Patrick Gillette said that RPSs, combined with production subsidies, are the best option for increasing the development of electricity production using REs, adding that having secure power purchase agreements is also extremely helpful.

In closing this set of presentations, Glenn Hamer stated that the appropriate policies for promoting RE development should focus on instruments such as RPSs, tax incentives, the net metering of electricity consumption, and the development of interconnection contracts, as well as transmission rights. He said that governments should play a more active role and have a responsibility to actively promote RE development.

There was thus agreement among the speakers that RPSs are fundamental for promoting and developing REs. Two of them (Gillette and Hamer) also considered tax incentives, or production subsidies, to be important policy tools. Despite the advances made in the United States, it was noted that much more remains to be done.

Session Three: MARKET-BASED MECHANISMS AND OTHER POLICIES FOR RENEWABLES

16:00 APPLICATIONS TO MEXICO

Jan Hamrin of the US Center for Resource Solutions, spoke on the nature and operation of tradable renewable energy certificates (T-RECs). She presented the concept for a North American verification and tracking system for “green certificates,” and the resulting benefits of such a

system for North America based on work done under a NAFEC grant. The proposed accounting system she argued, would facilitate and overcome many of the barriers now associated with green certificates (e.g. concerns about the double-counting of renewable attributes of renewable electricity), and would allow them to reach their potential for providing incentives for the development of renewable sources of electricity through market-based mechanisms.

Stephen Probyn of *Probyn and Company* focused on investing in cleaner forms of renewable electricity in the United States and Canada, as well as an analysis from an investor's perspective of the investing situation for renewable electricity in Mexico. He discussed the growing interest of oil companies and others to develop and commercialize systems for renewable electricity. He pointed out that the renewable electricity start-up phase is usually very slow, and he saw long-term power contracts as an important determinant in the development of renewable electricity projects. He agreed with Jan Hamrin in that a North American tracking and monitoring system would contribute to RE development and enable the use of certain mechanisms under the Kyoto Protocol, especially between Mexico and Canada. The specific actions regarded by Stephen Probyn as necessary to promote RE investment in Mexico included:

- the institution of RPS in Mexico;
- the definition of long-term policy guidelines;
- the active promotion of large renewable electricity projects with competitive bidding (between 500 and 1,000 MW) with long (25 years) contracts;
- simpler procedures for generation permits; and
- move toward facilitating carbon credit trading through Kyoto mechanisms.

Lastly, Dr. Manuel Martínez of the Center for Energy Research (*Centro de Investigación en Energía*) at *Universidad Nacional Autónoma de México* (UNAM) made a broad presentation on REs, entitled "Opportunities for Action." During his presentation, he stated that in 2001, Mexico imported 30% of its L.P. gas consumption. He also referred to the barriers and challenges to be overcome in promoting the development of RE projects in Mexico. Some of his suggestions to promote renewable energies in Mexico included:

- the Establishment of a consistent and comprehensive system for monitoring renewables production and consumption; the internalization of environmental, social and macro economic costs of energy into energy markets; the redesign of current environmental policies to encourage companies to replace existing polluting technologies with clean renewables at a future specified date; the establishment of renewable portfolio standards for electric power generation with an increasing percentage of renewables required over time; and the removal of impediments for adding distributed sources generally to the grid, by making the transmission and distribution system open to all producers regardless of size.

17:30 OPPORTUNITIES FOR COLLABORATION

Gabriel Quadri spoke of the role of companies and of his organization in promoting REs. He described particularly what he believed were two major problems standing in the way of increased usage of renewable electricity in Mexico: the ineffective operation of the country's energy market and an apparent disinterest in this problem on the part of the government.

Odón de Buen referred to the joint efforts underway among energy ministers in the framework of the "North American Energy Working Group (NAEWG) and how they intend to reduce RE transaction costs using various measures. Zachary Patterson of the CEC explained future CEC

work on renewable electricity, including a meeting that will be held later in 2003 on quantifying the displacement of emissions by renewable electricity plants and its work on green procurement.

The following captures the main points covered in the discussion and at various times during the day.

MAIN DISCUSSION POINTS

Greater availability (through the use of policies such as RPSs), lower prices (through among other things, production subsidies), reliability and consumer training and development (the public in general as well as institutional purchasers) are needed.

Although surveys typically show a preference for green energy and a willingness to pay a premium, US and Canadian experiences reveal that if the price of green energy exceeds the price of conventional power by more than 10%, it is very hard to sell.

Green electricity is composed of two products that can be sold on different markets: electricity and its environmental attributes. T-RECs represent the environmental attributes of a specific quantity of renewable energy environmental attributes associated with REs.

Barriers

Public Awareness

A fundamental problem with the uptake of renewables in Mexico is not technological, but rather has to do with what is known about renewable energy and its benefits, and to how renewable energies are perceived. Generally they are perceived as being expensive and unavailable. Their intermittent nature also leads to concern with respect to their reliability.

Costs and Reliability

Some argued that it is a myth that RE is more costly than conventional energy, and that this common misconception results from the provision of subsidies to fossil fuels and nuclear energy, as well as the fact that the human health and environmental costs with the use of these conventional fuels is not incorporated into their price. It was also noted that public subsidies have been granted to household consumers and farm irrigation, but that these subsidies represent only 63% of the total subsidy amount. In 2001, subsidies to CFE and *Luz y Fuerza del Centro* (LFC) totaled 52 billion pesos (42 billion pesos to CFE and 10 billion pesos LFC).

Legal and administrative barriers

Legal and administrative barriers related to the uncertainty and the costs associated with ensuring property rights and land ownership for the development of RE projects (which often require extensive land usage), as well as the fact that in Mexico just over half of national territory is held in collective ownership regimes, cause problems when trying to secure the right to use the land for electricity generation. However, others like Arturo Whaley felt that this particular problem was not insurmountable, as they had signed a very welcome contract with one ejido group.

Others saw legal issues like the Supreme Court's ruling of unconstitutionality of the reforms to the Law of Public Electrical Energy Service (*Ley del Servicio Publico de Energía Eléctrica*) and its regulations; the CFE's power purchasing policies; and the disregard of the environmental costs in the pricing of fossil fuels, as important.

Way forward

From the discussion emerged comments suggesting the need for a comprehensive renewable energy policy. Other parts of the discussion revolved around particular policies that might be able to fall under such a regime. Three areas were identified: public awareness and education, specific renewables policies and legal policies facilitating RE development.

Public awareness and education

In order to overcome the fact that many people know little about renewable energy and its benefits, or the fact that those that do know have concerns about its cost and reliability requires more involvement in public opinion in order for REs to be an item on the political agenda. As well, the relevant authorities need to undertake greater efforts to raise the level of education and awareness about REs. On the developer's side, a mechanism is needed to permit developers of RE projects to understand and take advantage of business opportunities as well as to understand the environmental benefits of renewable energy. The definition of a favorable public policy is indispensable to enabling the development of REs in a framework of market certainty.

Renewables Economic Policies

The development of renewable portfolio standards and the provision of production subsidies were clearly favored by participants. Another measure often mentioned to increase RE development was the use of renewable energy certificates. It was felt that in order for these to work well, a verification and certification system for these credits was required. Some suggested that they thought the CEC in conjunction with the Center for Resource Solutions would be an ideal organization to try to develop such a system at the North American level. Another policy that could provide the right environment for the development of renewables, as well as showing the government's commitment to RE would be competitive bid contracts for large RE developments. Some even mentioned that Conae could become a window for developing RE projects.

Renewables Legal Policies

A good legal and regulatory framework is essential to promoting the development of RE projects. The interconnection agreements granted by the CRE in 2001 were a necessary and good start, but more is needed to develop an adequate legal framework. For instance, these contracts must be granted for longer periods of time (of 25 years or more), so that they may be used as collateral to gain access to credit. In addition, the Mexican institutional framework would need to be analyzed to make a market for T-RECs truly operable. In fact, it was suggested that this should be developed under the provisions of the Federal Law of Measurements and Standards (*Ley Federal de Metrología y Normalización*).