

Renewable Energy Policy in México

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To use Renewable Energy (RE) is to protect public goods

- ◆ Conservation of non-renewable resources
- ◆ Reduced environmental impacts
- ◆ Positive economic impacts
 - **A source of employment**
- ◆ Can become a driver for regional development
- ◆ Reduce dependency on oil

There are barriers to RE

- ◆ **Technical**

- RE is intermitent
- RE requires extensive use of land

- ◆ **Economic**

- More expensive and most of the cost is initial cost

- ◆ **Social**

- Applicable technology is not known and/or trusted

Public policy objectives are clear

- ◆ **Establish confidence in the technology**

- Information
- Technical standards

- ◆ **Level the playing field**

- Regulation and incentives

- ◆ **Identify market niches**

- Evaluate resources

- ◆ **Promote R&D**

RE use is a priority in modern economies

- ◆ **There are several reasons why**
 - To reduce dependency from abroad
 - United States, Japan, Spain
 - To limit environmental impacts
 - Europe, Canada, United States
 - To reduce the need for foreign currency
 - Brazil

Public policy for RE development has specific instruments (1)

- ◆ **Laws**
 - Renewable Portfolio Standards
- ◆ **Fiscal incentives**
- ◆ **Taxes**
 - Applied to be used in special funds
- ◆ **Regulations**
 - Mandatory technical standards
- ◆ **Promotion programs**



Public policy for RE development has specific instruments (2)

- ◆ **Institutions**
 - To coordinate actions
 - To catalyze processes
 - To inform and educate the public
- ◆ **Certificates with market value**



Mexico's advantages

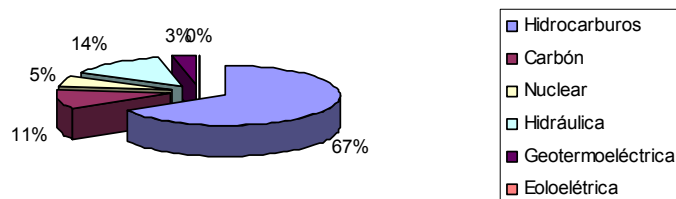
Great RE resources

- ◆ High insolation levels
 - 5 kWh/m²-day (average)
- ◆ Regions with good wind
 - 2,900 MW (estimated by CFE)
- ◆ High potential in mini-hydro
 - 3,200 MW (according to Conae)
- ◆ High but not well evaluated biomass resources
 - 1,000 MW (just with bagasse)

Need to diversify

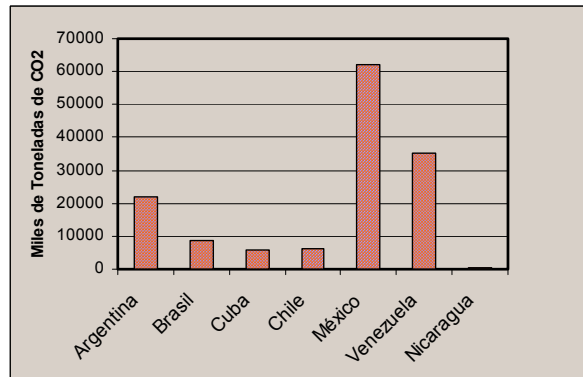
- ◆ More than 75% of electricity comes from fossil fuels

Porcentajes de generación eléctrica por energético primario, 1998



High environmental impacts of present production

CO2 emissions from electricity generation, 1995



Need to provide electricity to rural households

- ◆ Close to 5 million people without electricity
- ◆ Close to 30,000 locations with more than 10 people
- ◆ RE can be the least-cost alternative
 - Use of local resources

Foster local manufacturing capacity

- ◆ Materials
 - Metals, plastics, ceramics
- ◆ Equipment
 - Power generators
- ◆ Systems

Solve some local environmental problems

- ◆ **Waste disposal**
 - Urban solid-waste
 - Manure
 - Agro-industrial residues



International experience and context



International context (1)

- ◆ **Concerns about the present and future of the environment**
 - Climate Change
 - Air quality in urban areas
 - Ozone
 - Particles
- ◆ **Power-sector restructuring**
 - Dismantling of vertically integrated monopolies
 - Specific policies to promote RE

International context (2)

- ◆ **Tendency towards a system architecture that favors RE**
 - Small plants in modular and hybrid systems
 - Closer to the end-user
- ◆ **There are market niches in power generation outside of cities**
 - Photovoltaic, biomass

International context (3)

Conclusions from the high-level meeting “*Best practices in Renewable Energy: sharing experiences in market development*”. Cocoyoc, Morelos, June of 2001

It was established that (policy) emphasis should...

- ...be made in the identification and design of mechanisms to create and promote markets (rather than “gadgets”) because, at least for mini-hydro, biomass and wind development, the problem is not technical but of market mechanisms

A key aspect is a specific legal ...

- A key element is a specific legal framework that provides certainty to investments and helps obtain conventional financing for RE projects



Incentives are necessary...



- **It was considered, as demonstrated in international experience, that incentives for RE development should exist under the logic of “learning investments”**
- **These incentives should be based on performance rather than amount invested**
- **Incentives should not be homogenous. They should be differentiated by technology**



Recent developments

Un mercado de “Energía Verde”

- ◆ Basado en el interés de amplios sectores de consumidores en productos y servicios de bajo impacto ambiental
 - **En México y en países de desarrollados**
- ◆ Los compradores podrían ser empresas exportadoras a mercados con compradores ambientalmente sensibles
- ◆ El Gobierno Federal puede ser también un importante comprador

Elementos clave

- ◆ Contratos de largo plazo y valor fijo por energía producida
- ◆ Interés de usuarios de energía eléctrica por Sello Verde
- ◆ Incentivos fiscales a generadores y usuarios
- ◆ Sistema de certificación de generación de “energía verde”
- ◆ Participación del Sector Público como comprador

Conae's Green Energy Proposal (2001)

- ◆ Green Energy as a differentiated product
 - Bought and sold at a price equal to production costs
- ◆ Special Regime in the Electricity Law
 - Mandatory for CFE to buy and sell electricity from RE as Green Energy
 - Under long-term contracts
 - Specific and incremental amounts per year
- ◆ Certification system

CRE's RE standard contracts (2001)

- ◆ Used for self-supply projects with connection to the grid
- ◆ Special consideration to the intermittent character of RE
 - Useful for wind and mini-hydro
- ◆ Recognizes the time of day differentiated value of available power
 - Peak (high price) RE based electricity can be exchanged with baseload (low price) conventional
- ◆ Has made some projects feasible



Projects under consideration

- ◆ Use of wind in La Ventosa (Oaxaca)
 - Several projects
- ◆ Cow manure in Hidalgo
- ◆ GEF support to overcome barriers to wind energy deployment



A Role for State Governments

Centralized systems are no longer the best alternative

- ◆ *In many cases it is better for the centralized system to generate at the point of use*
 - *Distributed generation*
 - *Rural applications*
- ◆ *It has become increasingly complicated and expensive to extend the power lines*
 - *For social and environmental reasons*

RE is an alternative to centralized generation

- ◆ *Solar kWh are cheaper than those from the grid in many rural applications*
- ◆ *Generating from biomass can be much cheaper too*
 - *Specially for agro-industrial residues*

RE is local

- ♦ *Wind, biomass, solar are local*
 - *They have to be evaluated on site*
- ♦ *Its exploitation requires local arrangements*
 - *Land*
- ♦ *Its best application can be local*

Energy's institutional framework in Mexico is very centralized

- ♦ *Almost everything is decided in Mexico City*
 - *Laws, investments, rates, rules, standard contracts, technical standards*
- ♦ *Energy has always been identified with the Federal Government*
 - *When people think of electricity they think of CFE*

State governments don't have energy specialists

- ◆ *Even though it is a key development-element*
 - *It affects the costs related to location*
- ◆ *There are many opportunities that are particular to a region*
 - *Because of its particular resource base and its economic activities*

Propuesta: Desarrollar capacidades institucionales descentralizadas e integrales en energía (1)

- ◆ *A través de instituciones específicas*
 - *Comisiones, institutos o secretarías*
- ◆ *Con personal especializado*
 - *Planeadores, promotores y reguladores*
- ◆ *Con información*
 - *Sobre recursos convencionales y renovables*
 - *Sobre usos finales de la energía*

State governments should develop their own capabilities in energy

- ◆ **To identify and promote their local alternatives**
 - RE
 - Energy efficiency
- ◆ **Local institutions should be created**
 - That integrate professionals, information and a clear mandate

Conclusions

Towards the future of RE in Mexico

- Greater recognition of its strategic value
 - *Environmental*
 - *Conservation of non-renewable resources*
 - *Job creation*
- Focus has to be on a regional-development perspective
 - *State governments should be more involved*
- R&D should deal with technology adaptation

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