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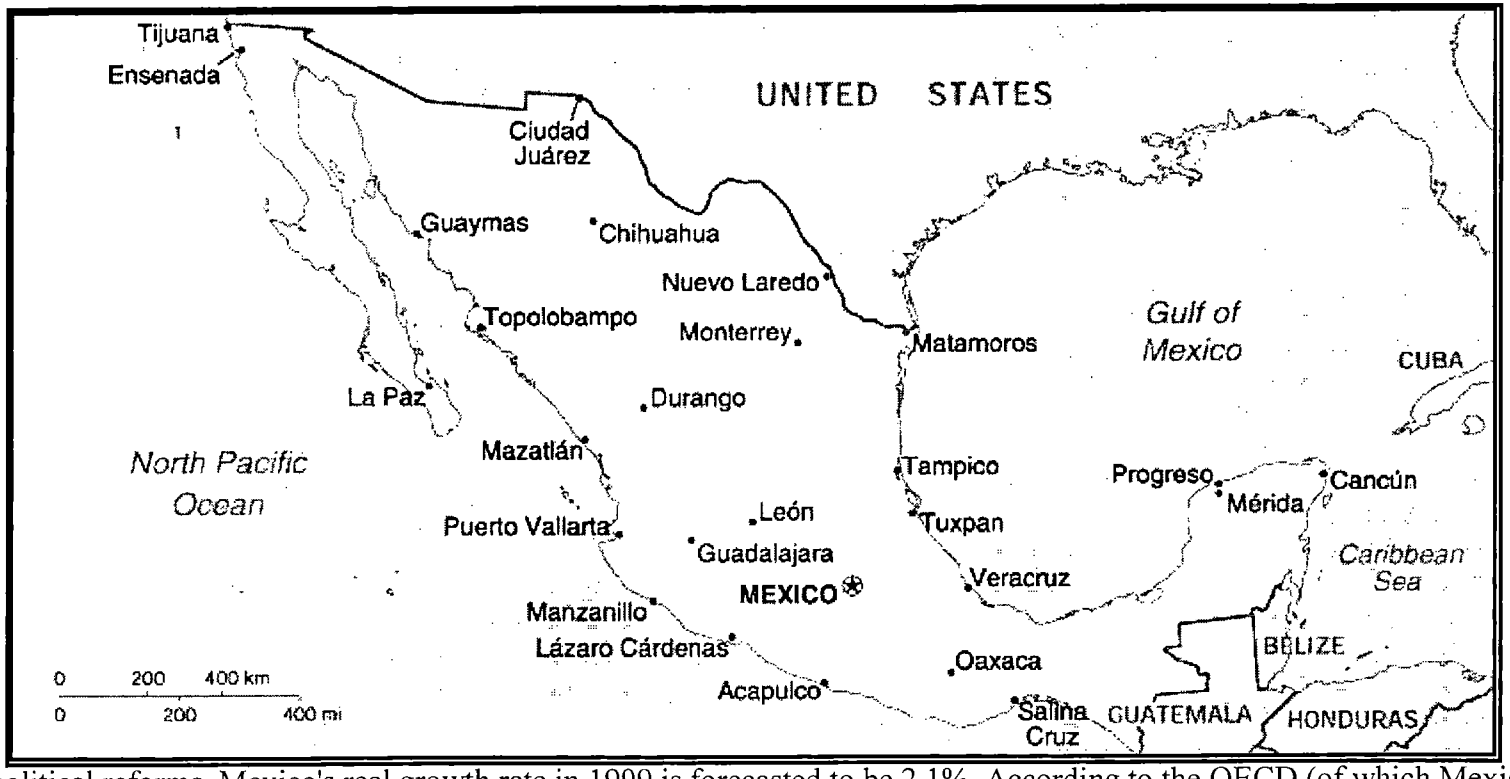
Mexico

A member of NAFTA and the OECD, Mexico is a major non-OPEC oil producer and has the world's sixth largest oil company (Pemex). Over half of Mexico's net oil exports go to the United States.

Press here for more details on Mexico.



GENERAL BACKGROUND

Despite the challenges of sustained low oil prices and the continuing worldwide emerging markets economic crisis, both of which are affecting the Mexican economy, the country's economic outlook is guardedly positive. Although Mexico's economy in 1998 was affected by these factors, it still posted a 4.6%-4.8% real growth rate, due in large part to increasing economic ties to the United States, international confidence in the strength of the Mexican economy, and continued economic and political reforms. Mexico's real growth rate in 1999 is forecasted to be 2.1%. According to the OECD (of which Mexico has been a member since May 1994), economic growth in 1999 will depend on several factors, including: continued implementation of structural reforms; prudent fiscal policy; a monetary policy aimed at further reducing inflation; and stable financial markets. Another important factor is strong exports, which are expected to face greater competition from Asia.

Mexico's government was forced to slash its budget, which is calculated using a specific oil price, three times in 1998 (by a total of $4 billion) due to historically low oil prices. Overall, oil accounts for about 7% of Mexico's total export earnings, and about 33% of government revenues. Mexico loses about $1 billion for every $1 per barrel drop in oil prices, and the 1998 collapse in oil prices thus contributed to a worsening trade deficit and repeatedly threw the government budget into disarray. Low oil revenues also have threatened to offset continued growth in Mexico's export sector, which has been a major force behind Mexico's economic recovery. As a result of Mexico's tightening fiscal situation, in the last year the government has eliminated subsidies for tortillas--Mexico's staple food--and instituted unpopular tax hikes and higher prices for government goods and services, including a 31% increase in gasoline prices and a 15% surcharge on phone services.

Mexico continues to open up its political process to further democratization. There are three main parties in Mexico: the ruling centrist Institutional Revolutionary Party (PRI); the center-right National Action Party (PAN), and the leftist Party of the Democratic Revolution (PRD). The PRI was formed in 1929, and up until only a few years ago, had won every election for President, and controlled every one of Mexico's 29 states. However, in the past few years, opposition parties have won numerous gubernatorial elections, and in July 1997, gained control of the federal government's lower house --- the Chamber of Deputies -- for the first time ever. The next election for president is scheduled for 2000. President Zedillo is not eligible to run.

The United States is Mexico's major trading partner and the country's primary source of foreign direct investment. In December 1997, Mexico displaced Japan as the second-largest importer of U.S. goods, after Canada. This relationship has been fostered through official mechanisms including the U.S.- Mexico Binational Commission (composed of U.S. cabinet officials and their Mexican counterparts) and the North American Free Trade Agreement (NAFTA). Implemented in January 1994, NAFTA has liberalized Mexico's trade with the United States and Canada. Indeed, future trends point to even closer ties among the United States and Mexico, in terms of economic integration, immigration, and energy ties. The U.S. merchandise trade deficit with Mexico has remained in the $15-20 billion range since the start of the Mexican peso crisis in late 1994, and these large U.S. trade deficits with Mexico have been a source of friction in U.S.-Mexican bilateral relations. However, overall Mexican import demand has increased as Mexico's economy has recovered from its severe 1995 recession, resulting in the country's overall monthly trade balance turning negative in late 1997, after three years in positive territory.

With the Mexican economy predicted to grow at an average rate of just over 5% per year for the next two decades, energy demand also is expected to increase during this time period. Oil and natural gas will likely remain the dominant energy sources through 2020, accounting for well over 80% of total energy consumed. The Mexican state still dominates domestic energy resources at all levels, and unlike most Latin American energy markets in the past decade, Mexico thus far has resisted substantial amounts of privatization. However, dwindling oil reserves, increasing fuel deficits, poor provision of electricity, and increasing imports of raw materials for the nation's petrochemical sector are all beginning to expose the large inefficiencies within the energy sector. Up until now, the government has allowed only limited private participation in the country's energy sector, such as access to transmission and distribution facilities in the natural gas industry, and self-generation of electricity in the power sector. Under the Mexican constitution, the government maintains a monopoly on direct access to natural resources, and this monopoly continues to prevent the flow of private investment required to improve conditions. In the meantime, businesses must rely on the government to provide energy services and raw materials to operate.

Despite an overall 43% increase for 1999 federal energy spending over 1998 levels, principally for increased electricity capacity and oil industry investments, Mexico still plans to tap the private sector for about $8.4 billion of the $14 billion in new investment planned for 1999. This private investment represents a large increase from 1998 levels, and will come both from the financial markets and direct investment. Mexican energy officials plan to award contracts to private companies to lay down natural gas pipelines, construct new power plants, and to modernize and expand six oil refineries (in part to expand Mexican production of unleaded gasoline). This increased dependence on foreign

investment is further necessitated due to ever tighter federal budgets, as well as the need to control the fiscal deficit. Budget outlays for Pemex and the Federal Electricity Commission (CFE), which generates and distributes power in Mexico, have been cut, and there also have been cuts in energy subsidies. In the case of CFE, the government is effectively shrinking the share of national power output it directly controls by licensing private companies to build, own and operate generation facilities.

Due to Mexico's expected future electricity demand growth, especially in the industrial and fast-growing northern region, there is an expectation of ever-greater energy interdependence between northern Mexico and Texas in the coming years. Both gas and electricity consumption in Mexico will continue to grow due to privatization efforts, growth in energy demand, advances in gas generation technologies, and growth in independent power production. Mexican tariffs on the imports of natural gas will be reduced to zero by 2003 (they are presently set at 4%), and this is viewed as a big opportunity for U.S. natural gas exporters.

OIL

Pemex, Mexico's state oil company, is the world's sixth largest oil company, the single most important entity in the Mexican economy, and a symbol of Mexican sovereignty and independence. Nationalized in 1938, it controls virtually all areas of the oil and gas sectors, and provides a major source of government revenues. Pemex enjoys a monopoly over exploration, development, refining, transportation, storage, and distribution of the country's hydrocarbons, a position guaranteed by Article 27 of Mexico's Constitution. Per Article 27, foreign participation in Mexico's upstream sector is limited to service and performance contract arrangements and turnkey drilling contracts. Pemex is divided into four primary areas: Exploration and Production; Refinery; Gas and Basic Petrochemicals; and Petrochemicals. President Zedillo has reaffirmed many times in recent years that Pemex will remain in state hands. This is in spite of the oil sector being badly in need of modernization and investments.

For 1999, Pemex will concentrate its spending on developing offshore basins in the Gulf of Mexico and building a new natural gas processing facility that will allow the oil monopoly to feed a growing gas supply network for industry. Pemex has announced that it will also seek $5.8 billion in private investments to modernize refineries and boost production, as operating budgets have been slashed three times in 1998 due to lower oil revenues. The Mexican government also plans to continue its troubled project of attempting to sell minority stakes in Pemex's petrochemical plants to private investors. One of the main challenges for Pemex is the amount of money it must turn over to the federal government each year in the form of taxes and special levies on production. Since oil prices began sinking in 1997, talk has increased about granting Pemex greater budget autonomy, although nothing has yet materialized on that front. Despite the current great need to invest billions in major upgrades, such movements towards even minimum privatization are politically sensitive, and raises fears of lost jobs. The prospect of any substantial stake for the private sector in the oil sector therefore appears unlikely in the medium term.

Mexico's proven oil reserves were estimated at about 48 billion barrels by the *Oil and Gas Journal*, as of January 1, 1999. In February 1999, Pemex officially downgraded its hydrocarbon reserve figures to about half this number, although it is not clear what this number includes. Nonetheless, Mexico has the second largest oil reserves in the Western Hemisphere after Venezuela. In 1998, Mexico produced about 3.52 million barrels per day (bbl/d), of which 3.07 million bbl/d was crude, and consumed about 1.9 million bbl/d. Net oil exports amounted to 1.5 million bbl/d, of which 1.33 went to the United States. Crude oil production increased by about 2.4% over 1997 levels, following a 5% increase from 1996.

The biggest story for the Mexican oil sector in 1998 was record low oil prices, which seriously impacted Mexico's federal budget and its plans for capital investments in the energy industry. Petroleum export revenues totaled $7.14 billion in 1998, a drop of $3.9 billion from the previous year. The average price of Mexico's export crude fell to $10.15 per barrel in 1998, down 38% from 1997. The overall average price for Mexican crude fell by $6.61 per barrel in 1998, to $10.16 per barrel. The average price hit its lowest level on December 10, 1998, at $6.91 per barrel. By

early 1999, Mexico was receiving prices for its generally heavy sour exports at about $6 - $7 per barrel, although prices started to rise in March 1999. As a result of low oil prices, Pemex reported that operating profits in the first quarter of 1998 were down 39% from the first quarter of 1997 ($2.98 billion vs. $4.88 billion). Pemex loses an estimated $1 billion annually for every dollar per barrel decline in its average oil price. About half of all Mexican crude oil production is exported. The export price of Mexican crude in December 1998 was the lowest monthly price reported since 1980.

Mexico's current oil development efforts focus mainly on the giant offshore $5.3 billion Cantarell heavy oil project in the southern part of the Bay of Campeche. Cantarell, which contributes about 1.4 million bbl/d of Mexico's total crude oil production, alone accounts for more than half of Pemex's investment budget. Pemex plans to spend nearly $5 billion between 1998 and 2011 to boost production even further, including nearly $1 billion on the world's largest nitrogen production and injection scheme to raise reservoir pressure and increase per-well production of heavy Mayan crude. Other new Mexican oil development projects include the heavy-crude Ku-Maloob-Zaap complex in the offshore Campeche basin, and the Grijalva Delta light oil project. Although Mexico has ambitious plans for further exploration and production of oil, unlike the exploration finds of the late 1970s, today's exploration is more difficult and requires advanced seismic techniques and instruments.

Mexico produces three grades of crude oil: heavy Maya-22, which accounts for more than half of total production; light, low-sulfur Isthmus-34 (about 28% of total production); and extra-light Olmeca-39 (about one-fifth of total production). About three-fourths of Mexico's crude oil production comes from offshore sites in the Campeche Sound of the Gulf of Mexico, which contain about 15 billion barrels of proven crude oil reserves (according to Mexico's first audited reserves estimates, which were released in March 1997).

Historically low oil prices, and Mexico's great dependence on oil revenues, has prompted the country to push for oil production cuts in an effort to boost prices. Three times in the past year, Mexico has played active roles in agreement among OPEC and non-OPEC oil producers. In March 1998 in Riyadh, Mexico announced a deal (along with Saudi Arabia and Venezuela) under which it pledged to cut its own crude oil exports by 200,000 bbl/d as part of a worldwide deal to cut supply by 3.1 million bbl/d. Following this agreement, Mexico's crude price increased to more than $10/bbl by early May, but still remained well below the federal budget's target price for 1998 of $12.50/bbl. In June 1998 in Amsterdam, Mexico pledged to cut its oil exports further. In March 1999, Mexico agreed to a further 125,000 bbl/d cut. In order to reduce oil exports as agreed, Pemex plans to push more Mexican crude into domestic refineries while cutting back on oil product imports.

Negotiations between the United States and Mexico continue on the issue of two "doughnut holes," or gaps, lying outside the respective countries' 200-mile Exclusive Economic Zones (EEZs) in the oil-rich western Gulf of Mexico. The western "doughnut hole" covers a 4.7-million acre area on the outer continental shelf; a similar "doughnut hole" also exists in the eastern Gulf. In November 1997, the U.S. Senate ratified a 1978 treaty on maritime limits in the Gulf of Mexico, setting both nations' borders of EEZs at 200 nautical miles into the Gulf. The Mexicans had stated that they would not discuss the "doughnut hole" issue until the border treaty was ratified by the U.S. Senate (the Mexican Senate ratified it soon after it was completed). The issue has become important in recent years as offshore drilling technology has improved significantly, opening up for the first time the 10,000-foot waters of the western "doughnut hole." This resolution of a 19-year old boundary proposal in the Gulf cleared the way for both countries to discuss how to divide mineral rights of these areas. The westernmost area, or western gap, is the one being eyed by petroleum companies for its large reserves of oil and gas. The eastern gap lies beyond the territorial waters of the United States, Mexico, and Cuba, but it is not currently being considered for exploration. Exploration in these deep waters of the Gulf has converged on a triangular-shaped area that is beyond the 200 nautical mile limit of U.S. and Mexican territorial waters. In order to divide the area, the U.S. is proposing that the two nations agree upon an equal distance from each country's 200-mile limit. Mexico's position on this proposal is still being defined. In order to come up with the land boundaries, the countries conducted surveys in 1998 at the same shore points from which the initial treaty was measured (southern Louisiana, points on the Yucatan Peninsula, and points near the Rio Grande River). Both parties now agree upon the boundaries. With the boundary issues resolved, both parties are further discussing the equal distance method.

The issue of transboundary resources has been raised by the Mexicans, as oil can seep from underneath the Mexican leases into wells drilled on the U.S. side, and as the United States is closer to starting to drill the near-boundary leases, transboundary resources are a concern to Mexico.

REFINING

There is a great need in Mexico for investments in refining and petrochemicals. In fact, petrochemicals accounts for more than $3 billion per year in trade deficits with the United States, as Mexican factories cannot obtain quality or competitively priced petrochemical products, and must import them from the United States. However, constitutional and political limitations on foreign involvement in the hydrocarbon sector will make any substantial participation difficult in the medium term.

Pemex maintains monopoly control over the refining of crude oil and production. As with petrochemicals, Mexico's domestic refineries are in need of upgrading, and refinery modernization has long been considered crucial to increasing Pemex's production and profitability. Although Mexico produces about 5% of the world's oil, it does not have sufficient refinery equipment or technology to supply all its own product needs. Mexico actually exports much of its oil to the United States, and then imports back almost 150,000 bbl/d of refined product. Overall, Mexico imports a little more than $2 billion per year in oil and gas from the United States. Between 1998 and 2002, Mexican consumption of gasoline is expected to grow by 3.6% annually on average, according to Pemex estimates. The total trade deficit in lighter fuels (mostly gasolines) has climbed from $479 million in 1995 to $1.8 billion in 1997. Given this situation, Pemex has been working to expand the country's refining capacity to process heavy crude oils and to produce higher volumes of lighter fuels.

Mexico has six main refineries. Pemex is in the process of a major modernization drive as part of plans to increase refining capacity. These plans call for investments of $3.1 billion from 1999-2001. The goal of these investments is for Pemex to produce better quality and cleaner-burning fuels, reduce imports of gasoline, meet its demand for jet fuel, diesel, gasoline, and other fuels, increase the profitability of its refineries, and possibly eliminate imports of these products. Plans call for 44 new plants and upgrades to 22 more over five years. In the past year, Pemex has added three units to the Tula refinery, added two alkylation plants in the Salina Cruz and Salamanca refineries, and is expanding refining capacity at the Cangrejera refinery.

Three main refinery upgrades, at Ciudad Madero, Tula and Salamanca, have been tendered and are expected to move ahead in the coming months. However, other planned upgrades required by Pemex, in Minatitlan and Salina Cruz, estimated to cost about $2.4 billion, have been delayed due to adverse market conditions, and have been pushed back until at least 2000, depending on global financing opportunities available. Along with Cadereyta, Pemex will build cokers at these refineries to allow the processing of heavier crudes starting in 2002. The Cadereyta refinery upgrade, a $2.46 billion massive expansion in northern Nuevo Leon state, was awarded in November 1997. The contract went to South Korea's Sunkyong Engineering and Construction, Germany's Siemens AG, and Mexico's Grupo Tribasa. When work is completed in late 2000, Cadereyta's capacity to produce jet fuel, diesel, and gasoline will increase sharply.

NATURAL GAS

Until recently, Mexico has not placed as much emphasis on the development and exploration of natural gas as it has for oil. The majority of natural gas currently is found and produced in association with crude oil. A major constraint has been the lack of investment in pipeline infrastructure for transporting gas over long distances (most production is in offshore and southern onshore regions while population is concentrated inland and in the north). However, natural gas is slated to play a more important role in the future as new combined cycle power plants are built, and existing power plants are converted to use natural gas. Mexico's Energy Regulatory Commission (CRE) expects that natural gas demand will double over the next decade, and that half of this gas will be used to generate electricity.

Mexico produced about 1.19 trillion cubic feet (Tcf) of natural gas in 1997, from reserves of 63.5 Tcf (as of January 1999). The United States

exported a total of 38.4 billion cubic feet (bcf) of natural gas to Mexico in 1997, while importing 17.2 Bcf. Imports of natural gas from the United States have been allowed since January 1996. The current import tariff is 4%, but this is decreasing annually and is set for total elimination by 2003. Mexico's Energy Ministry expects gas production to increase by an average of 10% annually over the 1998-2000 period. Domestic demand is expected to grow faster than production, at an average annual rate of 12% between 1998 and 2000, reaching 2.5 trillion cubic feet (tcf) by 2006 (from around 1.2 tcf in 1997). Investment in Mexico's natural gas market is expected to reach $1 billion in the next two years. Of that amount, $400 million is expected to be invested in natural gas distribution in Mexico City, and $60 million will be invested in natural gas distribution in the central Bajio region comprising Leon, Salamanca, Celaya and Irapuato.

A Liberalized Sector.

Mexico's natural gas industry is rapidly becoming the most liberalized of its energy sectors. In 1995, the Mexican Congress approved the Natural Gas Law, modifying Article 27 of the Mexican constitution. Legislation was enacted to open the natural gas market to private, including foreign, investors. This includes gas transportation, storage, and distribution, and allows private companies to import and export natural gas, although it restricts ownership in more than one function within the industry. This legislation liberalized exports and imports, defined the conditions for first-hand sales, contracts, authorizations, and concessions. It also established the regulatory framework for building and expanding transmission and distribution pipelines. Pemex holds the exclusive rights for the extraction and sale of natural gas, and therefore holds the monopoly on all distribution and storage until the time of sale. Thus the growth of the natural gas market is dependent on the actions of Pemex to establish a competitive market.

CRE is mandated to achieve a competitive, efficient, safe, and sustainable natural gas industry as part of Mexico's efforts at increasing use of natural gas for environmental, economic and other reasons. CRE's powers include enforcement of regulations, inspections of facilities, issuance of permits, regulation of prices, overall supervision of the industry, ensuring an adequate supply, security, the promotion of competition, and the elimination of cross-subsidies. Since this landmark legislation, CRE has been working to create pertinent regulations for transmission, distribution and storage operations for natural gas, and a more transparent overall policy for pricing, eliminating cross-subsidies, and access to the national grid. Private-sector participation in these areas currently are subject to permits granted by CRE for 30 years based on competitive bidding. CRE has already allotted many distribution and transmission concessions in the Mexicali, Hermossillo, and Chihuahua area, and will allocate more in the Bajio, Tijuana-Tecate-Ensenada, Quetaro-San Juan del Rio-Laguna, and Puebla Tlaxcala regions. The large markets for residential gas, which currently use LPG, and the emerging needs for gas-fired generation plants will continue to attract investors to the industry and to press for further liberalization, particularly in the area of LPG. Privatization of natural gas distribution rights will continue over the next few months.

Most of Mexico's natural gas is produced in the southeastern part of the country, far from major consuming areas in the north and northeast. Associated ("wet") gas is produced both onshore (primarily in the southern Chiapas and Tabasco regions) and offshore. Natural gas also is produced in the northeastern part of the country at the country's largest non-associated ("dry") gas field (Burgos), where Pemex has begun an ambitious plan to increase production from 500 million cubic feet/day (Mmcf/d) in late 1997 to a peak of 1,400 Mmcf/d in 2001. The Burgos basin has been in production since 1945, with maximum production of more than 600 Mmcfd reached in 1970. Pemex hopes to increase Burgos production through 3D seismic technology combined with new drilling techniques and hydraulic fracturing. The first major contract ($110 million) for this work went to U.S. firm Schlumberger. Pemex plans to spend $2 billion through 2000 (and $5.5 billion over 15 years) on these and other efforts at Burgos. By increasing Burgos production, Pemex hopes to supply the growing industrial market of northeastern Mexico, which U.S. producers also have targeted. In addition, Pemex is considering exporting part of any increased gas production to the United States. Natural gas consumption in northeastern Mexico -- pushed by rapid industrial growth, clean air goals, and construction of new gas-fired power plants -- is expected to increase rapidly during the next decade. In late 1997, natural gas was exported from the United States to Mexico via the new Samalayuca Pipeline, which crosses the U.S.-Mexican border near Clint, Texas. The pipeline is aimed at supplying the Samalayuca power

plant near Ciudad Juarez, Mexico, as well as other markets in the area.

COUNTRY OVERVIEW

President: Ernesto Zedillo (since December 1994; next election in 2000)
Independence: September 16, 1810 (from Spain)
Population (1998): 94.3 million
Location/Size: Southern N. America/762,000 square miles (nearly three times the size of Texas)
Major Cities: Mexico City (capital), Guadalajara, Monterrey
Languages: Spanish, Mayan dialects
Ethnic Groups: Mestizo (Indian-Spanish), 60%; Amerindian, 30%; Caucasian, 9%; Other, 1%
Religions: Roman Catholic, 89%; Protestant, 6%, Other, 5%
Defense (8/97): Army: 130,000, Navy: 37,000, Air Force: 8,000, Rural Defense Militia: 14,000

ECONOMIC OVERVIEW

Finance Minister: Jose Angel Gurria
Currency: 1 Peso = 100 centavos
Market Exchange Rate (4/1/99): US$1 = 9.523 pesos
Gross Domestic Product (GDP, market exchange rates) (1998E): $429.8 billion
GDP Per Capita (1998E): $4,405
Real GDP Growth Rate (1998E): 4.6%-4.8% **(1999E):** 2.5%-3.0%
Inflation Rate (consumer prices, 1998E): 17.0%-18.6% **(1999E):** 14.8%-16.5%
Unemployment Rate (1998E): 3.2% (official rate)
Major Trading Partners: United States, Japan, Germany, France, Italy, European Union
Current Account Balance (1998E): -$14.9 billion (3.5%-3.9% of GDP)
Merchandise Trade Balance (1998E): $0.62 billion ($14.5 billion with the United States)
  Exports : $110.4 billion ($94.7 billion to the United States)
  Imports: $109.8 billion ($79.0 billion from the United States)
Major Export Products: Crude oil and products, coffee, silver, engines, motor vehicles, cotton, consumer electronics
Major Import Products: Metal-working machines, steel mill products, agricultural machinery, electrical equipment, aircraft, motor vehicle and aircraft parts
Total Reserves (non-gold) (1998E): $30.0 billion
Total External Debt (1998E): $174 billion

ENERGY OVERVIEW

Energy Minister: Luis Tellez Kuenzler (appointed 10/20/97)
Total Energy Consumption (1997E): 5.77 quadrillion Btu
Energy-Related Carbon Emissions (1997E): 93.7 million metric tons (1.5% of world carbon emissions)
Proven Oil Reserves (1/1/99E): 48 billion barrels (Note: estimate may be lowered by about half this amount by Mexico)
Oil Production (1998E): 3.52 million barrels per day (bbl/d), of which 3.07 million bbl/d is crude
Oil Consumption (1998E): 1.9 million bbl/d
Net Oil Exports (1998E): 1.62 million bbl/d
Gross Crude Oil Exports (1998E): 1.69 million bbl/d (1.36 million bbl/d to the United States)

Oil Export Revenues (1998E): $11.5 billion
Crude Oil Refining Capacity (1/1/99E): 1.525 million bbl/d
Natural Gas Reserves (1/1/99E): 63.5 trillion cubic feet (tcf)
Natural Gas Production (1997E): 1.19 tcf
Natural Gas Consumption (1997E): 1.20 tcf
Natural Gas Imports from the United States (1997E): 38.4 billion cubic feet (bcf)
Natural Gas Exports to the United States (1997E): 17.2 bcf
Recoverable Coal Reserves (12/31/96E): 1.3 billion short tons
Coal Production (1997E): 10.3 million short tons
Coal Consumption (1997E): 12.0 million short tons
Net Coal Imports (1997E): 2.5 million short tons
Electric Generation Capacity (1/1/97E): 37.6 gigawatts
Net Electricity Generation (1997E): 164 billion kilowatthours (bill kwh)
Net Electricity Consumption (1997E): 154 BKWh

ENERGY INDUSTRY

Organization: *Oil and natural gas* - Petroleos de Mexicanos (Pemex), four operating subsidiaries (Exploration and Production, Refining, Gas and Basic Petrochemicals, Secondary Petrochemicals), Petroleos Mexicanos Internacional (PMI); *Electric power* - Comission Federal de Electricidad (CFE); *Natural gas and electric power regulation* - Comission Reguladora de Energia (CRE)
Major Ports: Gulf Coast - Cayo Arcos, Dos Bocas, and Pajaritos (handle most of Pemex's oil exports), Tuxpan, Ciudad Madero; Pacific Coast - Salina Cruz, Rosarito
Major Oil-Producing Fields (1997): Cantarell, Abkatun, Ku, Caan, Pol
Major Refineries (1/1/99 Capacity): Salina Cruz (340,000 bbl/d), Tula Hidalgo (320,000 bbl/d), Salamanca (235,000 bbl/d), Cadereyta (235,000 bbl/d), Minatitlan (200,000 bbl/d), Ciudad Madero (195,000 bbl/d)

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Chavez Mexico overview

Last 3 yrs: 5.5% GDP growth

1998: 4.8% "

gas will ↑ ~5%/yr

half of elect from nat gas in 2007

private participation in gas

electricity - 2 players

limited participation by private sector

3/4 elect from FF

(D) ↑ 6%/yr

$25 b investments necessary -∴ need prioritization

competition → ↑ efficiencies, ↓ costs

Mazur US Natl Action Plan

CCAP

CCTI

electrics

Chavez

Mex total energy supply: 66% crude oil + liquids

18% nat gas

→ 9.5 quads

"sus energy" ~ 25.4% incl nat gas, hydro, (N), biomass, g

→ 2.4 quads

population: 1998: 97m 2020: 122m pop growth rate 97/98: 1.6%

Sus energy policy: renew resources: solar, wind, geothermal, hydro

nat gas

to contribute to intl efforts to mitigate GHG emissions
→ switch to nat gas
→ promoting renewables + energy efficiency
1994 - began program to convert 70% of fuel oil power plants to nat gas

renewables	installed capacity (MW)
hydro	10,000
geo	750
wind	1.6
solar	11

CHP 231MW installed capacity
energy efficiency - Ilumex, FIDE, voluntary programs, regulation, daylight saving time
→ avoided capacity: 1689 MW
Actions to mitigate GHG emissions
" " local pollutants

de Buen energy conservation - Lawrence

Danish model - applying to Mexico energy-economic-env
"MexBrus II" - WB grant
- engineering model
- then link to ecan model

met w/
Manuel Betancourt's assistant - leading modeling effort
5 labs, 11 labs studies

background info on SO_2 trading → Manuel

talk to Jae E. e Mexico

has common baseline for all institutes

Odon Energy Cooperation Agreement

Annex I

Annex II

impacts of daylight savings time – need evidence

- criticized on health, accidents, + labor productivity

Criteria for Prioritizing Efforts

- timeframe - soon
- which ones would have greatest impact

by category

info

policy/regs

projects

- need to better understand each other's models
- Mex want to understand permit trading
  - have existing program in Mex but hasn't been successful – problems w/ monitoring
  - provide info on SO_2, ideas for GHG
  - get info on their experience – description of law/policy + performance

Joseph E. Aldy
06/03/99 06:44:04 PM

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To: Raymond.Prince @ hq.doe.gov @ inet, phil.tseng @ hq.doe.gov @ inet, Nagelhout.Peter @ epamail.epa.gov @ inet, donez.francisco @ epa.gov @ inet

cc: Rosalind V. Rasin/CEA/EOP, mark.mazur @ hq.doe.gov
Subject: meeting with Bernardo Flores

The meeting with Bernardo Flores of the Mexican Energy Secretariat has been confirmed for Tuesday, June 8. We will meet from 10am - 12noon in 324 OEOB. Please email Vickie Rasin (see cc) your clearance information (date of birth and social security number).

We plan on discussing our experience with economic modeling of climate change and the Mexican energy secretariat's efforts to conduct modeling. While informal, it would be useful for us to be prepared to talk about several different topics (but formal presentations are not necessary). Specifically, I would appreciate it if you could be prepared to discuss the following:

Ray: IAT
Peter: SGM
Phillip: Markal-Macro
Francisco: ongoing cooperation with Mexican environment secretariat

I will open the discussion with an overview of how we use economic modeling to inform the policy process, and describe the kinds of questions that models can be used to address. From there, I would like to go to each of you (in the order above) for a brief overview of these topics (e.g., 3-5 minutes) and try to promote an active dialogue with Bernardo. We will use this opening discussion to identify the key issues that we should focus on for the rest of our meeting.

For more information about what to expect from this meeting, refer to what Bernardo wrote in a recent email to me:

"In that meeting we could share what our governments are developing on this issue [modeling]. In the mexican case, we are now building a bottom-up model and we are also working on the integration of this model with a general equilibrium model in order to evaluate energy, economic and enviromental policies as a whole."

Thanks for your help with this.

Joe

more info on modeling
how will intl mkt behave in future (oil mkt)
- GCC + oil
- MERGE; EIA
compare modeling results
get preliminary results from Mex

Developing Country Participation in International Emissions Trading

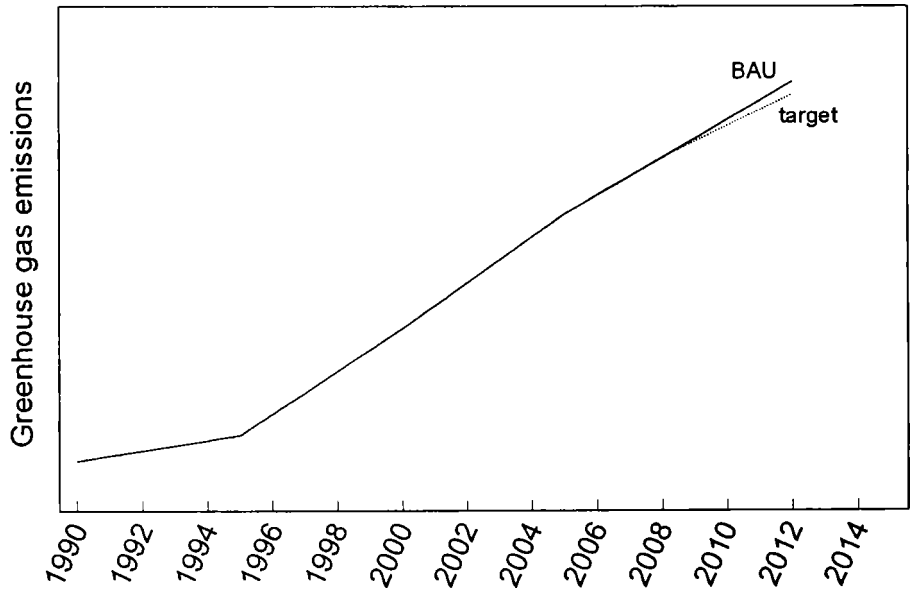
If a developing country (a) chooses to adopt a growth target slightly below its business as usual (BAU) emissions, and (b) trades its emissions allowances internationally, it could enjoy substantial economic and environmental gains.

- **Economic Benefits.** As potential sellers, developing countries with targets slightly below BAU projections could enjoy net gains from participation in international emissions trading, because they can achieve emissions reductions relatively "cost-effectively" (i.e., at a cost per metric ton of carbon equivalent that is less than the world trading price). Even with this participation, a country's emissions could continue to grow above current levels (see figures below).

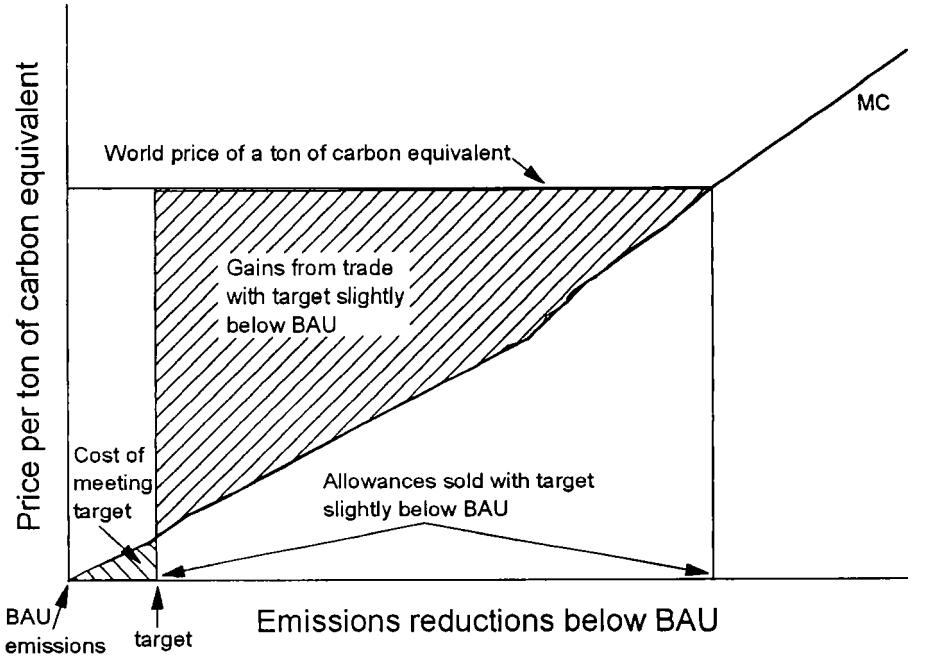
- **Environmental Benefits.** A world with broad-based participation in international emissions trading, including participation by countries with growth targets slightly below their BAU projections, could result in lower global greenhouse gas emissions relative to a world with narrow participation. Moreover, reductions in greenhouse gas emissions would generate ancillary air quality benefits through reductions in sulfur dioxide, nitrogen oxides, and particulate matter emissions.

Benefits of Trade: The following example illustrates (i) a potential growth target, set slightly below a developing country's BAU projection, and (ii) the economic benefits available to this developing country through international emissions trading.

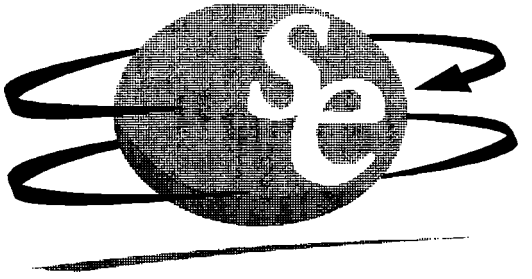
(i) Illustration of a Developing Country Growth Target



(ii) Marginal Abatement Cost Curve and Gains from Trade in 2010



These gains from trade represent revenue from sales of emissions allowances less the cost to the developing country of reducing emissions.



Secretaría de Energía

Economy - Energy - Environment

June 8th, 1999
Washington, D.C.

Secretaría de Energía

Index

- ✓ Objective
- ✓ Background
- ✓ EEE System
- ✓ Bottom-up Model (BRUS II-M)
  - Demand
  - Supply
  - Scenarios
- ✓ Computable General Equilibrium Model

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Objective

- To design integral public policies (Energy and Environmental) in order to promote economic growth, social welfare and nature conservation.

To this end, Ministry of Energy (SE) and Ministry of Environment (SEMARNAP) are developing reliable quantitative tools which simulate the Economy-Energy-Environment System and allows us to evaluate different public policies in the short, mid and long run.

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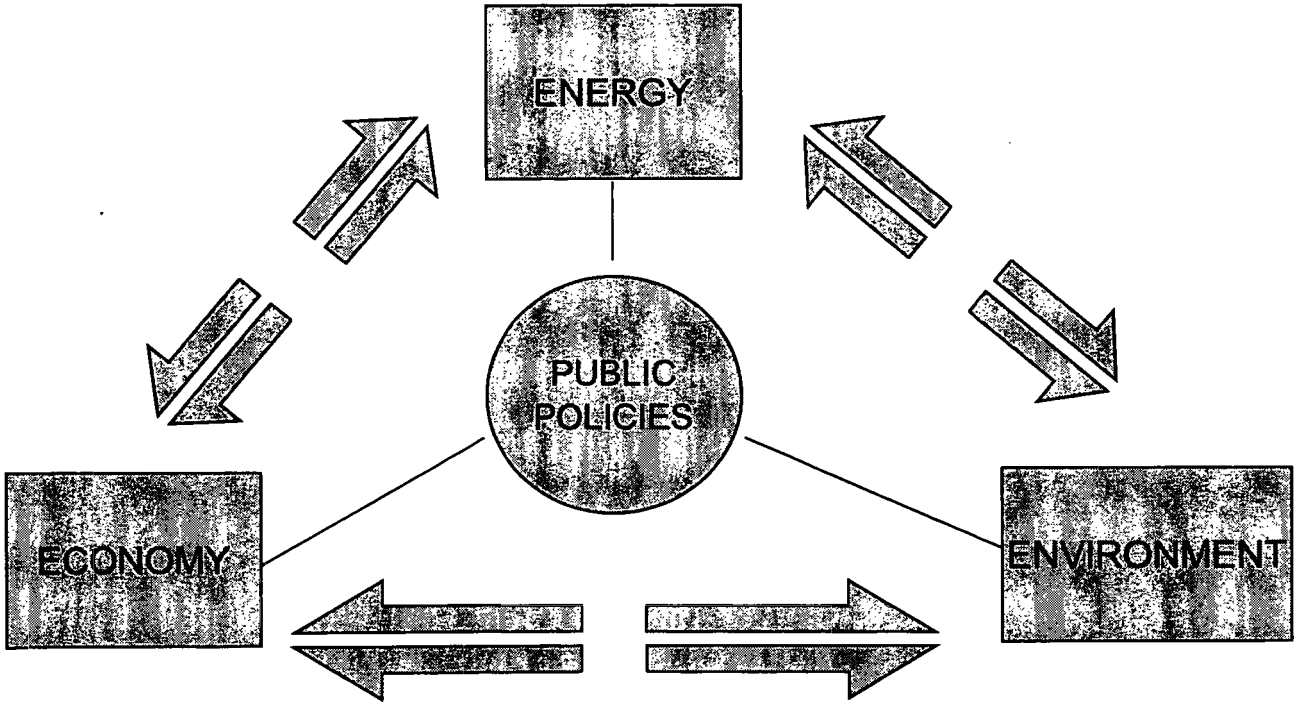
Background

The Economy, the Energy Sector and the Environment are topics strongly related.



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Background

- When the economy grows, the different consumption sectors begin to demand more energy to be able to carry out their activities. Historically, energy consumption in Mexico has grown in the same average percentage as the GDP.
  Therefore, in order to sustain dynamic growth, the Energy Sector should grow at least at the same rate as the rest of the economy.

- Mexico's Energy Sector is an important source of Government income, which is used to finance infrastructure and social development.
  Energy Sector's sales represented almost 4% of GDP in 1998. Additionally, oil revenues represented 33% of total public sector revenues and oil exports represented 6.1% of total exports, which meant a Government revenue of over 7.1 billion dollars.

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Background

- In spite of the above mentioned benefits, the production, transformation, transportation and consumption of energy have important implications on the environment. Those activities generate greenhouse gases emissions (GHG), which cause the climate change phenomenon. In order to delay this phenomenon, the growth rate of the emissions must be reduced, specially CO_2.

- The current challenge for Mexico's energy sector is to adapt and evolve in order to maintain its competitiveness, meet expected demand growth and respect environment. Specifically, the energy sector must not only keep up with the pace of the economy, but it must stay ahead, to function as a catalyst for growth.

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EEE System

✓ To simulate the EEE system, the following types of quantitative models are required:

- An engineering model that calculates the consumption and production of energy, with a bottom-up methodology (BRUS II-M).

- An economic model which incorporates economic agents behavior (Computable General Equilibrium Model).

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BRUS II-M

- The BRUS II-M is a long-term simulation model for the Mexican energy system. It is being developed by the Ministry of Energy, the Ministry of Environment and the Risoe Institute of Denmark.

- This model applies a bottom-up methodology, and is organized as a spreadsheet model using Excel with more than 30 sheets. It is divided in four modules:

  - Macroeconomic assumptions
  - Energy demand (consumption)
  - Energy supply (availability)
  - GHG emissions

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BRUS II-M

Macroeconomic assumptions

This module includes basic assumptions as demographic growth (urban and rural); economic growth divided into subsectors; energy prices.

Energy demand (consumption)

On the basis of these assumptions, the model proceeds to the energy demand side, which is divided into four sectors:

- Residential (households)
- Services (public and commercial)
- Industry
- Transport

The final energy consumption is calculated by adding up the results from the demand sectors.

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BRUS II-M

Energy Supply (availability)

On the supply side, there are modules for the transformation sector, i.e. refineries, gas and electric plants. The supply is the total production of natural gas, oil products, electricity and so on.

GHG emissions

The model uses emission factors according to sector and type of fuel in order to calculate the greenhouse gas emissions (CO_2, CH_4, N_2O, CO, HCNM y HC) and others as PST, SO_2 and NOx.

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BRUS II-M

Finally, for the chosen system configuration, the model calculates the total capacity needed (split into different types of plants and technologies) and what the cost would be in terms of investment, operation and maintenance.

BRUS II-M is constructed to facilitate the development of scenarios. Given a baseline, the scenarios are developed using a number of choice-parameters which includes:

- Economic growth and energy prices
- A long-term structure of the energy system
- Choices of technology and fuel substitution

The base year of the model is 1996, the mid-term is 2007 and long-term is 2017.

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Demand

✓ Residential

- Households
  - Urban
  - Rural

- Energy end uses:
  - Lighting
  - Electric appliances
  - Water heating
  - Cooking

- Fuels:
  - Natural Gas
  - Electricity
  - Biomass
  - LPG
  - Solar energy

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Demand

Service Sector

- Private services:
  Restaurants, hotels, business, schools, hospitals and others.

- Public distribution:
  Water and lighting systems.

- Energy end uses:
  Lighting, air conditioning, compressors, water pumping, heating processes and others.

- Fuels:
  Electricity, LPG, fuel oil, gas oil, solar energy and others.

- Drivers
  Population growth and value added.

public private

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Demand

Industry

- Subsectors:
  mining, beer, beverages, car factories, construction, rubber, aluminum, tobacco, petrochemicals, chemicals, iron and steel, ceramics and glass, paper, cement, fertilizers and other industries.

- Energy end uses:
  Lighting, air conditioning, electronics, cooling, motors, heating processes, compressed air and others.

- Fuels:
  Electricity, LPG, fuel oil, gas oil, solar energy and others.

- Drivers
  Value added per subsector and fuel prices.

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Demand

Transport

- Uses of transport:
  Passengers and cargo.

- Types of transport:
  Airplane, car, truck, train and ship.

- Fuels:
  Gasoline, natural gas, electricity, LPG, fuel oil, jet fuel, diesel and others.

- Drivers:
  Passenger per km, and for cargo is ton per km.
  Estimates of these drivers are made through linear projections.
  Number of vehicles are estimated by OLS using GDP and population as explanatory variables.

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Supply

Refineries

- In Mexico there are six refineries which are both consumer and producer of fuels.
- They produce fuels as gasoline, diesel, fuel oil, LPG, gas oil, coke, etc., and consume crude (Istmo, Maya, Olmeca), fuels and electricity.
- Refining Division of PEMEX (PR) runs an LP model to optimize the fuel production in the refineries at the minimum cost, according to the demand figures reported by BRUS II-M.
- Finally, the model calculates emissions associated to fuel consumption and crude oil process in the refineries.

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Supply

Gas Plants

- Gas plants are also consumers and producers of energy.
- Gas Division of PEMEX (PGPB) runs a model to optimize the natural gas production in the gas plants at the minimum cost, according to the demand figures reported by BRUS II-M and the production plans of Production Division of PEMEX (PEP).
- The model calculates emissions associated to that production level, including flaring and venting of gas.

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Supply

Power Plants

- This module simulates the electricity distribution and production processes, as well as the plants´ selfconsumption of fuels, according to the demand scenarios.

- It employs an LP process to optimize the dispatch of the power plants in order to satisfy the average and peak demand.

- It reports the investment needs to satisfy the electricity demand increase.

- Finally, it calculates the emissions associated to power plants´ fuel consumption.

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Scenarios

Scenarios of:

- Fuel substitution
- Technology substitution
- Technology improvements (energy efficiency)
- CHP promotion
- Development of renewables sources of energy
- Changes on energy prices
- Taxes & subsidies

preliminary results by end of June
BRUS to be used both by env + energy ministries

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CGE Model

Description

It is a Computable General Equilibrium Model which solves various equations simultaneously.

Current main characteristics:

- A dynamic model
- Assumes Rational Expectations
- Allows for a 30 year time horizon

Roy Boyd developing Mexico CGE (being used by ...)

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CGE Model

... current main characteristics:

- **Four economic agents**
  Consumers, producers, Government and a foreign sector.

- **Seven consuming sector**
  Agriculture, coal, petroleum, natural gas, refining, chemical, manufactures and services.

- **Eight producing sectors**
  Food, housing, gasoline, energy use, automobiles, transportation, services & utilities.

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CGE Model

Results

- Assessment of direct and indirect effects of price changes on consumption goods
- Shows changes in spending patterns which appear as consumers anticipate a change in policies
- Show changes in investment, capital formation, economic growth and income distribution

next step: incl world oil mkt

M · É · X · I · C · O

AND CLIMATE CHANGE

First Edition: November, 1998

Secretaría de Medio Ambiente, Recursos Naturales y Pesca (SEMARNAP)
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Table of Contents

- Mexico is committed to the transition to sustainable development. Its policies are oriented to the reversion of current trends in environmental deterioration, while encouraging economic development and combating poverty.

- Mexico's generation of greenhouse gases is not significant on a world scale, particularly considering its population and territory.

- Mexico is very vulnerable to climate change.

- Mexico is working in mitigation actions related to energy, natural resources, agriculture, husbandry, communications, transport and urban development. In addition, Mexico is promoting research on climate change, developing and strengthening the institutional framework for the effectiveness of those actions.

- Mexico has developed national inventories of its emissions, and conducts research on the mitigation of, and adaptation to, climate change.

- Altogether, these actions exceed Mexico's obligations as stipulated by the Convention.

MEXICO AND CLIMATE CHANGE

INTRODUCTION

Mexico's environmental policy attempts to restrain the historical tendency of deterioration of the environment and the natural resource base, to achieving significant economic growth based on cleaner production processes, and to improve the living conditions of approximately 26 million of Mexicans living in extreme poverty, especially in rural areas.

This policy, consistent with the search for a more sustainable development path, has two important aspects in terms of the actions Mexico is undertaking to face global climate change.

On one hand, Mexico's economy needs to grow more rapidly than its population. The national economy can only grow if energy production also increases, which implies larger greenhouse gas emissions.

On the other hand, many of the actions required to mitigate climate change have beneficial effects relevant to the above mentioned objectives of environmental policy, such as: stopping present day deforestation and deterioration of the forestry sector; promoting the sustainable use of natural resources —particularly of temperate forests and rainforests—; contributing to reduce extreme rural poverty; improving energy efficiency and reducing pollution.

Mexico is developing an important set of actions to mitigate climate change. During the 90's, Mexico's economy has grown using productive processes cleaner than those used in the past, and inter-institutional mechanisms have been established which contribute to the objectives of the United Nations Framework Convention on Climate Change, thus avoiding the emission of significant quantities of thermoactive gases.

Mexico is committed to continuing the present course of actions, irrespective of the result of the multilateral negotiations on climate change. These actions represent this country's best possible contribution to the solution of this global problem, which is causing

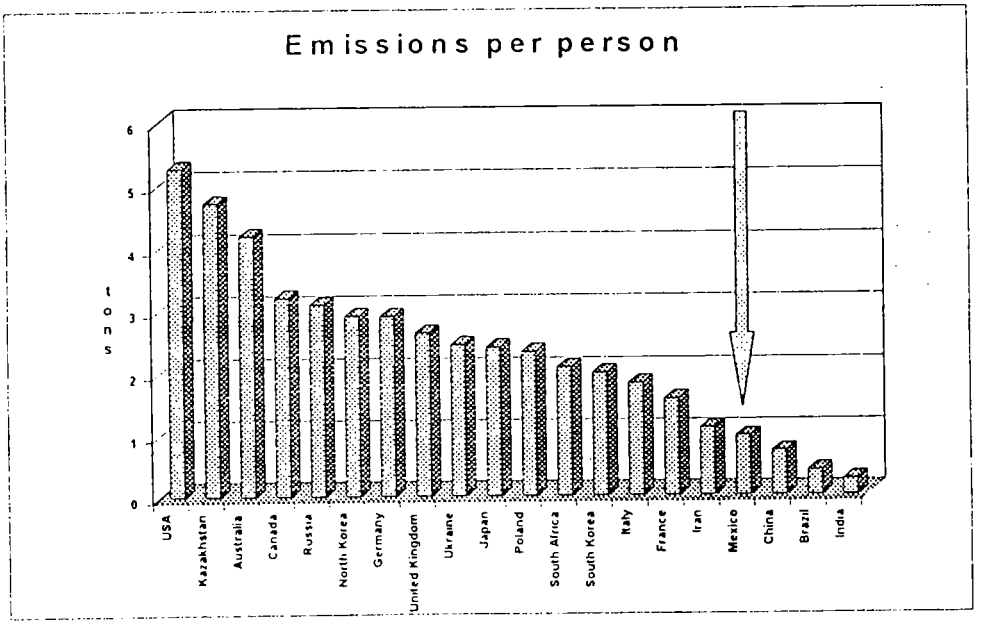
growing and justified concern within the international community. Under the present circumstances, Mexico cannot commit itself to further obligations over and above those to which it is currently committed. Nevertheless, the establishment of flexible mechanisms derived from the Convention —in particular, the Clean Development Mechanism (CDM)— could complement the nation's present endeavor, widening its overall reach.

This document presents several aspects of Mexico's contribution, both to the problem and to its solution, among which some of the most salient are: a summary of the inventory of greenhouse gas emissions, which forms a component of the First National Communication; an analysis of Mexico's vulnerability to climate change, and a brief listing of the actions taken by different government institutions, and the projects undertaken.

1. Mexico contribution to greenhouse gas emissions

In terms of emissions by GNP and per capita, Mexico trails way behind the main carbon emitting nations, even though in terms of total emissions, Mexico is in 14th place. This is understandable, given its population, its territory and level of development.

Mexico's total emissions of CO_2 are the equivalent of only 6.27% of carbon emissions regarding the main emitting nation. Mexico is not one of the world's large emitters of carbon.

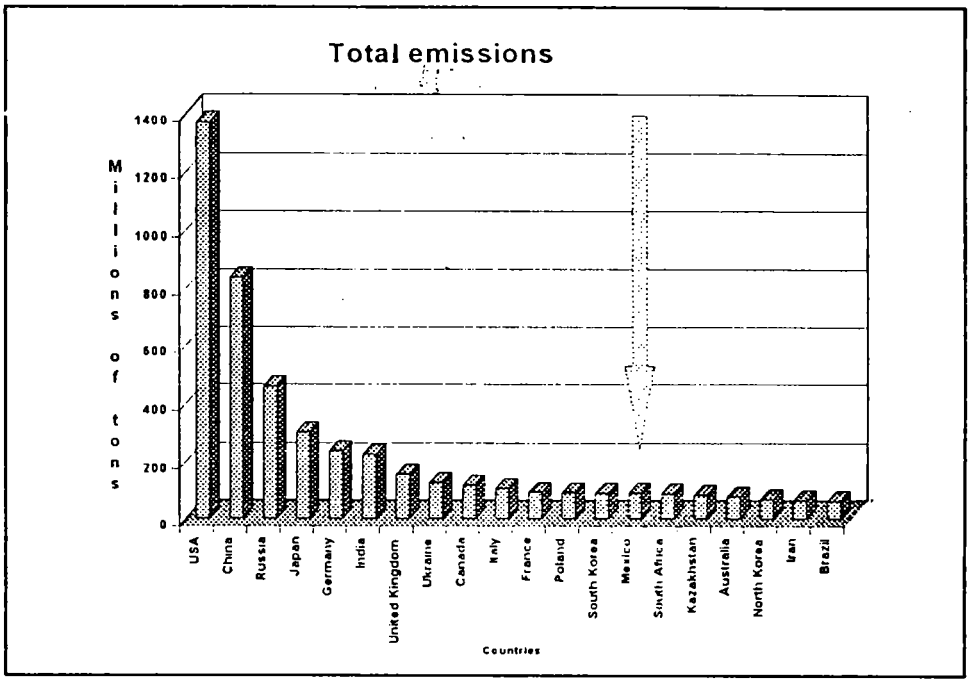


[1] In order to make these comparisons the following sources were consulted: Marland, G., R. J. Andres and T.A. Boden (1995) *Global Regional and National* CO_2 *Emission Estimates from Fossil Fuel Burning, Cement Production and Gas Flaring: 1950- 1992* (electronic database) Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, Oak Ridge, Tennessee. World watch estimations are based on the above and on British Petroleum (1995) *BP Statistical Review of World Energy* Group Media Publications, London. Population Reference Bureau (1994) *World Population Data Sheet* Washington, D.C. World Bank (1995) *The World Bank Atlas, 1995* Washington D.C.

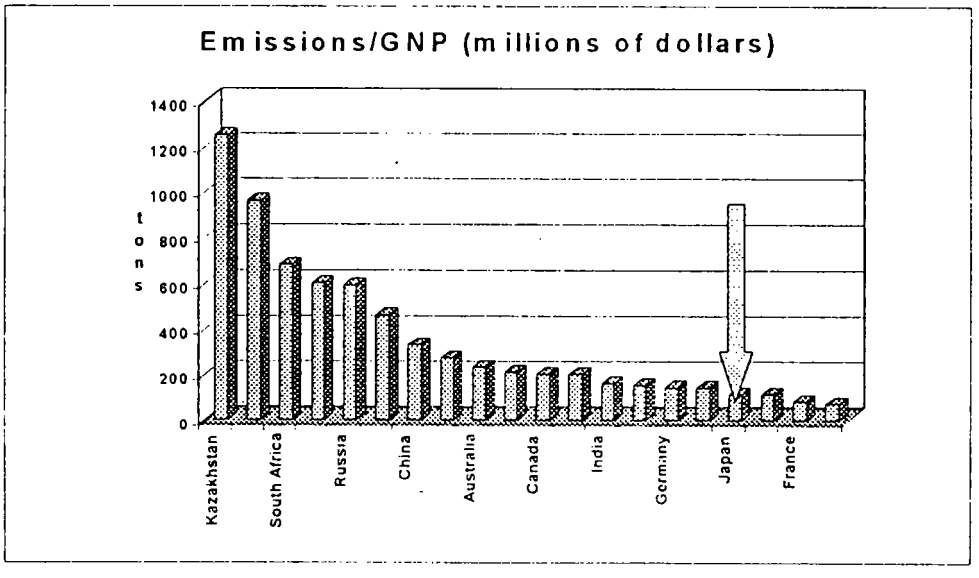
IEA Statistics (1997) *CO2 emissions from fuel combustion 1972-1995* OECD.

* GNP measured in "Purchasing Power Parity" for 1993

In terms of CO_2 emissions per capita, Mexico occupies the 72nd place at world level, with 3.46 tons/ person in 1995. In terms of per capita carbon emissions, it ranks 71, with 0.96 tons.



Among other indicators of Mexico's situation with respect to greenhouse gas emissions, it is worth mentioning that the country emits 1.16 kg of CO_2 per unit of GNP, at 1990 prices. The emission per square kilometer is 166.74 tons of CO_2; the ratio of emissions/ energy supply (not including renewable sources) is 2.66 tons of CO_2 for every ton of petroleum equivalent. The ratio of emissions/ renewable energy supply is 41.46 tons of CO_2 for every ton of petroleum equivalent.



Comparatively speaking, Mexico has a lower energetic efficiency than most of the OECD countries, although those countries have larger per capita emissions than does Mexico.

The compilation of Mexico's National Inventory of Greenhouse Gas Emissions[1] has allowed the identification and quantification of the country's principal sources and sinks of greenhouse gasses. The inventory was developed using the IPCC methodology for estimating these sources and sinks.

The National Inventory of Greenhouse Gas Emissions includes direct greenhouse gases, such as carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), as well as indirect greenhouse gases which contribute to the formation of atmospheric ozone, such as carbon monoxide (CO), nitrogen oxide (NO_X) and volatile non-methane organic compounds.[2]

Inventory of emissions of direct greenhouse gases from Mexico
Summary of results, 1990 (Quantities in Gg (10^9 gr))

Category	CO2	CO_2	CH_4	N_2O
Sources and sinks of Greenhouse gases	**top/down***	**Bottom/up****		
National total of emissions and by sources and sinks (net emissions)	459 278.3	444 489.0	3641.6	11.8
1. Total energy (fuel+leaks)	311 800.0	297 010.6	1081.3	3.962
2. Industrial processes	11 621.0	11 621.0		
3. Agriculture			1793.3	5.8
4. Land use change and forestry	135 857.3	135 857.3	241.0	2.0
5. Waste			526.0[4]	

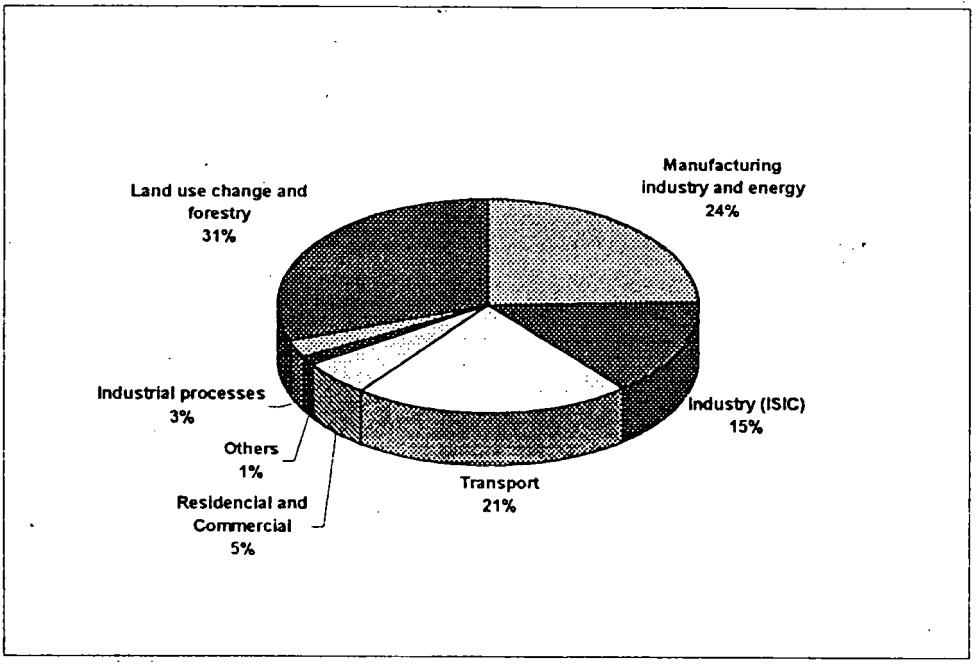
*Top–down: Breakdown which goes from total energy demand to final uses.
** Bottom–up: Aggregation of final energy uses to form total demand.

[2] Compiled in 1990 (updated in 1996) by INE (Mexico's National Ecology Institute), with international sponsorship.
[3] For greater detail consult the First National Communication to the United Nations Framework Convention on Climate Change.
[4] It should be noted that the figure for methane emissions in the "waste" category includes waste water treatment.

As can be seen, national emissions of greenhouse gases derive from the burning of fossil fuels, land use change, industrial processes, agriculture (including livestock production), and from waste decomposition.

In 1990, total carbon dioxide emissions amounted to 444 489 Gg. The energy sector was the most important source of this gas, contributing with 297 010.6 Gg (67% of the total), while land use change represented 31% of national CO_2 emissions.

Carbon dioxide emissions in Mexico, 1990 (Gg)



Sector	Gg
Manufacturing industry and energy industry *	108,473.1
Industry (ISIC) **	64,971.2
Transport	94,705.6
Residential and commercial	23,558.6
Agriculture, livestock and fisheries	5,301.9
Industrial processes (cement)	11,621.0
Land use change and forestry	135,857.3

* Electricity generation including that consumed by the energy industry (Petroleos Mexicanos and the Federal Electricity Commission)

** ISIC: International Standard Industrial Classification of All Economic Activities, including cement production and metallurgy

Within the energy sector, the main sources of emissions are the energy industry and transportation, which together account for 45% of total CO_2 emissions. On the other hand, emissions due to land use change, which account for 31% of total CO_2 emissions, result mainly from deforestation processes.

Methane emissions for 1990 were of the order of 3 641.6 Gg. Agriculture and livestock production were the main sources of this gas, accounting for 49% (1 793.3 Gg), followed by fugitive emissions from the oil industry, natural gas and coal industries which, without including the burning of fuel per se, accounted for 29% (1 039.58 Gg). Solid waste contributed 13% (468.0 Gg), land use change accounted for 7% (241 Gg), and fuel burning 1% (41.778 Gg).

Considering that the warming potential of one gram of methane is 21 times higher than that from CO_2, emissions of this gas are equivalent to 14.6% of total CO_2 emissions.

2. MEXICO'S VULNERABILITY TO CLIMATE CHANGE

Mexico's Country Study,[6] allowed for an evaluation of the country's vulnerability to climate change. The research conducted compared present conditions to those which could potentially prevail with climate change, in the hypothetical event that increases in greenhouse gases would lead to an effective doubling of atmospheric CO_2, compared to pre-industrial levels.[7]

The results of these studies indicate that the following processes, among others, would be likely to occur in Mexico:

- Modification of rainfall patterns, including changes in temporal and spatial distribution.
- Changes in soil and atmospheric humidity, including alterations in the processes of evapotranspiration and aquifer recharging.
- Intensification of droughts, desertification of the land, and the potential modification of regional ecosystems: drastic reductions in tropical and temperate forests.
- Greater incidence of forest fires, leading to more acute problems of deforestation, soil erosion, carbon emissions and biodiversity loss.
- Alteration of hydrological catchments, as well as the pattern and distribution of surface runoff and flooding.
- Sea level rise, with consequent impacts on coastal and marine ecosystems.

30% of Mexico's territory is comprised of arid and semiarid areas. Temperate and tropical forests cover an additional 28%. Around 80% of the nation's soils present some degree of erosion, principally due to deforestation of steep slopes. Under these circumstances,

[6] Coordinated by the National Ecology Institute between 1994-1996.

[7] Vulnerability studies were carried out for: agriculture, human settlements, coastal zones, desertification and drought, forest ecosystems, water resources and the energy and industrial sectors

a doubling of CO_2 compared to pre-industrial levels, would have grave consequences in terms of such processes as desertification, deforestation, erosion and biodiversity loss. It would also potentially increase the frequency and severity of extreme events.

The area most appropriate for the production of basic grains would shrink considerably; forest ecosystems and the species which comprise them would suffer irreversible damage; water supplies for human consumption and irrigation would be affected, and the country's production infrastructure could suffer severe damage. Furthermore, some coastal regions would be exposed to flooding, and agriculture, in particular rain-fed production, would suffer severe losses due to the greater frequency of droughts. In sum, Mexico is a country with an enormous vulnerability to potential climate change.

3. Sectorial actions

The actions carried out by sectors which are analyzed below, constitute a determined strategy of transition towards sustainable development, a strategy comprised of various facets:

1. A policy which oriented to increasing energy efficiency, including:
   - The continual improvement, within financial constraints, of fuel quality.
   - A substitution of fuels, whereby natural gas will gradually replace other fossil fuels.
   - An energy saving policy, both in terms of production and domestic consumption.
   - The promotion of alternative and renewable energy sources.
2. An industrial policy that seeks to modernize industry, offering new technological alternatives which reduce the environmental impact of emissions.
3. An important group of actions to improve the sustainability of the agricultural sector, simultaneously limiting emissions of greenhouse gases from agriculture and livestock production.
4. A policy of urban development and ecological land use planning which, at the same time it strengthens the institutional and legal framework, prevents changes in land use.
5. Modernization of the transport sector which reduces both emissions and fuel consumption per unit transported (passengers per kilometer or goods per kilometer).
6. An active policy to contain and, if possible, revert the trends of deforestation, erosion and desertification, all of which prevent the efficient sequestering of greenhouse gases.

Some of the concrete actions that Mexico is currently developing are specified below.

3.1. Energy

Mexico's energy policy recognizes the need to satisfy the requirements of the country's various productive activities and of its households in order to promote economic development and to improve the living standards of the population within the context of competitivity, sustainability and harmony with the environment. In this sense, its efforts to reduce greenhouse gas emissions are aimed, on one hand, toward energy production and transformation through the provision

of improved quality fuels and the promotion of alternative energy sources and, on the other hand, it has induced changes in fuel consumption in several branches of the economy (for example, switching from gasoline to natural gas, or the promotion of greater efficiency levels in fuel consumption by industry, transport and domestic sector).

In this sense, the following actions have been taken:

- Promotion of natural gas use.
  - Structural change of the electrical sector using combined cycle units.
  - Extending the natural gas distribution network.
- Efficient Use of energy and Energy Saving.
  - Energy Savings program in the electrical sector
  - Electrical Sector Energy Saving Support Fund.
  - National Commission for Energy Saving.
  - Product standards.
  - Co-generation projects.
  - Seasonal hour adjustments.
- Fuel improvement.
  - Reconfiguration of the National Refinement System for the transformation of fossil fuel, despite the high cost involved.
  - Elimination, since 1998, of leaded gasoline, and improvement in the quality of diesel.
  - Change, as of 1996, in the composition of liquid petroleum gas, in order to reduce emissions of highly reactive hydrocarbons implicated in the formation of ozone.
- Promotion of renewable sources for energy generation.
  - Creation of the National Council on Renewable Fuels, and the development of:
    - Hydroelectric plants,
    - Geothermal plants,
    - Solar energy projects,
    - Eolic energy projects.

The actions derived from the energy policy presently represent an important mitigation action, which is in the process of being quantified.

3.2. Natural Resources

As a result of Mexico's strategy on natural resources, the country has much to offer, with regard to the objectives of the Convention, if the enormous mitigation potential of its forest ecosystems can be fully exploited.

Most of Mexico's forest resources are socially owned (ejidos), and comprise the heritage of 12 million Mexicans, most of whom live in conditions of poverty and marginality. For this reason, Mexico's forestry policy aims at the dual objectives of conservation and increase of forest resources to maximize their potential for providing environmental services (including carbon sequestration) on the one hand, and promoting their sustainable use as a source of economic and social development for the communities who depend on them directly, on the other.

National policy with regard to natural resources comprises the following strategies for mitigating greenhouse gas emissions:

- Increase in carbon sequestration.- This includes forest management practices which foster the expansion of forest ecosystems in terms of extent and/or of biomass, and by increasing the density of carbon stored in the soil. This strategy is implemented through:
  - National Reforestation Program (Pronare).
  - National Campaign for Ecological Restauration and Against Land Use Change in areas affected by forest fires.
  - Commercial Forestry Plantations.
  - Forest Frontier Defense Program.
- Conservation of carbon sequestered in soil and vegetation.- Includes measures to preserve existing biomass, such as reducing the rate of deforestation, reducing risk factors and increasing support measures to encourage the natural regeneration of temperate and tropical forests. This strategy is comprised of:
  - Forest Frontier Defense Program.
  - Agro-ecological Improvement Program for Peasant Agriculture.
  - National Program for Forest Inspection and Vigilance.
  - Program of Protected Natural Areas.- In 1998 the total area with protection status in Mexico is around 12 million ha, distributed among a total of 112 protected natural areas. It is estimated that the present focus on 36 priority areas will avoid the deforestation of 312 000 ha of rainforest, temperate forest and semiarid zone vegetation.
  - Conservation, Management and Sustainable Exploitation of Wildlife Units.- Some 1,449 such units currently exist, under either intensive or extensive management, and contribute to the conservation of 7 200 000 ha of temperate and tropical forest, grazing land and desert scrub.
  - Sustainable management of natural forests.- Between 1995 and 1998, some 442 700 ha of forest has been incorporated into a scheme which emphasizes more efficient silvicultural techniques, doubling forest productivity. Investments are made in the form of subsidies channeled to those engaged in forestry production, thereby making sustainable harvesting even more attractive.
  - Forestry Development Program (Prodefor).- In the period 1997–2000, some 6 million ha will be incorporated within programs of sustainable management, a figure which implies an increase of 85% in the area currently under such management, encouraging the efficient integration of silvicultural production processes.
  - National Program for Protection against Forest Fires.
  - National Program for Forest Sanitation.
  - Substitution of emissions derived from the use of fossil fuels.
  - Improvement of bio-fuel devices, and increased supply of biomass for fuel.- In 1998 the following actions have been carried out in this respect: Promotion of 170 ha for multiple use plantations using suitable species; support for the manufacture and distribution of 2 653 biomass stoves for rural areas; development of a manual for the management and exploitation of forest resources for sustainable production

of fuel-wood; design and implementation of a program for the production and sale of charcoal.

3.3. *Agriculture and livestock production*

The agricultural sector includes attention to climate change as an integral part of rural development. In order to ensure that rural producers join the effort to mitigate climate change, actions must encompass measures that i) Improve agricultural productivity, ii) ensure greater economic benefits, and iii) overcome disparities between agriculture and other sectors of the economy.

With these premises in mind, programs and actions are currently underway which:

- Improve agricultural systems, eliminating —as far as is possible— those practices which pose risks or damage the environment.
- Foster technologies in accordance with the cultural and socioeconomic characteristics of producers.
- Permit the natural regeneration of ecosystems.
- Promote minimum tillage.
- Improve the use of crop residues.
- Induce perennial crops.

In this context, those programs which are particularly important in terms of contributing to the reduction in emissions of greenhouse gases are:

- Conservation Tillage Program.
- Salinized Soils Recovering Program.
- Soil Productivity Improvement Program.
- Fertilized Irrigation ("Ferti–Irrigación") Program.
- Promotion of pastures sown with grasses with a high capacity for carbon sequestration.

3.4. Industry

Mexico's technological policy for industry follows the recommendations of the IPCC for reducing greenhouse gas emissions from the industrial sector, employing greater fuel efficiency, as well as the prevention and control of pollution. With this objective, the following steps are being taken:

- Revision of productive processes to improve their environmental performance.
- Fuel efficiency measures.
- Substitution of fuels and materials for less pollutant alternatives.
- Adoption of cleaner production methods.
- Recycling of sub-products and residues.

Significant steps have been taken with regard to the following:

- Adaptation of the tariff system.- Aiming to improve the competitiveness of national industry, the tariff system has been adjusted, allowing duty-free import of capital

goods not produced in the country, including environment-friendly devices which prevent or reduce emissions of greenhouse gases.

- Modernization of the regulatory framework and promotion of environmental industrial management.- At present, the environmental regulations are being updated in the context of current environmental conditions and requirements of the country.

Mexico's regulatory systems have been gradually modified and improved, in the light of reconsidered technological assumptions, and the evaluation of potential environmental benefits that can be derived from them. The principal changes to existing regulatory instruments include the following:

- The process of Environmental Impact Assessment (EIA) has been refined in terms of those activities which specifically require EIA. In turn, the need for EIA is being linked to ecological land use planning ordenances.
- Compulsory standards have been modified in the light of environmental considerations. Limits are established with regard to the carrying capacity of the environment, to limit waste generation or potential environmental risk. For a given ecosystem, these limits are independent of the nature of the emitting agent. Thus, the notion of "best available control technology" loses relevance, given that stipulated limits are not tied to specific processes. On one hand this allows the internalization of the differential environmental costs of regulation, and on the other, it recognizes that environmental costs vary among ecosystems. This new regulatory framework induces a wide range of preventive measures through the implementation of modifications to productive processes, instead of simply enforcing an "end of pipe" approach to emission control.

The modernization of the environmental regulation of industry simultaneously promotes voluntary programs of environmental management that give impetus to the self-regulation of industry and also foment:

- The exploitation of the benefits provided by cleaner technology.
- The development of environmental auditing to improve industry's environmental compatibility.
- The presentation of awards and other benefits to industries which go further than simply complying with set environmental standards.
- An integrated approach to prevention of media pollution that both minimizes emissions of contaminants and saves energy and resources.

Several mandatory environmental standards emphasize the control and prevention of pollutants, and promote the modernization of industry. These standards aim to reduce emissions, optimize combustion processes, reduce fuel consumption and constitute indirect steps to toward mitigation. The most important are:

- NOM-085, which aims to substitute energy sources and to optimize combustion processes. It establishes different limits for emissions of SO2, NOX, PST and CO, depending on the region in which the emissions are produced. It is closely tied to the switching from fossil and solid fuels with natural gas. This standard has rapidly increased the consumption of natural gas.
- NOM-086, linked to the above, establishes the characteristics of petroleum derived fuels, which must satisfy increasingly stringent environmental requirements.
- Processes of direct heating and drying are also subject to controls.

3.5. Urban Development

By the year 2000, Mexico's population will have reached 100 million, of which 63% will live in urban areas. In the medium and long term, a more ordered growth path of urban areas will contribute to mitigate the effects of climate change. Among the programs and actions that contribute to achieve this, are the following:

- Program for Ecological Land Use Planning and Promotion of Urban Development.- The legal adoption of these tools of rural and urban planning contribute to restrain the processes of deterioration and destruction of the vegetative land cover, while at the same time promote changes in land use patterns which reduce environmental risks and encourage the efficient and sustainable use of natural resources.
- One Hundred Cities Program.- This Program aims at guaranteeing the ordered growth of 116 small to medium size cities, which significantly influence their ecological, social, economic and cultural surroundings. In order to attain these objectives, seven lines of action have been developed, among which the following stand out in terms of their potential to mitigate emissions:
  - Land use regulation and urban administration.
  - Ordered incorporation of agricultural (and other) sites to urban use.
  - Road system modernization and promotion of public transport use.
  - Solid waste management.
  - Consolidation of the most important urban areas of the country.
- Air Quality Programs.- These aim at gradually reducing pollution levels and the number of days of "environmental atmospheric contingency" per year in the large cities. It is expected that, on average, between 10-50% of the anthropogenic emissions of hydrocarbons, nitrogen oxide and suspended particles will be reduced. In general, these measures include steps to promote clean industry, non-polluting vehicles, efficient public transport and the abatement of soil erosion.

3.6. Communications and Transport

The steps toward reducing emissions from the communications and transport sector include the improvement of infrastructure, the modernization of automotive vehicles and the promotion of less polluting means of transport.

Among the measures adopted are:

- With regard to road transport:
  - Improvement in the design and use of highways.
  - Construction of overhead lanes for sections of highways with difficult topography and heavy volumes of traffic.
  - Improvement of the ecological surroundings on highways through reforestation.
  - Improvement of the free flow of traffic on long stretches of highway via the construction of access and egress slip-roads, where volumes of traffic justify such action.

- Development projects which promote the improved articulation of highway infrastructure.
- Reduction of tolls and development of special tariffs for frequent users, seasonal use, user type and regional conditions, which foment the use of better highways and promote fuel saving.

- With regard to Coastal ports:
  - Formulation of new compulsory standards with particular attention to pollution control.
  - Development of multi-modal transport systems, through Integral Port Administrations and the participation of the shipping industry, so as to improve the movement of cargo from point of origin to point of delivery, and to increase fuel use efficiency.
  - Introduction of new, environmentally friendly technology to replace that which is becoming obsolete.
- Further, there is a development of infrastructure which permits the efficient integration of ports, highways and railroads.
- Stricter regulation of emissions from vehicles with internal combustion engines.

This set of actions, seeking to improve and modernize transport conditions, constitute mitigation actions by avoiding unnecessary emissions from cargo and passenger transport, and by shortening journey distances.

4. Institutional Strengthening: development of experimental methodologies and projects

A new institutional framework has been established in order to comply with international commitments.

- In April 1997 the Inter-secretarial Committee on Climate Change was established, under the coordination of the Ministry of Environment, Natural Resources and Fisheries, and it includes the Ministries of Energy, Commerce and Industrial Promotion, Agriculture and Rural Development, Communications and Transport, International Relations, and Social Development. This committee establishes Mexico's position in international fora on climate change, and coordinates the various sectorial strategies.
- Mexico's First National Communication, presented at the Third Conference of the Parties (Kyoto, December 1997), documents the fulfillment of Mexico's commitments with regard to inventorying greenhouse gas emissions and to the studies related with Mexico's vulnerability to climate change.
- A Mitigation Office is currently being set up which, at present, is part of the National Institute of Ecology. Its functions will be to:
  - Promote the studies required to improve national knowledge on climate change.
  - Foster methodological studies in all areas related to mitigation actions, with special emphasis on carbon sinks.

- Help generate regional and sectorial projects for fuel saving and carbon sinks.
- Keep a register of private sector mitigation activities and evaluate them using available methods.
- Act as promoter and intermediary for projects which could eventually qualify for the Clean Development Mechanism.

In recent years, Mexico has actively participated in the work of IPCC, and has contributed with methodologies and pilot projects that facilitate the implementation of the Convention's objectives. Among these are:

- An inventory of anthopogenic emissions of greenhouse gases, identifying sources and sinks, carried out in 1995 with data from 1990.
- Development of specific emission factors for methane emissions from living systems, forests and transport areas, much more precise for actual Mexican conditions.
- Scenarios of future emissions, based on the Markal and Stair model.
- Climatic scenarios based on US and Canadian models. The vulnerability of the country to climate change was estimated with reference to forests, agriculture, desertification, drought, hydrology, coastal areas, human settlements and industry.
- Studies to evaluate technology in terms of greenhouse gas emissions mitigation in the forestry and energy sectors.
- Studies of climatic variability and climate change to allow the adaptation of the agricultural sector.
- Integrated programs for the reduction of greenhouse gas emissions in an specific area of Mexico City, with the aim of repeating them in other areas.
- Studies on renewable energy: pre-feasibility studies on solar heaters for domestic use.

5. Conclusions

Mexico, as an intermediate developing nation, is implementing an important number of official and sectorial actions that contribute significantly toward the objectives of the United Nations Framework Convention on Climate Change. These actions are motivated by the search of a transition towards a new development pattern which must be sustainable from economic, environmental and social perspectives.

To coordinate the actions which affect climate change, a Program for National Action on Climate Change is currently being drawn up. This program is being developed within the framework of the Inter-secretarial Committee, and once completed will undergo a process of public consultation. A greater coordination of actions, a more explicit national commitment to take the global effects derived from different actions undertaken by Mexico into account, during its transition to sustainable development, as well as a national strategy to face the challenges and opportunities that Climate Change holds for our country may be expected from this Program.

FIRST MEXICO-U.S. WORKING GROUP ON SUSTAINABLE ENERGY MEETING

Mexico City, April 15, 1999

PROGRAM

Hour	Activity
9:00 hrs.	Welcoming remarks
9:15 - 9:25 hrs.	**1. Overview of the Working Group on Sustainable Energy**
9:25 - 11:00 hrs.	**2. National Action Plans in aspects related to Sustainable Energy** - Mexican action program description - U.S. Action Plan description
11:00 - 11:15 hrs.	Coffee break
11:15 - 12:30 hrs.	**3. Review activities under Energy Cooperation Agreement** 3.1. Overview discussion - Report of the activities under the Energy Cooperation Agreement Annexes • Project Annex 1: Cooperation in the Field of Renewable Energy • Project Annex 2: Cooperation in the Field of Energy Efficiency 3.2. Investment opportunities in clean energy and energy Efficiency 3.3. Prioritization of activities - Discussion: - What is missing? - New activities / projects
12:30 - 13:00 hrs.	**4. Regional developments in sustainable energy**
13:00 - 14:30 hrs.	Lunch hosted by the Secretariat of Energy
14:30 - 15:30 hrs.	**5. Final comments** - Summary of agreements - Report to Binational Commission - Next steps
15:30 - 16:00 hrs.	Closing remarks

MEXICO/US EERE Areas of Cooperation

- Renewable Energy
- Energy Efficiency
- Information/Technical Exchange
- Financing Activities
- Joint Implementation/CDM

MEXICO/US Renewable Energy Goals

- To institutionalize the use of renewable energy through project implementation process
- To strengthen the supply and maintenance infrastructure necessary for sustainable projects and to build the foundation for their replication
- To increase the sustainable use of renewable energy technologies in partnership with Mexican industry
- To increase the use of renewable energy technologies as a mechanism for combating global climate change, especially greenhouse gas emissions

MEXICO/US Renewable Energy Activities

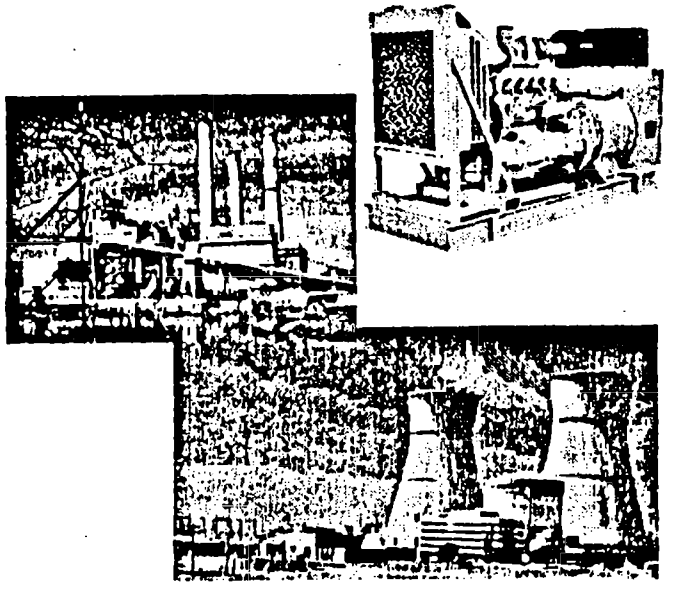
- **Signed Project Annex 1 on Cooperation in the Field of Renewable Energy**

- **DOE/USAID program that works with established Mexican organizations and provides training and technical assistance in technologies, applications and project implementation**

- **Other cross-cutting activities that include solar and wind resource assessment; technical and economic analyses; project monitoring and evaluation; and environmental assessments**

MEXICO/US
Renewable Energy Transition

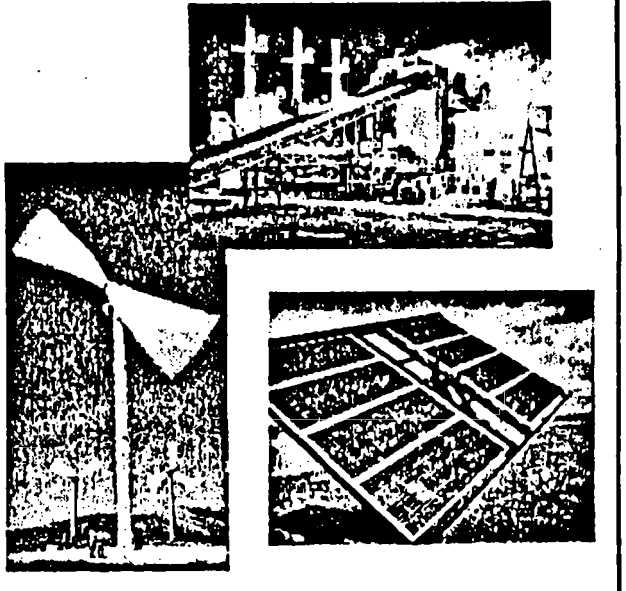
Traditional Energy System



Clean Energy

Transition Strategy

Emerging Energy System



End-User

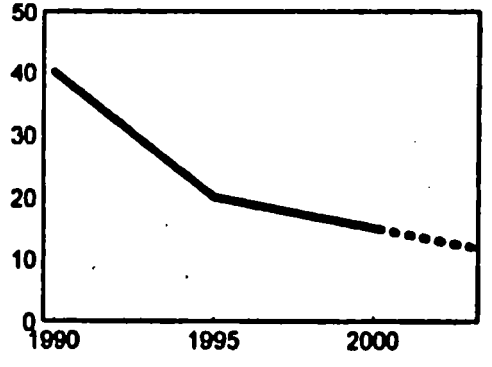
Goal: For the end-user, the emerging energy system is superior to the traditional energy system when considering quality of service, environmental impacts, reliability and cost.

End-User

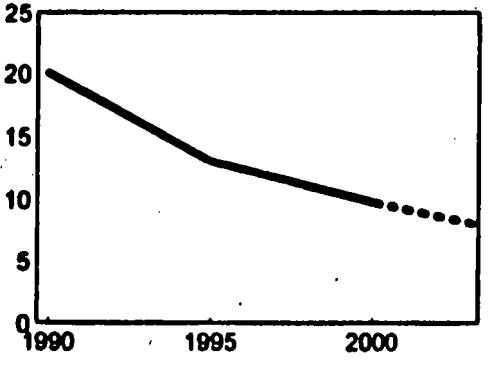
MEXICO/US
Renewable Energy Costs

Cost of Electricity
(levelized cents/kWh in constant 1995$)

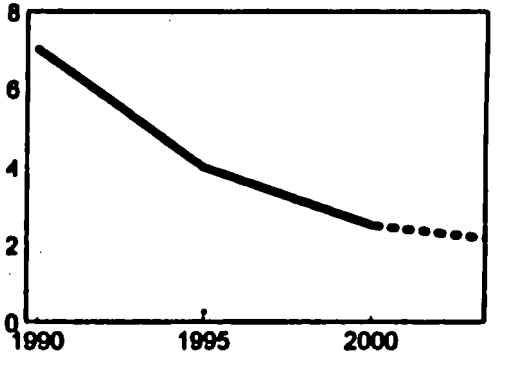
Photovoltaics



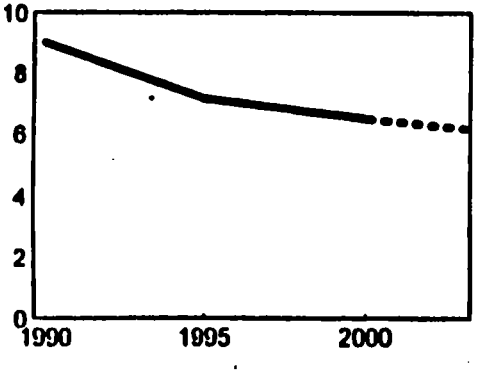
Solar Thermal



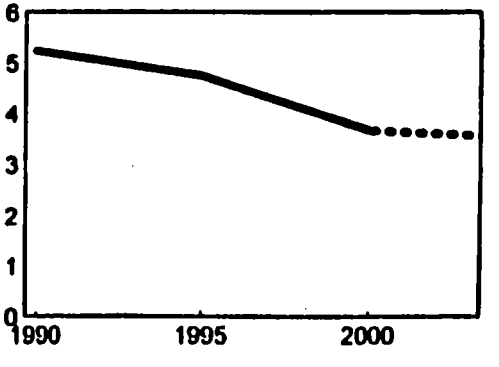
Wind



Biomass

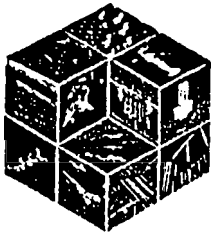


Geothermal



MEXICO/US Energy Efficiency Goals

- To increase the sustainable use of energy efficiency technologies in partnership with Mexican industry
- To promote energy activities that support Global Climate Change by reducing greenhouse gas emissions from energy production and use
- To promote energy activities that support pollution reduction by supporting activities that increase clean energy usage in Mexico



MEXICO/US Energy Efficiency Activities

- Signed Project Annex 2 on Cooperation in the Field of Energy Efficiency
- DOE and other US Government Institutions are collaborating with Industry through the Committee on Energy Efficiency Commerce and Trade (COEECT) to provide Mexico with energy Efficiency technology and know how

MEXICO/US
Energy Efficiency -Annex 2

- Collaboration in the design and development of government programs, aimed at voluntary participation of the private sector
- Collaboration in the design and development of programs for government procurement of energy efficiency technologies
- Collaboration in the development, implementation and harmonization of test procedures for appliances, motors and other equipment
- Collaboration in the training in energy efficiency technologies and delivery mechanisms
- Collaboration in the benchmarking of energy efficiency in energy intensive industrial sectors and buildings

MEXICO/US (cont) Energy Efficiency -Annex 2

- Cooperation in the development of financing packages for energy efficiency projects
- Cooperation in the development of energy services companies and the promotion of their activities
- Cooperation in the development of web sites, seminars and workshops, and sharing of information on energy efficiency
- Collaboration in the development of monitoring, evaluation and verification of energy efficiency projects and programs
- Collaboration in promoting energy efficiency in the U.S./Mexico border region

MEXICO/US COEECT Coordination

GOVERNMENT

Federal Agencies

- •DOE
- •DOC
- •EPA
- •OPIC
- •EX-IM
- •DOS
- •DOD
- •GSA
- •AID
- •SBA
- •DOI
- •TDA
- •USTR
- •USIA
- •DOTy

Export promotion
Market Conditioning
Financing
Education and training
Technology transfer

DOE (202) 586-1491

COEECT

Organize semi-annual meeting of agency heads

Fund ECEE

Communicate to industry

Coordinate policies

Coordinate programs

INDUSTRY REPRESENTATIVES

Export Council for Energy Efficiency (ECEE)

- •Alliance to save Energy
- •Int'l Institute for Energy Conservation
- •National Assoc.. of Energy Services Companies
- •National Assoc.. of State Energy Officials
- •Solar Energy Industries Association

Identify financing options
Project partnering
Focused trade missions
Market development

ECEE (202) 371-2779

MEXICO / US
Energy Efficiency Partnership Opportunities

Electric Motors - Pilot EE Programs; FIDE and Hagler-Bailly

Appliance Standards – Pilot program and joint conferences
CONAE, IIE, FIDE and others with LBNL

Building Standards – Pilot program and joint conferences
CONAE, IIE, FIDE and others with LBNL

Steam Generation – Pilot Steam Generation & Distribution Project; CONAE and Hagler-Bailly

ESCO – Finance Project
Empresas ESM and EEAF

Lighting Efficiency – Residential Lighting Project
FIDE – Hagler-Bailly

Sustainable Cities – Monterey Pilot

MEXICO / US

Renewable Energy Efficiency Partnership Opportunities

Bioenergy – Bi-lateral Joint Implementation projects (UNFCCC AIJ pilot)

Photovoltaic – CONAE (COFER) Projects with SNL/NREL

Wind – CONAE/NREL Wind Mapping

Hybrid Systems – CFE/San Juanico Project with NREL, SNL

Off-Grid Application – FIRCO Agricultural Water Pumping with SNL

SECRETARIA DE ENERGIA

CONAE

Energy Efficiency and Renewable-Energy Activities in México

Odón de Buen
Technical Secretary
National Commission for Energy Conservation

SECRETARIA DE ENERGIA

CONAE

The National Commission for Energy Conservation

- ✓ Created on September, 1989
- ✓ Original mandate: a public consulting-body on energy conservation and renewable -energy issues

SECRETARIA DE ENERGIA

CONAE

Conae's main functions

- Standardization for energy efficiency
- Technical assistance
- Promotion

SECRETARIA DE ENERGIA

CONAE

Conae: Areas of action

- Energy-efficiency standards
- Energy efficiency programs
  - Industrial
  - Commercial
  - Municipal
  - Transportation
- Promotion of supply-side alternatives
  - Cogeneration
  - Renewable energy
  - Alternative fuels

SECRETARIA DE ENERGIA

CONAE

Energy-Efficiency Standards (1)

- 18 mandatory standards for systems and equipment
  - Refrigerators, AC units, electric motors, water-pumping systems,water heaters, steam generators
- Apply to more than 5 million products sold in México
  - Locally manufactured and/or imported
- Efficiencies up to 40% higher than models five years or older

SECRETARIA DE ENERGIA

CONAE

Energy-Efficiency Standards (2)

- Very positive economic impacts
  - More than 2,000 GWh conserved per year
  - More than 650 MW avoided through 1998
  - Close to 80 million US$ saved per year by energy users
- Important environmental impacts
  - Avoided emissions of more than 9 million Tons of CO2 (up to 1998)
- Test procedures for refrigerator standards harmonized in NAFTA region

SECRETARIA DE ENERGIA

CONAE

Energy-Efficiency Programs: Public Buildings

- One-Hundred Public Buildings
  - Close to 1 million m2 of office space and 125,000 luminaries were analyzed
  - Potential of more than 25% in energy costs (1 million US$ per year)
- Federal-Buildings Program
  - Started in March of 1999
  - Expected to identify energy-efficiency potentials in more than 8 million m2
  - Will operate under CONAE´s new, Internet-based, technical-assistance strategy

SECRETARIA DE ENERGIA

CONAE

Energy-Efficiency Programs: PEMEX-CONAE Committee (1)

- Aimed at specific systems
  - Cooling systems, processs heaters, exhaust-gas heat recovery, industrial lighting, and lighting in buildings
- More than a hundred installations have been analyzed
  - A portafolio worth more than 10 Million US$ of possible investments
  - Recommendations involving operation procedures have been implemented

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CONAE

Energy-Efficiency Programs: PEMEX-CONAE Committee (2)

- CONAE´s technical assistance strategy has been tested in PEMEX
  - Methodolgies available in the Internet
  - Operator´s gather data
  - CONAE supports through Internet
- CONAE´s strategy is becoming part of PEMEX´s environment-protection and industrial-safety programs
  - CONAE´s methodologies will become mandatory
  - Methodologies already available in PEMEX Intranet
  - CONAE will train PEMEX personnel

SECRETARIA DE ENERGIA

CONAE

Utility-Operated Demand-Side Programs (1)

- ILUMEX
  - GEF proyect
    - 23 Million US$ (WB, CFE and Norway)
    - Started in 1995
  - More than 2.4 million CFLs installed in two regions
  - 300 GWh saved (through 1998
  - 80 MW avoided (through 1998)
- FIPATERM
  - Specific to residential sector in Mexicali, Baja California
  - Oriented towards efficiency in air-cooling

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CONAE

Utility-Operated Demand-Side Programs (2)

- FIDE
  - **Demonstration projects**
    - Several hundred projects in the industrial, commercial and municipal sectors
  - **Daylight-savings time**
    - Operates since 1996
    - 1,000 GWh saved per year
    - More than 650 MW avoided
  - **Incentives program**
    - IDB loan
    - Oriented towards residential and commercial, lighting systems and electric motors

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CONAE

Cogeneration: National Potential

- **Analysis performed in 1994-95**
- **Based on 1993 data from 1,700 installations representing 94% of industrial energy consumption (fuel-oil and natural gas)**
- **Two scenarios:**
  - **Without surplus fuel: 7,590 MW**
  - **With surplus fuel: 14,300 MW**
- **An estimated 114 million BOE could be conserved on the highest scenario (per year)**

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CONAE

Cogeneration in Mexico: Present Status

- 26 cogeneration permits granted since 1994
  - 1,385 MW total capacity
  - 7,450 GWh-yr total generation
  - 781 M$US total investment
  - 14plants in operation
- 14 in operation
  - 691 MW total capacity
- 5 under construction

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Cogeneration: Promotion Sub-Commission

- Created in 1996 to analyze non-economic barriers to cogeneration
- Has the participation of private sector representatives, the utililities, the Regulatory Commission, and related government agencies
- Its main conclusions have been:
  - Self-supply is economically feasible under the current rate structure
  - The main barriers are power dispachability and the price paid by the utility (short-run marginal price)

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CONAE

Cogeneration: Regional Seminars

- Organized by the Ministry of Energy with Conae's support
- Includes presentations by CFE on wheeling, the Regulatory Commission on applicable regulations, and success stories by private developers
- Eight have taken place so far in Mexico's most important cities and with great turnout

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Renewable Energy: Activities (1)

- Studies
  - Small-hydro potential in a region on Eastern Mexico
  - Specific projects
    - Micro-hydro in Veracruz
    - Biogas from urban sanitary-confinemts in Mexico City
- Advisory council
  - Created in 1997
  - A partnership of CONAE with the National Solar Association
  - Integrated by private and public sector representatives
  - Analyses barriers and recommends actions and policies

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Renewable Energy: Activities (2)

- Seminars
  - Saltillo (Oct. 1998): Analized barriers
  - Veracruz (Nov. 1999): Will focus on small hydro
- Courses
  - Residential water-heating and small-photovoltaic systems-evaluation
- Projects under development
  - Internet-accesible, geographic information system for renewable resoures
  - Solar water-heating in Mexico City

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CONAE

Alternative-fuel use promotion activities

- Natural gas
  - International seminar on natural gas use for transportation (Mexico City, 1997)
  - Seminar on natural gas use-technology (Mexico City, 1999)
- Ethanol
  - International seminar in Mexico City (1998)
- Hydrogen
  - Creation of a national association of hydrogen-related research

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Conclusions

- Mexico is doing a serious effort to promote energy efficiency
- Potential for cogeneration is considerable but some barriers remain
- There is social interest in the development of renewable energy alternatives
- CONAE is a serious partner for the promotion of cogeneration, renewable-energy and alternative-fuels use in Mexico

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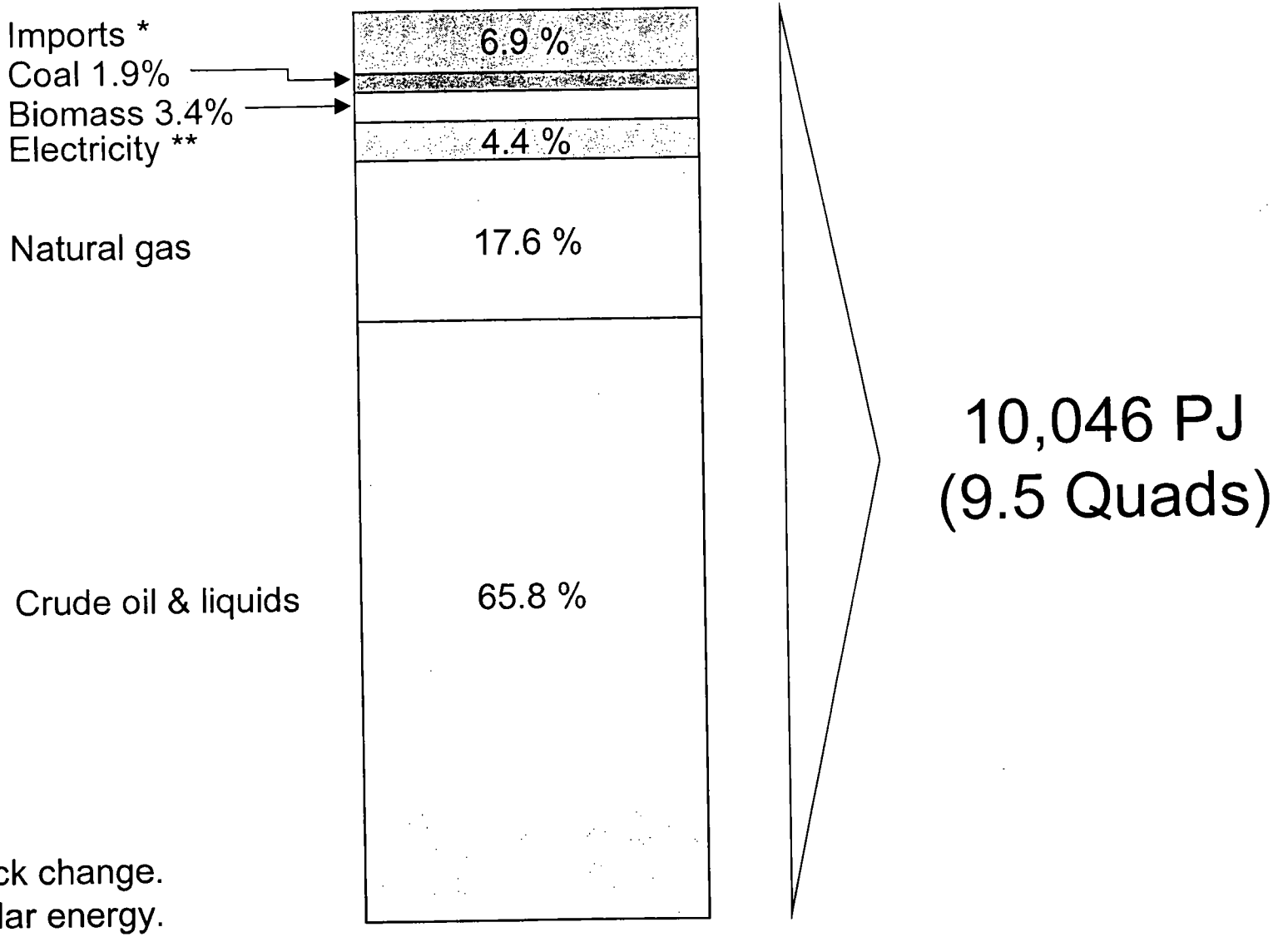
CONAE

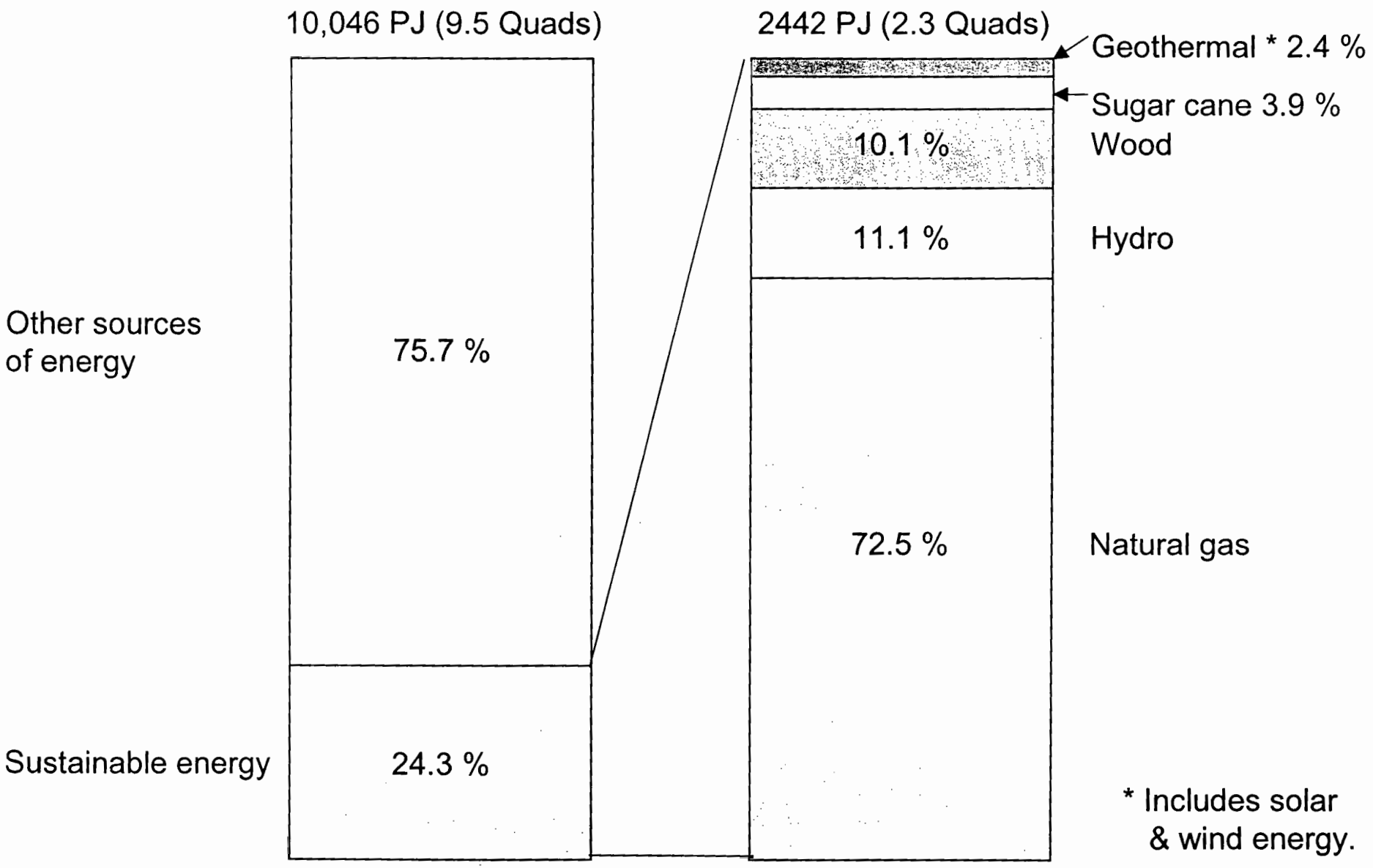
http://www.conae.gob.mx

Mexico: Total Primary Energy Supply, 1997

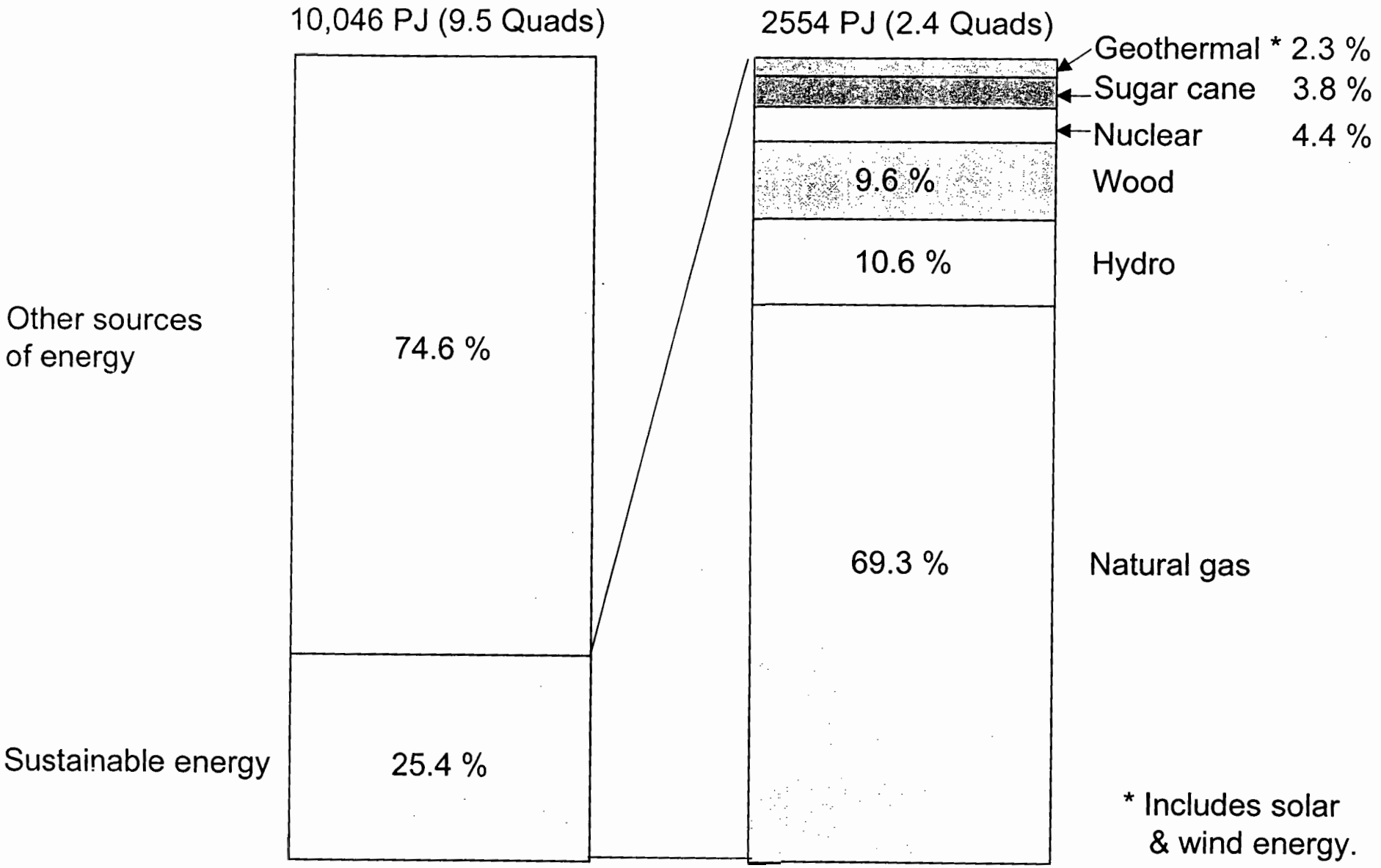


* Includes stock change.
** Includes solar energy.

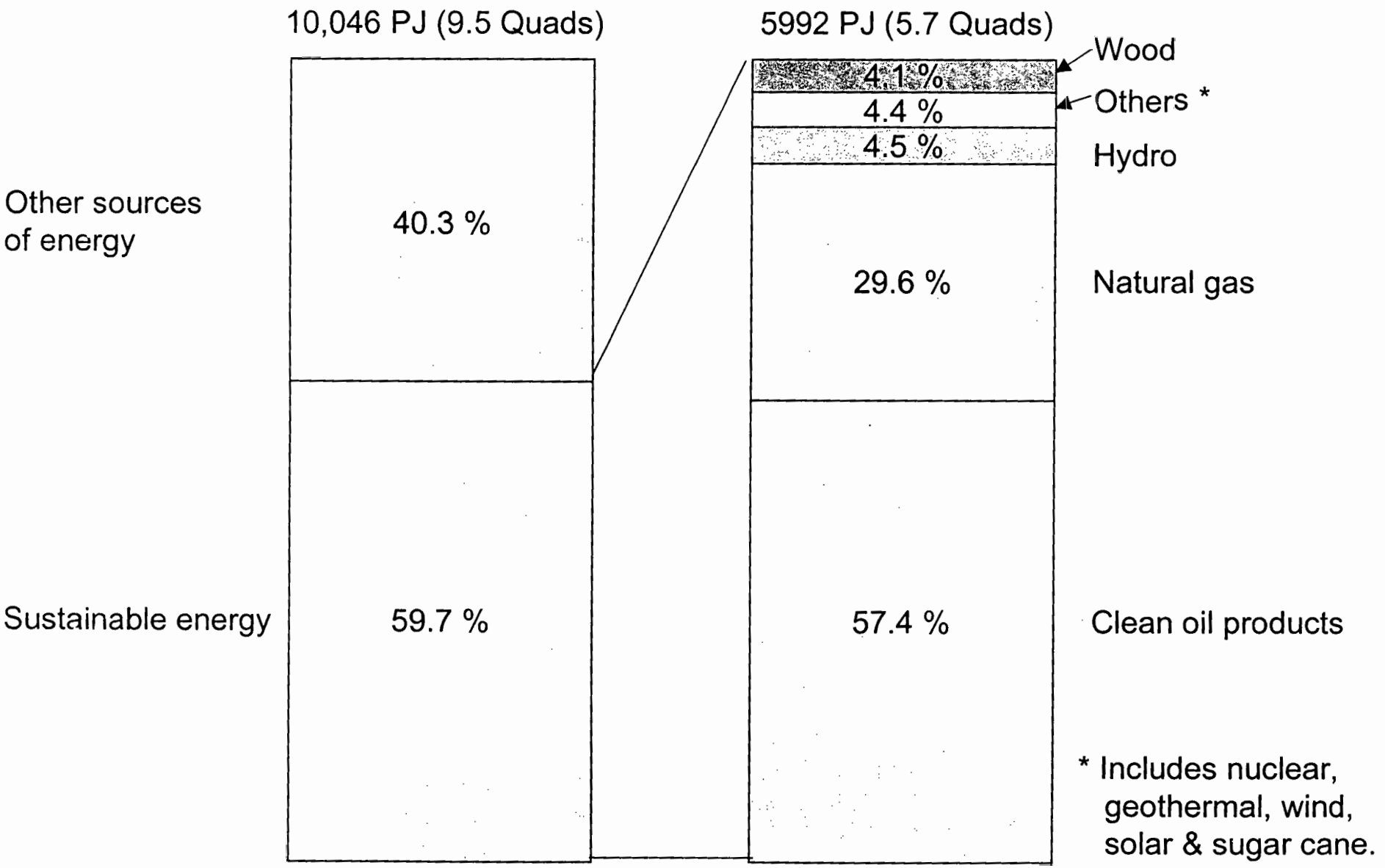
Share of Sustainable Energy in TPES, 1997



Share of Sustainable Energy in TPES, 1997



Share of Sustainable Energy in TPES, 1997



Mexico: Demographic indicators

➡ ***Population, 1998 (e): 96.6 million*** *(midth of the year)*

Age structure

Years	(%)
0 - 14	34
15 - 29	30
0 - 29	64
30 - 64	31
65 or more	5

➡ ***Population Growth Rate, 1998/1997: 1.6 %***

	2005	***2010***	***2015***	***2020***
➡ ***Population (million):***	106.3	112.2	117.5	122.1

➡ ***Area: 1,972,550 sq. km***

Sustainable energy

Sustainable energy is the basis for economic development that meets the needs of the present without jeopardizing the ability of future generations to meet their needs.

- Strongly implies the need to exploit natural resources at a rate that does not impede the regeneration of ecosystems.
  - In the case of the renewable natural resources, this dictates production and consumption at rates such that nature, or nature aided by technology, is allowed to regenerate itself.
  - In the case of non-renewable natural resources, this implies extraction at rates that allow ~~optional~~ optimal alternatives to be developed.

Sustainable energy (continued)

- Sustainable development is an environmental issue. The effect of production and consumption of energy on the environment should be considered in detail.
- Widespread support for energy efficiency is a main weapon for sustainability, and R&D will play an important role in designing means to achieve this.

Sustainable energy

Sustainable Energy Policiy refers to the promotion of cleaner consumption and production of energy in order to encourage economic growth and social welfare in the short and long run, minimizing its negative externalities on environment.

Renewable Resources ⇒
- Hydro
- Wind
- Solar
- Geothermal

Hydrocarbons ⇒ Fuels as natural gas

Specific policies in the energy sector

In order to contribute with the international efforts to mitigating greenhouse gases emissions, Mexico is concentrating in three areas:

- ⇨ Switching energy consumption towards clean fuels as natural gas.
- ⇨ Promoting the use of renewable energy resources.
- ⇨ Efficient use of energy and its conservation.

A) Natural gas

⇨ *High sulphur fuel substitution in current power plants*

In 1994, the Electricity Company started a program for converting the 70% of power plants using fuel oil to use natural gas by the year 2000.

⇨ *New power capacity using natural gas*

There are 14 projects of new power plants using natural gas. They represent an additional capacity of 5,553 MW.

B) Promoting the use of renewable resources

Source of Energy	Installed Capacity (MW)
Hydro power	10,000
Geo thermal power	750
Wind power	1.6
Solar power	11

C) Efficient use of energy and its conservation

Supply Side

⇨ *Combined Heat and Power (CHP)*

231 MW of installed capacity

It generates 1,575 GWh per year.

... C) Efficient use of energy and its conservation

Demand Side

⇨ *Ilumex*

Program for switching use of bulbs to fluorescent lamps.

⇨ *Incentive Program of FIDE*

Program for promoting the use of high efficiency equipments in the industry sector.

⇨ *Voluntary Programs*

National Commission for Energy Saving (CONAE) offers technical assistance to Companies interested on saving energy in their buildings.

⇨ *Regulation*

During the last 3 years, the Secretary of Energy has issued 16 mandatory standards (NOM) which define efficiency standards for appliances, electric motors, lamps, air conditioners, etc.

⇨ *Daylight Saving Time*

During summer, time is adjusted in order to save energy.

... C) Efficient use of energy and its conservation

Demand Side - Results

Program	Avoided Capacity (MW)*/
Ilumex	267
Incentives (FIDE)	65
Voluntary Program	154
Regulation	653
Daylight Saving Time	550
Total	***1,689***

*/ From its implementation up to now.

Set of actions to mitigate pollutants

⇨ Mexico is developing an important set of actions to mitigate climate change. During the 90´s, Mexico´s economy has grown using cleaner productive processes than those used in the past, and inter-institutional mechanisms have been established which contribute to the objectives of the United Nations Framework Convention on Climate Change.

⇨ In parallel, Mexico has carried out other actions to mitigate local pollution, as the reconfiguration of its refining system in order to improve both the quality of oil products and therefore the air. These actions have had a positive impact on avoiding health damage in the urban population.

Set of actions to mitigate local pollutants

Since 1994 Mexico has carried out the reconfiguration of the National Refining System for the transformation of fossil fuels, despite the high cost involved:

Elimination since 1998, of leaded gasoline production and improvement in the quality of gasoline.

Reduction the sulphur content in oil products.

Implementation of a phase down process on the availability of high sulphur fuel oil through the installation of cokers.

In 1996, Mexico implemented a change in the composition of liquid petroleum gas (LPG) in order to reduce emissions of highly reactive hydrocarbons implicated in the formation of ozone.

FIRST MEXICO-U.S. WORKING GROUP ON SUSTAINABLE ENERGY MEETING

Mexico City, April 15, 1999

Draft Agenda

1. **Overview of the Working Group on Sustainable Energy**

2. **National Action Plans in aspects related to Sustainable Energy**
   - Mexican action program description
   - U.S. Action Plan description

3. **Review activities under Energy Cooperation Agreement**

   3.1. Overview discussion
   - Report of the activities under the Energy Cooperation Agreement Annexes

- Project Annex 1: Cooperation in the Field of Renewable Energy
- Project Annex 2: Cooperation in the Field of Energy Efficiency

   3.2. Investment opportunities in clean energy and energy efficiency

   3.3. Prioritization of activities
   - Discussion:
   - What is missing?
   - New activities / projects

4. **Regional developments**
   - Overview of clean energy developments in the region

5. **Final comments**
   - Summary of agreements
   - Report to Binational Commission
   - Next steps

AMERICAN DELEGATION
FIRST MEETING OF THE SUSTAINABLE ENERGY WORKING GROUP
APRIL 15, 1999, MEXICO CITY

Theodore James Glauthier
Deputy Secretary of Energy
U.S. Department of Energy

Rachel King
Senior Policy Advisor for International Affairs
U.S. Department of Energy

Mark Mazur
Senior Policy Advisor and Chief Economist
U.S. Department of Energy

Joseph Aldy
Senior Advisor
Council of Economic Advisors

David Pumphrey
Director, Office of the Americas, Asia and Africa
Office of Policy and International Affairs
U.S. Department of Energy

Robert Dixon
Director, International Programs
Office of Energy Efficiency and Renewable Energy
U.S. Department of Energy

Larry Sperling
Environmental Protection Agency
U.S. Embassy, Mexico

Katherine Simonds
Economic Officer
U.S. Embassy, Mexico

DELEGACIÓN MEXICANA
PRIMERA REUNIÓN DEL GRUPO DE TRABAJO DE ENERGÍA SUSTENTABLE
15 DE ABRIL DE 1999

Dr. Jorge Chávez Presa
Subsecretario de Política y Desarrollo de Energéticos
Secretaría de Energía

Dra. Lourdes Melgar
Directora General de Asuntos Internacionales
Secretaría de Energía

Ing. Odón de Buen
Secretario Técnico
Comisión Nacional para el Ahorro de Energía

Lic. Manuel Betancourt
Director General de Política y Desarrollo de Energéticos
Secretaría de Energía

Lic. Ana María Sánchez
Directora para América, Medio Oriente y Países Petroleros
Secretaría de Energía

Lic. Ramiro Magaña
Director para Asia – Pacífico y Europa
Secretaría de Energía

Lic. Sergio Segura
Asesor de Cooperación Internacional
Comisión Nacional para el Ahorro de Energía

Additional Items for Table of Contents

The Deputy Secretary of Energy
Washington, DC 20585

Last printed 04/14/99 1:35 PM

CONTACT LIST

Travel to Mexico, DF
Wednesday, April 14, 1999 – Friday, April 16,1999

Rachel King	Cell: 011.525.452.9328
Mark Mazur	Cell: 011.525.452.9319
Dave Pumphrey	Cell: 011.525.452.9391
Hotel Presidente	P: 011.525.327.7700
	F: 011.525.327.7737

The Deputy Secretary of Energy
Washington, DC 20585

FINAL

Last printed 04/14/99 1:35 PM

SCHEDULE FOR DEPUTY SECRETARY GLAUTHIER

Travel to Mexico, DF
Wednesday, April 14, 1999

Wednesday, April 14, 1999

3:30 PM Depart en route Dulles Airport

Note: Rachel King will ride with **YOU**

4:30 PM Arrive Dulles Airport

5:20 PM Wheels up en route Mexico, DF

Airline:	United Airlines
Flight:	1021
Seat:	6-D
Flight Time:	4 Hours 33 Minutes
Time Change:	Mountain (-2 Hours)
Meal:	Dinner

8:53 PM Wheels Down Mexico, DF

Note: **YOU** will be met by car from US Embassy
YOU will be met by Tim Sykes and Bob Pittman, DOE Security Detail
YOU will be met by Katherine Simonds, Economic Officer, US Embassy
YOU will proceed to Hotel Presidente for overnight

10:00 PM Arrive Hotel Presidente

Location: Campos Eliseos
218 Polanco, Mexico, DF
011-525-327-7700 (Phone)
011-525-327-7737 (Fax)

FINAL

Thursday, April 15, 1999

7:30 AM **BREAKFAST WITH DELEGATION**

Location: Hotel Presidente
Campos Eliseos

218 Polanco, Mexico, DF

Attendees: -DOE staff
-CEA staff
-Embassy staff

Note: **YOU** will receive briefing during this breakfast

8:30 AM Depart en route

9:00 AM-
11:00 AM **SESSION I – FIRST MEETING OF THE HIGH-LEVEL WORKING GROUP ON SUSTAINABLE ENERGY**

Location: Secretariat of Energy
Avenida Insurgentes
Sur 890
Colonia Del Valle

Attendees: -Dr. Jose Chavez Presa
-Dra. Lourdes Melgar
-Ing. Odon de Buen
-Dr. Francisco Guzman
-Lic. Manuel Betancourt
-Lic. Ana Maria Sanchez
-Lic. Ramiro Magana
-Rachel King
-Mark Mazur
-David Pumphrey
-Robert Dixon
-Joseph Aldy
-Katherine Simonds
-Jim Loveland
-Robert Wolcott

11:00 AM-
11:30 AM **BREAK**

11:30 AM-
1:00 PM **SESSION II – FIRST MEETING OF THE HIGH-LEVEL WORKING GROUP ON SUSTAINABLE ENERGY**

1:00 PM-
1:30 PM **MEETING WITH MINISTER TELLEZ**

Location: Office of the Minister

Attendees: TBD

1:30 PM-2:00 PM **LUNCH**

2:30 PM-4:00 PM **SESSION III – FIRST MEETING OF THE HIGH-LEVEL WORKING GROUP ON SUSTAINABLE ENERGY**

4:00 PM Depart en Route Hotel Presidente

4:30 PM-6:00 PM **DOWN AT HOTEL**

6:30 PM Depart en Route (Location TBD)

7:00 PM **DINNER WITH UNDER SECRETARY CHAVEZ**
Location: TBD

Attendees: TBD

FINAL

Friday, April 16, 1999

7:00 AM Depart en route Charges d'Affaires Residence

7:30 AM **BREAKFAST WITH U.S. ENERGY EXECUTIVES**

Location: Charges d'Affaires Residence
115 Virreyes Lomas de Virreyes, Mexico, DF

Attendees:
-Bill Weidler
Lone Star Gas International
-Jorge Young
Intergen
-James Robo
GE of Mexico
-Richard Bryan
Bechtel
-Bill Pollard
Tejas Gas
-Derek Stillwell Fernandez
Calpine
-Karl Huber
AES
-Bob Reed
Coastal Gas Services Corp.

9:00 AM Depart en route Mexico, DF Airport

10:36 AM Wheels up en route Dulles Airport

Airline: United Airlines
Flight: 1020
Seat: 6-D
Flight Time: 4 Hours 03 Minutes
Time Change: Eastern (+2 Hours)
Meal: Lunch

3:39 PM Wheels down Dulles Airport

4:00 PM Depart en route HOME

U.S.-Mexico Sustainable Energy Working Group
Scope Paper
April 15, 1999

Overview

This group was formed as a result of Secretary Richardson's meeting with President Zedillo of Mexico Wednesday, October 21, 1998. At that meeting, Secretary Richardson proposed that we initiate a broad, high-ranking Climate Change Working Group that would bring to the table energy and economic/finance interests to complement the ongoing diplomatic/environment interaction, emphasizing tangible economic and technology benefits. This Sustainable Energy Working Group, to be chaired by the U.S. and Mexican Energy Ministries, is, as agreed to by the Mexicans, much narrower in focus. The Mexicans agree that clean energy strategies have an important role in future energy policies but emphasize that the energy ministry has no role, by law, in affecting Climate Change policy–that can only be done by the environment ministry, SEMARNAP. The goal of this group is not to work the issue of targets, but to get the Mexican energy side comfortable with the climate change issue. Coming up with the parameters was difficult and while we have pushed for interagency participation from both countries, the Mexicans have resisted.

It was agreed that the focus of the Working Group would be sustainable energy development. Progress in this area would improve the environment (addressing local air pollution and climate change concerns) at the same time that economic growth was spurred. The Working Group would draw from the various bilateral energy efficiency, renewable energy, and clean power activities under the existing bilateral energy agreements. The Working Group will parallel and so draw from the bilateral climate change group led by EPA and SEMARNAP that has focused on international negotiations issues and other elements under the United Nations Framework Convention on Climate Change.

Mexico has not agreed to a Climate Change target, although President Clinton also raised this with President Zedillo. Mexico is concerned about the effect of climate change measures on its economic growth as well as on its state-run energy industry, a source of great pride and little government flexibility for Mexico. Mexico is, however, one of only two OECD members (Korea is the other) not to have taken on a target and has recently shown interest in policies to increase trade, foreign investment and growth in the renewable energy, energy efficiency and natural gas sectors. We hope to continue to stress that all these measures would benefit from Mexico agreeing to take on a target, probably a growth target, and become a beneficiary of an emissions trading scheme.

Mexico's energy sector continues to be an area of significant political sensitivity, dominated by the two powerful Parastatals, Petroleos de Mexicanos (PEMEX) and the Comision Federal de Electricidad (CFE). Notwithstanding the opportunities provided by NAFTA for private sector participation in natural gas distribution and electricity generation, efforts by the government to institute further changes have been fraught with delays and changes in plans. Tellez, with Zedillo's

support, is pushing for reforms in the electricity sector, including restructuring CFE, and we should privately commend and support their efforts.

In the meeting, we will want to take up the goals of the Working group and emphasize President Zedillo's support for these goals. Mexico may want to develop terms of reference for the Working Group in order to contain the scope of the discussion. We want to keep the scope of the discussions as broad as possible and therefore would like to avoid restrictive terms of reference.

National Action Plan

Mexico has recently completed and released a National Action Plan. This plan was developed with assistance from DOE and other agencies. We understand that the National Action Plan results in reducing the growth of emissions below a baseline case. Secretary Richardson offered to put our governments' best minds together to help Mexico develop a path to a target after completion of the National Action Plan. Mexico indicated at the time of the October meeting that it was ready to release its internal strategy on greenhouse gas emissions and the key push for Mexico should be on how they cast the results of this package. Mexico should be encouraged to stand as a leader as a result of their strategy and the fact that it will lower their emissions levels significantly. We should continue to encourage Mexico to take a proactive stance.

During this meeting we will also outline the U.S. Action Plan and encourage discussion on a cooperative agenda that commits to an exchange of information on our National Action Plans and movement forward on both Action Plans.

Energy Cooperation Agreement

At the last meeting of the Energy Working Group of the U.S.-Mexico Binational Commission in June 1988, the U.S. and Mexico, agreed to enhance cooperation in energy efficiency and renewable energy by signing annexes to the Agreement for Energy Cooperation in the fields of energy efficiency and renewable energy. These annexes will bring together and extend already existing programs. At this meeting you should emphasize that we need to move from research into development, and push for agreement on the clean power annex.

The activities under the energy efficiency and renewable energy annexes include: collaboration in the development and testing of renewable energy equipment under varying conditions and the training of engineers and technicians, as well as development of programs to encourage the use of renewable energy in the private and public sector. In addition, we agreed to pursue participation in a workshop on new and emerging clean power generation technologies.

Renewable Energy -- DOE and U.S. AID are jointly funding a project to identify and promote renewable energy opportunities in Mexico's rural areas, particularly for those communities not served by the central electricity grid. This project began in 1994, and is receiving $500 thousand from DOE and $880 thousand from AID. In addition, DOE has other renewable energy projects underway in Baja California Sur, Xcalac, and other states in Mexico. To codify and expand these activities, an Annex to our Memorandum of Agreement (MOA) was signed that would expand

cooperation in this area including, collaboration in the evaluation of renewable energy equipment under varying conditions, the training of technicians to install and maintain renewable energy equipment and perform work related to other renewable energy technologies, as well as programs to encourage the use of renewable energy by the private and public sector.

Energy Efficiency -- At the December 1997 U.S.-Mexico Technical Energy Consultations, we agreed to continue our cooperative efforts in a number of areas, including work on standards, the verification protocol, and how to manage Federal energy efficiency programs. There had been very little activity in any of these areas, so the second annex to the MOA was signed in the hope of increasing Mexico's interest in pursuing activities in energy efficiency. The annex includes AID and the Environmental Protection Agency as Parties , and encompasses cooperative activities such as programs for energy efficient buildings, homes and motors as well as the development of procedures for appliance testing, testing and training of technicians to conduct the above tests and perform work related to other energy efficiency technologies.

At this meeting of the working group we will hear a status update on cooperative efforts under these agreement and discuss how these activities can support reducing greenhouse gas emissions. A key objective will be to begin to develop a set of policy priorities that will help frame future cooperation. We will want to begin to direct the cooperative activities into the areas of greatest interest and potential payoff. The priorities that get set by the Sustainable Working Group should provide guidance to the researchers to redirect existing activities and develop new ones. We will propose additional activities and a new annex for cooperation in the area of clean power technologies. We will want Mexico to take the lead in identifying key areas of interest for new activities.

Regional Developments

A key objective for our work with Mexico is to reinforce and expand cooperation in the Hemisphere on sustainable energy. Mexico has participated in some of the activities of the Hemispheric Energy Initiative created by the Summits of the Americas. This Initiative is aimed at enhancing the climate for investment in clean energy and to further integration of regional energy markets. Recently Mexico has been critical of the lack of progress in the Initiative, but has not offered concrete suggestions for new projects to strengthen the work. We want to use this part of the discussion to begin to focus Mexico on some proposals for enhanced regional cooperation on sustainable energy. This discussion will help prepare for the July Hemispheric Energy Ministers Conference that the Secretary will host.

We want to encourage Mexico that there are significant benefits to expanding work with the countries and regional organizations in the Western Hemisphere to integrate its energy infrastructure. Projects such as the Mexico-Guatemala gas pipeline develop partnerships among governments, industry, non-government organizations and universities to foster economic development, which is increasingly crucial to the Hemisphere's prosperity and of no small consequence to Mexico's own. The expansion of a gas market south from Mexico to Guatemala will increase gas use in southern Mexico and Guatemala and back out less environmentally friendly

fuels. It would also create demand in the north of Mexico for U.S. gas supplies. Unfortunately, given the current size of Guatemala's gas market, the economics are not very attractive for private investors. You will hear presentations on this project and other regional initiatives.

We should also discuss ways to enhance regional cooperation in energy efficiency, clean power technologies, and rural electrification. We should reach agreement that we will build on our strong bilateral cooperation in these areas to enhance regional cooperation.

Final Comments

You will want to reemphasize the goals of the Working Group: sustainable energy development to improve the environment (addressing local air pollution and climate change concerns) at the same time enhance economic growth. Congratulate the Working Group on the conclusions that various bilateral energy efficiency, renewable energy, and clean power activities already underway can enhance climate change goals. We would propose that the next meeting of the Working Group take place in Washington in October.

OPENING REMARKS FOR T.J. GLAUTHIER
DEPUTY SECRETARY, U.S. DEPARTMENT OF ENERGY
U.S.-Mexico Sustainable Energy Working Group

April 15, 1999

- Under Secretary Chavez, other Mexican colleagues, I am very pleased to be here to launch this bilateral dialogue on sustainable energy paths for our two nations and for the region.

- This discussion carries forward a commitment made between our two countries in 1998. Secretary of Energy Bill Richardson was very pleased to have reached mutual agreement on this dialogue in his meetings with President Zedillo and Energy Secretary Tellez last fall. The Secretary thanks you for your early engagement in this important discussion.

- The United States is firmly committed to cooperating closely with Mexico and the other countries in the region to help accelerate the path to a sustainable energy future. This has multiple benefits. Greater deployment of energy efficiency and clean energy options helps address compelling local environmental problems, reduces greenhouse gas emissions, fuels economic growth and prosperity in a sustainable fashion, and enhances the competitiveness and deployment potential of clean technology options.

- In short, the United States is convinced that sustainable energy practices will allow us to be both environmentally responsible and promote vigorous economic growth. That is why I am accompanied today by delegates not only from my Department of Energy and from the Environmental Protection Agency, but also from the Council of Economic Advisors.

- I hope that at today's meeting, we can engage in four areas:

  - recognize the important role which energy does and can play in dealing with the challenge and response to global climate change;

  - make a commitment to exchange information on our national climate change action plans and strategies, and identify potential areas and opportunities for cooperating in implementing them;

  - examine our ongoing and extensive cooperation in the energy sector, take stock of its benefits to our sustainable energy goals and identify possible priorities to guide our future efforts;

  - discuss how we can leverage our bilateral efforts in sustainable energy by finding ways to communicate the importance of sustainable energy paths for the region as a whole, using the process available through the Hemispheric Energy Initiative and the Summit of the Americas.

- Bilaterally, we have a strong foundation of cooperation to build on today. Already, we have cooperative agreements in energy efficiency, renewable energy and waste water clean-up and a commitment by both our countries to sustainable energy initiatives in our national energy plans.

- In the regional context, we can provide leadership through our own actions. Mexico's commitment to increasing energy efficiency, natural gas utilization, renewable energy and private power investments in the electric power sectors demonstrates that kind of leadership.

- With natural gas demand in Mexico expected to double, spurred by expanded investments in pipelines and infrastructure and elimination by the year 2003 of tariffs on imported gas, you will be encouraging an option with significantly lower greenhouse gas emissions than other conventional fossil fuels.

- Enhanced energy efficiency also opens doors to more sustainable energy paths and to greater cooperation between our two countries. We encourage you in your resolve to increase energy efficiency and are seeking ways to support you in this effort.

- Our two countries are already working cooperatively to advance the potential for renewable energy. DOE and US AID are jointly funding a project to identify and promote renewable energy opportunities in Mexico's rural areas, particularly those communities not served by the central power grid. This project began in 1994 and is receiving $500 thousand form DOE and $800 thousand from AID. Other activities are underway and, an Annex to our Memorandum of Agreement was also signed that would expand collaboration in this area.

- Intensifying our cooperative efforts, identifying priorities, exchanging strategies and expanding this dialogue to the region will serve and advance the interests of both the United States and Mexico to achieve a competitive, efficient, safe and sustainable energy industry.

- I look forward to our discussions today.

NOTES FOR SESSION ON NATIONAL PLANS

mjm 4/14/99

Background: The main goal here is to set the stage for the subsequent discussions. Mexico released its National Action Plan last week (April 6th) and we expect them to discuss this document and its policy implications. The US will focus on: the Administration's Climate Change Action Plan (announced in 1993 and included in the 1997 Climate Action Report to the UN); the Administration's FY 2000 Budget Request, including the Climate Change Technology Initiative; the Administration's Electricity Restructuring Proposal (released April 15th); and the Administration's analysis of the economic costs of complying with the Kyoto Protocol (the CEA analysis released in July 1998).

Presentation on the first three elements on the US side will be by Mark Mazur; the Kyoto Protocol analysis will be presented by Joe Aldy, Senior Advisor to the Chair of the Council of Economic Advisers.

Talking Points

- We would like to begin our substantive discussion today with a brief overview of the sustainable energy strategies our countries are following in light of our concerns with local and global environmental matters.

United States

- In the United States, the main policy driver behind our sustainable energy strategies is the issue of global climate change. This comes up in our Climate Change Action Plan (unveiled in 1993 and updated and presented in our 1997 Climate Action Report to the UN) and in our annual budget submissions. In fact, our FY 2000 Budget Submission included over $4 billion in climate change-related items -- basic scientific research, R&D in a wide variety of areas, such as energy efficiency, renewable energy, improved fossil energy technologies, and nuclear energy, and tax incentives to accelerate deployment of effective technologies.

- Today we unveiled the Administration's electricity restructuring proposal. This legislation would, by 2010, reduce consumers' electricity bills by about $20 billion per year and reduce greenhouse gas emissions by 45-60 million tons of carbon equivalent. This is an example of a policy that is good for the economy and good for the environment.

- We also want to spend some time discussing the Administration's analysis of the economic costs of complying with the target set out in the Kyoto Protocol, greenhouse gas emissions 7 percent below 1990 levels. We think that the overall cost to the economy would be modest, due to the market-based mechanisms contained in the Kyoto Protocol and the ability of the United States economy to adjust to the target.

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UNCLAS EPA MEXICO 03271
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ACTION: EST
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INFO: EPA

DISSEMINATION: EST
CHARGE: PROG

APPROVED: EST:LKERR
DRAFTED: EST:JDLOVELAND
CLEARED: EST:MOPTICAN

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▶ 3

To Kathy Deutsch	From R. Simonds
Dept./Agency	Phone #
Fax # 586-0013	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

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DEPT FOR ARA/MEX PAUL STORING
DEPT FOR OES/PCI
EPA/CLIMATE CHANGE FOR JLEGGETT
USAID/ENVIRONMENT
E.O. 12958: N/A
TAGS: SENV, KSCA, MX

SUBJECT: MEXICO PRESENTS NATIONAL CLIMATE CHANGE PLAN

SUMMARY
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1. MEXICO PRESENTED ITS NATIONAL CLIMATE CHANGE PLAN ON APRIL 6. THE PLAN INCLUDES A STATEMENT OF MEXICO'S POSITION ON CLIMATE CHANGE AS WELL AS BRIEF DISCUSSIONS OF THE NATIONAL CLIMATE CHANGE STRATEGY, SECTORAL PRIORITIES, AND LIKELY DIRECTIONS FOR FUTURE RESEARCH. THE PLAN IS AVAILABLE ON THE INTERNET, IN SPANISH, AT HTTP://WWW.INE.GO.MX/DGRA/PNCC/INDEX.HTML. END SUMMARY.

MEXICO'S POSITION
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2. MEXICO'S POSITION GROWS OUT OF THE FUNDAMENTAL ASSUMPTION THAT THE COUNTRY'S TOTAL AND PER CAPITA EMISSIONS WILL GROW OVER TIME, AS A RESULT OF NATIONAL EFFORTS TO EXPAND THE

ECONOMY. REGARDING EMISSIONS TARGETS, THE PLAN EMPHASIZES THAT MEXICO IS NOT NOW TECHNICALLY CAPABLE OF MEASURING OR PREDICTING EMISSIONS WITH THE ACCURACY NECESSARY TO CONSIDER TARGETS. HOWEVER, THE PLAN SIGNALS MEXICO'S WILLINGNESS TO UNDERTAKE ACTIONS TO REDUCE CLIMATE CHANGE, AND UNDERLINES THE IMPORTANCE OF INTERNATIONAL COOPERATION TO ACHIEVE THIS END.

STRATEGIES FOR THE FUTURE

3. MEXICO'S STRATEGIES FOR FUTURE ACTION INCLUDE SUPPORTING ADVANCES IN ENERGY EFFICIENCY AND ALTERNATIVE ENERGY PROGRAMS, MODIFYING REGULATIONS TO ENCOURAGE RATIONAL DECISION-MAKING WITH RESPECT TO CLEAN TECHNOLOGIES AND ENERGY PRICES, AND CAPTURING THE ENORMOUS POTENTIAL OF FOREST ECOSYSTEMS AND PREVENTING CHANGES IN LAND USE WHICH CONTRIBUTE TO CLIMATE CHANGE. FINALLY, THE PLAN SIGNALS MEXICO'S INTENTION TO GRANT MAXIMUM POSSIBLE BUDGETARY SUPPORT TO CARBON SEQUESTRATION, ENERGY EFFICIENCY, AND CLEAN DEVELOPMENT PROJECTS.

SECTORAL INITIATIVES

4. MEXICO'S NATIONAL PLAN IDENTIFIES CLIMATE CHANGE POLICIES FOR VARIOUS SECTORS OF THE SOCIETY. IN THE AREA OF NATURAL RESOURCES AND AGRICULTURE, EMPHASIS IS PLACED UPON EXPANDING AND CONSERVING FOREST ECOSYSTEMS, REDUCING THE USE OF FOSSIL FUELS, AND LIMITING HARMFUL LAND-USE CHANGES. AS ENERGY POLICIES, THE PLAN IDENTIFIES PROMOTION OF ALTERNATIVE FUELS AS A PRIORITY, AS WELL AS ENERGY CONSERVATION PROGRAMS AND THE PROMOTION OF COGENERATION OF ELECTRICITY. IN THE INDUSTRIAL SECTOR, ENERGY EFFICIENCY, TECHNOLOGICAL ADVANCES, AND THE MODERNIZATION OF THE REGULATORY FRAMEWORK ARE IDENTIFIED AS PRIORITY AREAS.

5. THE PLAN LISTS THE FOLLOWING AS PRIORITIES FOR URBAN DEVELOPMENT: ORDERLY URBAN GROWTH, THE MODERNIZATION OF PUBLIC TRANSPORTATION SYSTEMS, THE CONTROL AND UTILIZATION OF LANDFILL-GENERATED METHANE, AND THE INSTITUTION OF AIR QUALITY PROGRAMS IN LARGE CITIES. THE PLAN ALSO HIGHLIGHTS THE IMPORTANCE OF MODERNIZATION OF TRANSPORTATION AND COMMUNICATION INFRASTRUCTURES.

DIRECTIONS FOR RESEARCH

6. MEXICO'S PLAN MENTIONS IMPORTANT DIRECTIONS FOR FUTURE RESEARCH. THESE INCLUDE DEVELOPMENT OF A NATIONAL INVENTORY OF EMISSIONS, THE PROJECTION OF EMISSION LEVELS BASED ON VARIOUS ESTIMATES OF ECONOMIC GROWTH, AND THE CREATION OF REALISTIC ESTIMATES OF THE COSTS OF TECHOLOGIES AND MITIGATION OPTIONS. FINALLY, THE PLAN IDENTIFIES THE STUDY OF OTHER NATIONAL STRATEGIES AS A PRIORITY.

COMMENT

7. THE PUBLISHED NATIONAL PLAN DOES NOT REFLECT SUBSTANTIAL CHANGE IN PREVIOUS GOM POSITIONS ON CLIMATE CHANGE. THE FACT THAT THE PLAN IS NOW THE PRODUCT OF GOVERNMENTAL CONSENSUS, HOWEVER, WILL MAKE THOSE POSITIONS EVEN MORE FIRM.

BREW
BT
#3271
NNNN

From Ray Prince (Policy) - his take on Mexico's National Action Plan. 4/99

TALKING POINTS FOR THE DOE DELEGATION TO MEXICO
(page numbers denote page in the National Communication)

General (pp. 13-7)

Mexico's proven hydrocarbon reserves in 1997 totaled 50 million barrels, 80% of which were petroleum and 20% natural gas. Mexico's coal reserves total 663 million tons. Mexico has significant potential for geothermal, solar and wind energy.

Although Mexico contributes less than 2% of world emissions of CO2, it ranks in the top 20 in per capita CO2 emissions (0.96 tons per capita in 1994 compared to 5.26 for the U.S.).

Carbon dioxide accounts for 96 % of total greenhouse gas emissions, methane for 1% and other gases 3%. [by molecular weight] ? from energy

In 1990, 62% of electricity was generated by fossil fuels.

The effects of a doubling of the CO2 concentration above pre-industrial levels (from approximately 280 ppm to 560 ppm) would cause flooding in the Panuco River delta in Tamaulpais in the North, render much arable land in central Mexico unsuitable for maize production and affect coastal areas along the Gulf of Mexico and the Caribbean.

Programs adopted to reduce air pollution from the burning of fossil fuels in Mexico's four major urban areas (Mexico City, Guadalajara, Monterrey, Toluca valley) include an increased use of unleaded gas and low sulfur diesel, conversions from petroleum to natural gas, development of co-generation plants and standards for consumer electrical products.

Approximately 72% of Mexico's territory (142 million square hectares) is covered with forests, jungles and other natural vegetation.

The National Communications estimates that approximately 30% [by weight] of Mexico's greenhouse gas emissions are traceable to past land use changes [starting date undetermined]. (p.22)

Climate Policy Specific

The Secretariat for Environment, Natural Resources and Fisheries (SEMARNAP) was formed in 1994. It mission is to establish the basis for sustainable development through programs that encourage the judicious use of ecological systems, natural resources, and protection of environmental quality. Those programs, spelled out in the National Development Plan for 1995-2000, included a proposed reform of environmental regulations for industry and improved monitoring (pp50-51).

Mitigation programs described in the National Communications that fall under SEMARNAP's jurisdiction include

- Air quality programs in the four major metropolitan areas (Note: the program for Mexico City is known as PROAIRE [Programa Integral contra la Contaminacion Atmosferica en la Zona Metropolitana de la Ciudad de Mexico])
- Programs to protect natural areas
- Programs to establish industrial standards
- Programs to measure emissions
- Plan for management of the national forests [PRODEFOR]
- Plan for the management of commercial forests [PRODEPLAN] (p 51)
- Develop plans for carbon sequestration by reforestation and aforestation
- Undertake pilot phase Joint Implementation projects (pp. 66-8)

The primary tenets of Mexican energy policy as it affects greenhouse gas emissions are

- Efficient and economical use of conventional energy including improved performance of internal combustion engines
- Substitution of natural gas for petroleum in electric generating plants in the major metropolitan areas.
- Encourage the economic use of renewable energy (p.53)

Accomplishments:

- 70% conversion of electricity generation plants in the metropolitan areas
- Deregulation of the natural gas electricity generation sector
- Establishment of CONAE [Comision Nacional para el Ahorro de Energia] to encourage co-generation plants
- Increased use of flourescent lights for residences
- Improved lighting systems for industry [p. 55]
- Pilot phase JI projects to promote carbon sequestration in Bahia Kino in Sonora, Chiapas, Oaxaca, Campeche and the Monarch Butterfly Reserve.

President Clinton's FY 2000 Climate Change Budget

"Our most fateful new challenge is the threat of global warming...Tonight I propose a new clean air fund to help communities reduce greenhouse and other pollution, and tax incentives and investments to spur clean energy technology."

President Bill Clinton, State of the Union address, January 19, 1999

Meeting the challenge of global warming. In his FY 2000 budget, the President is proposing a 34 percent increase for R&D in energy efficient technology and renewable energy; a new Clean Air Partnership Fund to boost state and local efforts to reduce greenhouse gases and air pollution; a five-year package of tax incentives to spur clean energy technologies; substantial new funding to focus on the ways farms and forests can reduce and offset greenhouse gas emissions; and $1.8 billion for global change research -- a total package for FY 2000 of over $4 billion.

Clean Air Partnership Fund. The President proposes $200 million for a new fund to provide grants to state and local governments for projects that reduce both greenhouse gases and pollutants like soot, smog, and air toxics.

Climate Change Technology Initiative (CCTI). The CCTI is a package of targeted tax incentives and investments aimed at increasing energy efficiency and spurring the broader use of renewable energy. The package will save consumers money and reduce greenhouse gas emissions at the same time. FY 1999 appropriations represented a 25 percent increase over the prior year. The President's new budget proposes a still more accelerated effort.

$3.6 billion in tax incentives over five years. The proposed package contains $3.6 billion over five years in tax cuts ($383 million for FY 2000) for consumers who purchase energy efficient products and for producers of energy from renewable sources. Highlights include:

- Tax credits for energy efficient homes. Consumers can receive a $1000-2000 credit toward the purchase of a new energy efficient home; a 10-20 percent tax credit for the purchase of selected energy efficient products for their homes and buildings; and a $1000-2000 credit for installing a rooftop solar system.

- Tax credits for fuel-efficient cars. The package includes tax credits ranging from $1000-4000 for the purchase of a qualifying electric, fuel cell or hybrid vehicle.

- Tax credits for renewable energy. The package extends the 1.5 cent per kilowatt hour tax credit for the production of electricity from wind and biomass; expands the biomass credit to cover additional sources of biomass; and adds a 1.0 cent per kilowatt hour tax credit for cofiring coal and biomass in power plants.

$1.4 billion for Energy Efficiency & Renewables. The proposed package contains nearly $1.4 billion in FY 2000 to research, develop, and deploy clean technologies for the four major carbon-emitting sectors of the economy -- buildings, transportation, industry, and electricity -- a 34 percent increase over the amount appropriated in FY 1999. Highlights include:

- Partnership for a New Generation of Vehicles. PNGV is a government-industry effort to develop comfortable, affordable cars that meet all applicable safety and environmental standards and get up to three times the fuel efficiency of today's cars. The combined proposal for PNGV in the FY 2000 budget is $264 million, an increase from the $240 million appropriated in FY 1999.

- Partnership for Advancing Technology in Housing. PATH is a government-industry partnership to improve the energy efficiency of new homes by more than 50 percent and to retrofit 15 million existing homes to make them 30 percent more energy efficient within a decade. The FY 2000 budget request for building efficiency efforts, such as PATH, Energy Star, and Building America, totals $273 million, a 59 percent increase over FY 1999 appropriations.

- Renewable energy. The President proposes $399 million for the Department of Energy's (DOE) solar and renewable energy programs, a 19 percent increase over the amount appropriated in FY 1999. The package includes expanded efforts in key renewable technologies, such as wind, bioenergy, photovoltaics, and geothermal energy.

Forests and Farms. The FY 2000 proposal includes $105 million for the Department of Agriculture's (USDA) climate change budget, an increase of $50 million over the amount appropriated in FY 1999 and $40 million over the Administration's FY 1999 request. The new proposal includes funding for a new, multi-agency Carbon Cycle Initiative to better understand how carbon is absorbed by agricultural soils and forests; a soil carbon inventory; pilot projects to demonstrate how improved farming practices can help store carbon; and programs to reduce emissions through means such as the conversion of waste to energy. In addition, DOE, in conjunction with USDA, will expand efforts aimed at broadening the use of biomass to produce power, fuels, and chemicals.

Cleaner Coal. The budget request contains $122 million for R&D to develop next-generation technologies for coal combustion with much higher energy efficiency and lower greenhouse gas emissions.

Weatherization & State Energy Grants. The budget request includes $191 million -- a $25 million increase over FY 1999 appropriations -- to deliver energy conservation services to low-income Americans and to assist state energy offices in addressing their energy priorities.

U.S. Global Change Research Program. The FY 2000 request includes $1.8 billion for scientific research to improve our understanding of human and natural forces that influence the Earth's climate system and to assess the likely consequences of global warming.

President Clinton's FY 2000 Climate Change Budget

The President's climate change package for FY 2000 totals over $4.1 billion -- an increase of more than $1 billion (34 percent) from the amount enacted for FY 1999. It is comprised of a new Clean Air Partnership Fund to boost state and local efforts to reduce both greenhouse gases and ground-level air pollutants; the Climate Change Technology Initiative, which mixes tax incentives and direct spending to spur the research, development, and deployment of energy efficient technology and renewable energy; other climate-related investments, such as R&D of highly efficient technologies for the combustion and use of coal and natural gas, weatherization, and state energy grants; and the United States Global Change Research Program, to enhance our understanding of the human and natural forces that influence the Earth's climate system.

Table 1. Climate-Change-Related Domestic Programs ($ in Millions)

	FY 1999 Enacted	FY 2000 Request	Change
Clean Air Partnership Fund	0	200	+200
Climate Change Technology Initiative--tax incentives	--	383*	+383
Climate Change Technology Initiative--spending	1,021	1,368	+347
Other Climate-Related Investments (cleaner coal & natural gas; weatherization; state energy grants)	387	400	+13
Global Change Research Program	1,681	1,786	+105
TOTAL	**3,090**	**4,137**	**+1,048**

*First year of a proposed five year, $3.6 billion package.

Clean Air Partnership Fund

To help protect public health and ease the threat of global warming, President Clinton is proposing $200 million for the creation of a new Clean Air Partnership Fund. The Fund will provide grants to states, localities, and tribes to support state, local, tribal, and private efforts that achieve reductions in both greenhouse gas emissions and ground-level air pollutants. The Fund will be administered by the Environmental Protection Agency (EPA) under existing authority.

- ***Integrated Pollution Control.*** The Fund will stimulate integrated, cost-effective pollution control strategies. It directs new resources to state, local, and tribal governments to finance projects and programs that achieve accelerated reductions in both air pollutants, such as soot, smog, and air toxics, and in greenhouse gases.

- ***A Quicker Path to Cleaner Air.*** By providing new resources for projects that accelerate pollution reductions, the Fund will enable communities to achieve multi-pollutant clean air goals sooner and reduce greenhouse gas emissions at the same time.

- ***Technological Innovation.*** The Fund will help spur both public and private sector innovations in next-generation pollution control technology.

- ***A Magnet for Local Investment & Innovation.*** The Fund will encourage public-private partnerships to demonstrate ways to create a cleaner environment at the local level. The Fund can be used to support local revolving funds, low-interest loan programs, matching grants, and other mechanisms that will leverage the original Federal investment, greatly increasing its impact.

- ***"Win-Win" Clean Air Projects.*** The Fund will support a wide range of practical projects that will mean cleaner air, reduced greenhouse gas emissions, and real savings for taxpayers and consumers. These could include projects such as building combined heat and power facilities that put waste heat to work, reducing emissions of both sulfur dioxide and carbon dioxide; retrofitting municipal buildings to make them more energy efficient, reducing pollution resulting from electricity generation; and upgrading municipal vehicle fleets to make them more fuel efficient.

Climate Change Technology Initiative: $3.6 Billion in Tax Incentives

The President is proposing a new $3.6 billion package in tax incentives over five years to help reduce greenhouse gas emissions by spurring the purchase of energy efficient products and the use of renewable energy (see Table 2).

Table 2. CCTI Tax Incentives ($ in Billions)

	Revenue Effect	
	FY 2000	Total FY00-04
Homes and Buildings		
Provide tax credit for energy efficient building equipment	-0.2	-1.5
Provide tax credit for new energy efficient homes	-0.1	-0.4
Provide tax credit for rooftop solar systems	--*	-0.1
Vehicles		
Extend tax credit for electric or fuel cell vehicles and provide tax credits for highly fuel efficient hybrid vehicles	0	-0.9
Renewable Energy		
Extend tax credit for electricity produced from wind and biomass; expand eligible biomass sources; and include coal-biomass cofiring	--*	-0.3
Industry		
Provide tax credit for combined heat and power systems	-0.1	-0.3
TOTAL**	**-0.4**	**-3.6**

*Less than $50 million.

**Total may not add due to rounding.

HOMES AND BUILDINGS

- ***Tax credit to consumers who purchase new energy efficient homes.*** To encourage the purchase of new energy efficient homes, consumers would receive a tax credit of $1,000 for homes purchased from 2000-2001 that are at least 30 percent more energy efficient than the standard under the 1998 International Energy Conservation Code (IECC); a credit of $1,500 for homes purchased from 2000-2002 that are at least 40 percent more efficient than the IECC standard; and a credit of $2,000 for homes purchased from 2000-2004 that are at least 50 percent more efficient than the IECC standard.

- ***Tax credit for energy efficient equipment in new and existing homes or buildings.*** This credit will encourage the purchase of electric heat pump and natural gas water heaters, electric and natural gas heat pumps, advanced central air conditioners, and fuel cells. The credit would apply to both residential and commercial equipment. For electric heat pump water heaters, natural gas heat pumps, and fuel cells, the credit would be 20 percent of the cost of the investment, subject to a cap, for equipment purchased from 2000-2003. For all other equipment, the credit would be 10 percent of the cost of the investment, subject to a cap, at one level of efficiency (2000-2001) and 20 percent, subject to a cap, at a higher level of efficiency (2000-2003).

- ***Tax credit for rooftop solar systems.*** A 15 percent tax credit will encourage the purchase by consumers and businesses of rooftop solar systems. The maximum credit would be $2,000 for rooftop photovoltaic systems placed in service from 2000-2006 and $1,000 for solar water heating systems placed in service from 2000-2004.

VEHICLES

- ***Tax credits for highly efficient cars and light trucks.*** Cars and light trucks (including minivans, sport utilities, and pickups) currently account for 20 percent of greenhouse gas emissions. Tax credits for electric, fuel cell, and hybrid vehicles will help to move these highly efficient technologies from the laboratory to the highway. These technologies can significantly reduce emissions of carbon dioxide, the most prevalent greenhouse gas.

    - **Extend the current tax credit for electric vehicles and fuel cell vehicles.** Under current law, a 10 percent credit, up to $4,000, is provided for the cost of qualified electric vehicles and fuel cell vehicles. The credit begins to phase down in 2002 and phases out in 2005. The President's proposal would extend the tax credit at its $4,000 maximum level through 2006.

- **Tax credits for hybrid vehicles.** The credit -- available for all qualifying vehicles, including cars, minivans, sport utility vehicles, and pickup trucks -- would be:

  -- $1,000 for each vehicle that is one-third more fuel efficient than a comparable vehicle in its class -- available from 2003-2004;

  -- $2,000 for each vehicle that is two-thirds more fuel efficient than a comparable vehicle in its class -- available from 2003-2006;

  -- $3,000 for each vehicle that is twice as fuel efficient as a comparable vehicle in its class -- available from 2004-2006; and,

  -- $4,000 for each vehicle that is three times as fuel efficient as a comparable vehicle in its class -- available from 2004-2006.

RENEWABLE ENERGY

- ***Tax credit for electricity produced from wind.*** Current law encourages the production of electricity from wind, which emits no greenhouse gases, through a tax credit of 1.5 cents per kilowatt hour (adjusted for inflation after 1992). The current tax credit covers facilities placed in service before July 1, 1999. The President proposes a 5-year extension of this tax credit.

- ***Tax credits for electricity produced from biomass.*** Biomass refers to trees, crops and agricultural wastes used to produce power, fuels or chemicals. This package of credits would:

  -- **Extend current biomass credit.** This proposal extends for five years the current 1.5 cent per kilowatt hour tax credit (adjusted for inflation after 1992), which covers facilities placed in service before July 1, 1999.

  -- **Expand definition of eligible biomass.** This proposal expands the definition of biomass eligible for the 1.5 cent tax credit to include certain forest-related resources and agricultural and other sources.

  -- **Include cofiring biomass and coal.** This proposal adds a 1.0 cent per kilowatt hour tax credit for electricity produced by cofiring biomass in coal plants.

INDUSTRY

- ***Tax credit for combined heat and power (CHP) systems.*** CHP systems make effective use of thermal energy that is otherwise wasted in producing electricity by more conventional methods. To encourage and accelerate investment in CHP equipment, this proposal provides an 8 percent tax credit for investments in large CHP systems that have a total energy efficiency exceeding 70 percent and in smaller systems that have a total energy efficiency exceeding 60 percent. The credit would apply to property placed in service from 2000-2002.

Climate Change Technology Initiative: $1.4 Billion for Energy Efficiency & Renewables

The President's FY 2000 budget proposes nearly $1.4 billion for the research, development, and deployment of renewable energy technologies and energy efficient products that will help reduce U.S. greenhouse gas emissions. This represents a $347 million increase (34 percent) over FY 1999 spending (see Table 3). The President's proposed investment package covers the four major carbon-emitting sectors of the economy -- buildings, transportation, industry, and electricity -- as well as carbon sequestration (see Table 4). The following sections highlight selected programs in each of these areas of effort. The full agency programs extend well beyond what is described here.

Table 3. CCTI Funding by Agency ($ in Millions)

	FY 1998 Enacted	FY 1999 Enacted	FY 2000 Request	Change from 1999
Energy	729	902	1,124	+222
EPA	90	109	216	+107
Housing & Urban Development	0	10	10	0
Agriculture	0	0	16	+16
Commerce	0	0	2	+2
TOTAL*	**819**	**1,021**	**1,368**	**+347**

*Totals may not add due to rounding

Table 4. CCTI Funding by Area of Activity ($ in Millions)

	FY 1998 Enacted	FY 1999 Enacted	FY 2000 Request	Change from 1999
Buildings	140	172	273	+101
Transportation	245	291	377	+86
Industry	157	188	239	+51
Electricity	239	310	379	+69
Carbon Sequestration	0	14	39	+25
Management, Planning & Analysis	37	46	60	+14
TOTAL*	**819**	**1,021**	**1,368**	**+347**

* Totals may not add due to rounding.

BUILDINGS

- ***Partnership for Advancing Technology in Housing (PATH).*** PATH is a partnership between the Federal government and building industry to develop and deploy housing technologies to make new homes 50 percent more energy efficient and to make at least 15 million existing homes 30 percent more energy efficient within a decade.

- ***Energy Efficient Appliances and Products.*** Various DOE and EPA programs aim to promote the dissemination of energy efficient appliances and products:

  -- DOE will accelerate its program to establish **energy efficiency standards** for **lighting and appliances.**

  -- EPA and DOE's **Energy Star Products** program saves consumers money and reduces greenhouse gas emissions at the same time by promoting the use of energy efficient products -- everything from computers to refrigerators to central air-conditioning units. New funding will support the launch of new Energy Star product lines.

- ***Energy Efficient Commercial Buildings.*** DOE and EPA work in partnership with industry to research, develop, and deploy new technologies and practices to improve the energy performance of commercial buildings. Buildings in the top 25 percent in energy efficiency qualify for EPA's **"Energy Star Buildings"** label. Participants include the Empire State Building, the World Trade Center, and Chicago's Sears Tower.

- ***Energy Smart Schools.*** Announced in October 1998, this initiative cuts across several DOE programs and brings together public and private sector resources to cut schools' energy bills so that the savings can be reinvested in students and their education.

TRANSPORTATION

- ***Partnership for a New Generation of Vehicles (PNGV).*** PNGV is a government-industry effort that aims to develop attractive, affordable cars that meet all applicable safety and environmental standards and get up to three times the fuel efficiency of today's cars. Since 1993, great strides have been made in producing lower-cost, light-weight materials, inexpensive fuel cells, and advanced internal combustion engines for use in hybrid vehicles. The program aims to produce a prototype mid-sized family car capable of 80 miles per gallon (mpg) with a two-thirds reduction in carbon emissions by 2004. The FY 2000 budget includes $264 million for PNGV-related work, an increase of $24 million over the amount appropriated for FY 1999.

- ***Light and Heavy Trucks.*** Similar government-industry efforts are aimed at developing cleaner, more efficient diesel engines for both light and heavy trucks.

  -- By 2002, DOE aims to develop **advanced diesel cycle engine technologies** for pickup trucks, vans, and sport utility vehicles which achieve at least a 35 percent fuel efficiency improvement relative to current gasoline-fueled trucks while
  - meeting strict emission standards.

  -- By 2004, DOE, in coordination with EPA and the Department of Defense, aims to develop **engine and vehicle technologies for heavy trucks** that will increase the fuel economy to 12 mpg from the current average of 5.3 mpg.

- ***Biofuels.*** Working with the Department of Agriculture (USDA), DOE will continue its work in the biochemistry of converting wood chips, grasses, agricultural wastes, and other products into ethanol and other potentially useful fuels.

INDUSTRY

- ***Industries of the Future.*** This DOE program works cooperatively with the nation's most energy-intensive industries -- such as aluminum, glass, chemicals, forest products, mining, petroleum refining, and steel -- on developing technologies that increase energy and resource efficiency. Promising collaborative efforts include improvements in the process of making steel, pulp and paper, and other energy-intensive products that could dramatically increase efficiency, lower greenhouse gas emissions, and improve competitiveness.

- ***Industrial Combined Heat and Power (CHP) Systems.*** DOE is developing new industrial CHP systems to capture thermal heat would otherwise be wasted. These systems are expected to be 15 percent more energy efficient and 80 percent cleaner than conventional power systems and cut electricity costs by 10 percent. In addition, EPA and DOE are also working to eliminate barriers to the rapid dissemination of combined heat and power technology.

- ***Voluntary Industrial Partnerships.*** EPA will expand its industry partnership programs, such as **Climate Wise** and the **Voluntary Aluminum Industrial Partnership**, to encourage businesses to take advantage of cost-effective emissions reductions opportunities -- including emissions of the most potent greenhouse gases, such as methane, perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulfur hexaflouride (SF6).

- ***Agriculture and Forestry.*** USDA will undertake R&D and support demonstration projects aimed at both lowering greenhouse gas emissions from agriculture and forestry and reducing their vulnerability to climate change.

  --The **Natural Resources Conservation Service** will invest $3 million in projects to demonstrate and test various means of reducing greenhouse gas emissions in agriculture, such as compost-based waste-handling facilities, rotational grazing systems, and improved feed and forage systems.

  --The **Agricultural Research Service** will devote $7 million towards climate change related activities, including the development of new technology and expertise for reducing agriculture's vulnerability to a changing climate. Field experiments will seek to measure various potential effects of climate change, such as varying amounts and patterns of rainfall on forage production.

The FY 2000 budget also includes important USDA funding for developing advanced biomass energy technologies; R&D and demonstration projects for carbon sequestration; research to study the role of farms, forests, and other natural or managed lands in capturing and storing carbon; and a comprehensive U.S. soil carbon inventory (see pp. 10-12 below).

ELECTRICITY

- ***Photovoltaic Energy Systems.*** Over the past 20 years, Federal R&D has resulted in a 90 percent cost reduction in solar photovoltaics. DOE will accelerate R&D of the next generation photovoltaic cells; increase manufacturing R&D; increase research in buildings-integrated applications; and fund efforts to develop new, unconventional technologies.

  -- **Million Solar Roofs.** In June, 1997, the President announced an initiative to encourage the installation of one million solar systems by 2010, which would reduce carbon emissions equivalent to the annual emissions from 850,000 cars. DOE has received commitments for over half a million solar rooftop installations.

- ***Biomass.*** Biomass represents a tremendous renewable resource whose use can help strengthen our energy security, protect the environment, and enhance our rural economy.

  -- **Biomass Power.** DOE is testing and demonstrating biomass co-firing with coal; developing advanced technologies for biomass gasification using paper industry by-products; and developing and testing high-yield, low-cost biomass feedstocks.

-- **Advanced Biomass Technologies.** This year DOE, USDA, and other Federal agencies and private partners will launch a national partnership to develop advanced integrated biomass technologies. These technologies will enable the production of power, transport fuels, and high-value chemicals from biomass feedstocks.

- ***Wind Power.*** DOE will continue developing a next-generation wind turbine able to produce power at 2.5 cents per kilowatt-hour in good wind regions, accelerate R&D on critical components, and accelerate testing and field validation.

- ***Hydrogen.*** DOE will accelerate research on low-cost hydrogen production and storage, prerequisites to the widespread use of hydrogen as a fuel.

- ***High Temperature Superconductivity.*** DOE supports industry-led projects to capitalize on recent breakthroughs in superconducting wire technology, aimed at developing devices such as advanced motors, power cables, and transformers. These technologies would allow more electricity to reach the consumer without an increase in fossil fuel input.

CARBON SEQUESTRATION

- ***R&D for Sequestration.*** Research initiatives are being funded to find ways to sequester (store) carbon. Examples include:

  -- **Enhancing Forest and Farmland Sinks.** The Forest Service, in conjunction with other USDA agencies, will spend $6 million for R&D and demonstration projects for optimizing forest, farmland, and rangeland carbon sinks. The focus of such projects will include storage of carbon in forest soils and increased durability and use of wood products to sequester carbon.

  -- **Enhancing natural geological and oceanic processes.** DOE will support research into the feasibility of capturing and storing carbon dioxide in underground geological structures and in the deep ocean.

Other Climate-Related Investments

There are a number of additional programs for which funding is proposed in the FY 2000 budget that -- while not part of the Climate Change Technology Initiative per se -- contribute to improving energy efficiency and reducing greenhouse gas emissions. These programs include:

- ***Cleaner Coal and Natural Gas.*** The FY 2000 budget includes $209 million to support the Department of Energy's (DOE) aggressive R&D effort to develop next-generation technologies for the combustion and use of coal and natural gas. For example, research and development of two new coal combustion technologies -- integrated gasification combined cycle and pressurized fluidized bed combustion -- could lead to ultra-high efficiency coal plants with dramatically lower greenhouse gas emissions.

- ***Low Income Weatherization and State Energy Grants.*** These DOE programs facilitate energy efficiency investments at the State and local level. The **Weatherization Assistance Program**, for example, delivers energy conservation services, such as insulation, to low-income Americans, reducing energy costs for consumers, improving health and safety, and reducing carbon emissions. The total FY 2000 budget request for these two programs is $191 million -- a $25 million increase over FY 1999 appropriations.

- ***Agricultural & Forestry Conservation Programs.*** Many Department of Agriculture conservation programs have the co-benefit of reducing carbon emissions resulting from agriculture and forestry and enhancing the ability of "sinks," such as forests and farmlands, to sequester or store carbon. This includes programs such as the **Conservation Reserve Program**, the **Environmental Quality Incentives Program**, and the **Farmland Protection Program**. In general, these programs assist farmers, ranchers, and other landowners in conserving and improving soil, water, and other natural resources associated with rural land.

U.S. Global Change Research Program

The United States Global Change Research Program (USGCRP) seeks to provide a sound scientific understanding of both the human and natural forces that influence the Earth's climate system. The information produced by USGCRP's scientists is used by national and international policy makers to make informed decisions on global change issues. This multi-agency scientific research program coordinated through the National Science and Technology Council.

For FY 2000, the President is requesting nearly $1.8 billion for the USGCRP, an increase of $105 million, or 6 percent, above the amount enacted for FY 1999. Of the FY 2000 budget request, $828 million is for scientific research (up $84 million) and $958 million is for NASA's development of climate monitoring satellites and ground based observation systems. Other important USGCRP budget highlights include:

- ***Carbon Cycle Initiative.*** The FY 2000 budget request establishes a new multi-agency initiative to improve our understanding of how carbon cycles between the atmosphere, the oceans, and land. Included in this request are funds to study the role of farms, forests, and other natural or managed lands in capturing carbon. Such carbon "sinks" may provide the U.S. and other nations with new tools for offsetting greenhouse gas emissions. The initiative includes $10 million in new funding for the Department of Agriculture (USDA) and $5 million for the Department of Energy.

- ***Soil Carbon Inventory.*** The FY 2000 budget request includes $14 million (an increase of $12 million from FY 1999 appropriations) to significantly expand efforts to conduct a comprehensive scientific inventory of carbon stored in U.S. soils and to develop methods to predict how soil carbon levels would be affected by different practices and policies. The inventory will be conducted by USDA's Natural Resources Conservation Service.

- ***3-Dimensional Mapping of Forests.*** The FY 2000 budget provides funding to launch NASA's Vegetation Canopy Lidar, which, for the first time, will give scientists a three dimensional view of the Earth's forests to help determine the contribution of forests in sequestering atmospheric carbon.

- ***Consequences of Climate Change.*** The FY 2000 budget provides funding to complete a report on the first national assessment of the potential consequences of climate change on the United States. The report will identify potential impacts on key economic sectors and geographic regions, mitigation and adaptation strategies, and provide technical information for policy makers.

- ***Regional Variability.*** The FY 2000 budget request includes funding to help scientists examine climate change and variability on a regional scale. Supported in part by the Administration's new Information Technology Initiative, the funding will help improve U.S. computer capabilities to run the complex models required to understand the effects of climate change and variability at the regional level.

Agriculture and The President's FY 2000 Climate Change Budget

Farmland, rangeland, and forests can play a critical role in meeting the challenge of global warming through carbon sequestration and renewable bioenergy. In his FY 2000 budget, the President is proposing $251 million in funding for sequestration and bioenergy research, development, and deployment. This includes $105 million for the Department of Agriculture (USDA), a $50 million increase over the amount appropriated for FY 1999, and $146 million for the Department of Energy (DOE), a $59 million increase over FY 1999 appropriated funds. Highlights include:

SEQUESTRATION

Carbon sequestration refers to the storage of carbon from the atmosphere by soils, trees, crops, and other plants.

- ***Demonstration Projects and New R&D.*** The Forest Service, the Agriculture Research Service and the Natural Resources Conservation Service will launch new R&D and demonstration projects to optimize farmland, rangeland, and forest carbon sinks.

- ***Carbon Cycle Initiative.*** The FY 2000 budget request establishes a new multi-agency initiative to improve our understanding of how carbon cycles between the atmosphere, the oceans, and land. Included in this request are funds to study the role of farms, forests, and other natural or managed lands in capturing carbon. Such carbon "sinks" may provide the U.S. and other nations with new tools for offsetting greenhouse gas emissions. The initiative includes $10 million in new funding for USDA and $5 million for DOE.

- ***Soil Carbon Inventory.*** The FY 2000 budget request includes $14 million to significantly expand efforts to conduct a comprehensive scientific inventory of carbon stored in U.S. soils and to develop methods to predict how soil carbon levels would be affected by different practices and policies.

BIOENERGY

Biomass refers to trees, crops and agricultural wastes used to produce power, fuels or chemicals. It represents a tremendous renewable resource whose use can help strengthen our energy security, protect the environment, and enhance our rural economy.

- ***Biomass Power and Fuels.*** DOE and USDA will continue developing, testing, and demonstrating high-yield, low-cost biomass feedstocks; testing and demonstrating biomass cofiring with coal; and seeking to produce alternative fuels, such as ethanol, from biomass.

- ***Advanced Biomass Technologies.*** This year, DOE, USDA and other Federal agencies and private partners will launch a national partnership to develop advanced integrated biomass technologies.

- ***Biomass Tax Credit.*** The President's tax package proposes to extend for 5 years the current 1.5 cent per kilowatt hour tax credit for electricity produced from biomass. The proposal also expands the types of biomass eligible for the credit to include certain forest-related, agricultural and other resources. Finally, the package includes a 1.0 cent per kilowatt hour tax credit for electricity produced by cofiring biomass in coal plants.

Opening Remarks
Review Activities Under Energy Agreement

- The objectives of the Agreement for Energy Cooperation are to conduct collaborative activities in the fields of research, development and commercialization, to promote improved use of renewable energy and energy efficiency, to develop and analyze energy strategies and regulatory criteria, and to encourage the promotion of energy trade opportunities.

- Today, we will review activities in Annex I, Renewable Energy, and Annex II, Energy Efficiency. Most importantly, we have an opportunity to evaluate the progress of this cooperation and identify new areas of collaboration.

- An inventory of Annex I and Annex II activities reveals we have a broad scope of cooperation. We appreciate the leadership of the National Commission for Energy Savings (CONAE) and GoM Departments and agencies in working with DOE Program Offices and the National Laboratories in the development of project activities. Much of the cooperation in the U.S. involves multiple government agencies.

- Dr. Robert Dixon, Director, International Programs, Office of Energy Efficiency Renewable Energy will review the history of this cooperation and offer an overview of the project activities.

- Our ongoing bilateral cooperation under the Agreement provides the foundation to help achieve the goals of the Sustainable Energy Working Group. Today I would like to initiate the discussion on the merits of individual project activities and identify appropriate next steps in our cooperation.

- Historically, much of our cooperation has focused on research activities. This cooperation has been productive. In the future I am hopeful we can place greater emphasize on technology deployment, commercialization, sustainable energy strategies, regulatory criteria, and project finance.

- We want to encourage broad participation by both U.S. and Mexican government Departments and Agencies as we consider a Sustainable Energy Strategy. My interagency team represents a broad spectrum of human, material and financial resources to consider sustainable energy strategies and technologies.

- Finally, I am hopeful we will have time to discuss Clean Power Annex to the Agreement.

Talking Points for Discussion of Clean Energy Technologies Annex

- The U.S. Department of Energy wishes to propose to the Mexican Secretariat of Energy our intention to develop a new annex under our Agreement for Energy Cooperation in the area of Clean Energy Technologies.

- The primary goal of the new annex is to promote the use of clean energy technologies for electric power generation while eliminating environmental issues as barriers to fossil fuel production and use, and maintaining the availability and affordability of fossil fuels in both Mexico and the United States.

- Outcomes of this annex could include:
  - workshop(s) to be held in Mexico or the U.S. in the areas of clean power generation, fuel evaluation and selection, and other topics of interest;
  - possible joint project to demonstrate a 200-kW fuel cell unit in Mexico using technology developed in the DOE Fuel Cell Program;
  - possible conversion of one of CFE's existing oil-fired power plants to coal using DOE fluidized-bed combustion technology developed under the DOE Combustion Program.
  - cooperative R&D work related to DOE's Advanced Turbine Systems Program, particularly in the areas of blade materials and coatings.

AGENDA ITEM 4-- REGIONAL DEVELOPMENTS

Suggested Talking Points

Promoting Hemispheric Cooperation

- We have over the last few years developed an extensive program of bilateral energy cooperation that includes the successful application of renewable energy and energy efficiency technologies.

- We should seek to find a way to apply our successful bilateral activities to a wider, regional group.

- I would like today to explore the possibility of implementing this outreach and the mechanisms available to implement it. I would like to see us take our experiences and use them to strengthen and expand cooperation under the Hemispheric Energy Initiative which was launched with Miami Summit of the Americas.

Hemispheric Energy Ministerial Conference:

- The theme for this Ministerial will be creation of the energy infrastructure to meet the economic and environmental needs of the hemisphere in the 21st century. We have an opportunity to invest in the cleanest energy technologies possible and address our concerns about local environment problems as well as show how clean energy technology can mitigate the effects of Global Climate Change.

- We all know that fossil fuels will be our key source of energy well into the next century, but even within that context the steps we propose to take will contribute to a positive climate change story. For example, expanding the use of your gas resources will help diversify your energy needs AND reduce green house gas emissions.

- WE believe that we can approach the issue by highlighting the positive results of energy efficiency, better technology and development of a regional gas industry for both economic growth and for the mitigation of the effects of climate change. We would like the Ministers to issue a clear statement that recognizes this link and says that, for this reason, governments that may wish to take on voluntary emissions targets should be allowed to do so.

- In addition, we should find a way to institutionalize an effective dialogue with the private sector. I believe your country had expressed concern on this issue and we are hoping that we can resolve these concerns and bring all of the other governments on board on this proposal. We need to find a mechanism through which the private sector can provide

input into our Ministerial discussions without interfering with the government-to-government dialogue.

- We should also highlight the actions we have taken and will take to implement the Santiago Summit's mandate to accelerate the integration of our energy markets, as well as address the issue of establishing a permanent secretariat for the Hemispheric Energy Initiative.

AGENDA ITEM 4

REGIONAL DEVELOPMENTS

Overview:

We are seeking to encourage Mexico to partner with the U.S. to expand our cooperative activities with the countries of the Western Hemisphere in the area of Sustainable Energy Use.

There are significant potential benefits to both our countries from a partnership to promote cooperation among the governments of the Western Hemisphere, industry, universities, and non-government organizations. Projects such as the prospective Mexico-Guatemala natural gas pipeline, and the Central American electricity grid, foster the integration of energy infrastructure. They are being increasingly viewed as crucial to the Hemisphere's prosperity by providing efficient energy services to the Hemisphere's energy consumers.

With the above prospective projects in mind as well as the various bilateral energy cooperation activities underway between our two countries, we will want to encourage Mexico to work with us in promoting cooperation among our Western Hemisphere neighbors to pursue regional energy integration.

Mexico-Guatemala Pipeline and Electricity Integration:

The expansion of a natural gas market south from Mexico to Guatemala is important for a number of reasons. It will increase gas use in Southern Mexico and Guatemala where gas use is currently low, backing out less environmentally friendly fuels now in use. It may promote further expansion of the natural gas market in Central America, through the extension of the pipeline into the other countries of Central America. Additionally, it may create an opportunity to market U.S. natural gas in Northern Mexico, replacing the Mexican gas that is shipped south into Central America. Finally, since the pipeline project is envisioned as a private sector project, it will highlight the potential value to the countries involved, of having such ventures financed and operated by private firms rather than government institutions.

The countries of Central America are also in the process of interconnecting their electrical systems through the construction and operation of a interconnecting grid, financed by the Inter American Bank. It's construction and operation creates an opportunity for Mexico to ultimately tie into the grid.

While the economics for regional integration are still to be demonstrated, these opportunities will be expected to grow over time, and with it the opportunity to incorporate cleaner, more efficient energy supplies.

U.S./Mexico Energy Cooperation:

Additionally, the U.S. and Mexico have an active bilateral energy cooperation agreement in renewable energy and energy efficiency, the results of which can be used as a basis for energy collaboration among other countries of the Hemisphere. AID and EPA are also active in these areas and their activities are conducted under the umbrella of DOE's cooperative agreement.

Hemispheric Energy Initiative:

The Summit generated Hemispheric Energy Initiative (HEI) is built on two key themes; regional integration of energy infrastructures and markets, and encouraging regional cooperation in promoting clean and efficient energy use. In both cases, we can look first at what we have achieved and what we want to accomplish bilaterally, and then at how we can broaden the scope to the rest of the Hemisphere. This should be our mechanism for making the link to the Summit of the Americas and the Hemispheric Energy Initiative, and the theme for the July Ministerial and engaging the Secretariat of Energy in thinking about how our experiences can be shared regionally.

Under the HEI, we have established several working groups to develop cooperative activities on sustainable energy. These working groups include clean power options, regulatory cooperation, petroleum, natural gas, energy efficiency, rural electrification and climate change information exchange. Our bilateral energy cooperation includes projects that are applicable to the cooperation in these groups. We should be able to commit to using the results from our cooperation to provide direction for some these groups.

Mexico has not taken on a leadership role in any of these working groups but has criticized the lack of progress. We should aim to get them more directly involved in all activities and encourage them to take a more productive role in defining new projects and activities for the Initiative. The process to prepare for the Secretary's Hemispheric Energy Ministers Conference provides an opportunity to more directly involve Mexico.

The theme for the Conference will be creation of the energy infrastructure to meet the economic and environmental needs of the hemisphere in the 21st century, including regional integration, open markets and development of the natural gas markets. We will seek to have the Conference make a clear statement about our commitment to creating the cleanest, most efficient energy systems possible and to make the link between clean energy policies and climate change. We would also like to get an acceptance of the idea that countries should be able to make voluntary commitments to greenhouse gas emissions targets. Finally, we hope to get agreement to the establishment of a Business Advisory Forum that will allow for more direct interaction with the private sector in the HEI.

We will need to find a way to get Mexico to support a role for the private sector in the Hemispheric Energy Initiative. Mexico has been the most resistant to such an effort. A draft of the Terms of Reference for a Business Advisory Board has been prepared and is being reviewed within DOE.

Meeting with Luis Tellez, Mexico's Secretary of Energy, Mexico City

Setting: Secretary Tellez' Office, April 15, at 1:00 p.m.

Background:

Luis Tellez was named Secretary of Energy in November 1997. Prior to that he was President Zedillo's Chief of Staff, a position he held from the beginning of the President's term in 1994. Tellez was educated in Mexico and the U.S. obtaining a degree in economics from the Autonomous University of Mexico and a PHD in the same field from the Mass. Institute of Technology. Most of his career has been in the public sector with positions in the now defunct Department of Programming and Budget and in the Department of Agriculture.

Tellez is a strong proponent of private sector activities in energy. In January of this year, he submitted the Administrations proposals to amend the Constitution to allow private firms to sell electricity directly to the public. He is pushing hard to get these changes adopted before the end of this Presidency. Tellez also supports removal of the tariff on natural gas but this issue is controlled by the Ministry of Trade and Investment. Tellez has also sought to help PEMEX sell off its secondary petrochemical plants.

You may wish to discuss DOE's plans for the Hemispheric Energy Ministerial Conference this summer. Secretary Richardson has sent a letter to Tellez noting the importance of the two secretaries staying in close touch as we prepare for the Conference (copy attached).

The theme for the Conference will be creation of the energy infrastructure to meet the economic and environmental needs of the hemisphere in the 21st century, including regional integration, open markets and development of the natural gas markets. The Conference will make a clear statement about our commitment to creating the cleanest, most efficient energy systems possible. We would like to see the Conference issue a statement that makes the link between progress on clean energy and climate change.

We will need to find a way to get Mexico to support a role for the private sector in the Hemispheric Energy Initiative. Mexico has been the most resistant to such an effort. A draft of the Terms of Reference for a Business Advisory Board has been prepared and is being reviewed within DOE.

MEETING WITH SECRETARY TELLEZ

Suggested Talking Points

- It is a pleasure for me to be able to lead this first meeting of the Sustainable Energy Working Group. I believe these meetings will give our ministries the opportunity to exchange views and ideas on energy issues related to climate change. I

- I would like to discuss with you our plans for the Hemispheric Energy Ministerial Conference.

- The theme for this Ministerial will be creation of the energy infrastructure to meet the economic and environmental needs of the hemisphere in the 21st century. We have an opportunity to invest in the cleanest energy technologies possible and address our concerns about local environment problems as well as show how clean energy technology can mitigate the effects of Global Climate Change.

- We all know that fossil fuels will be our key source of energy well into the next century, but even within that context the steps we propose to take will contribute to a positive climate change story. For example, expanding the use of your gas resources will help diversify your energy needs AND reduce green house gas emissions.

- We believe that we can approach the issue by highlighting the positive results of energy efficiency, better technology and development of a regional gas industry for both economic growth and for the mitigation of the effects of climate change. We would like the Ministers to issue a clear statement that recognizes this link and says that, for this reason, governments that may wish to take on voluntary emissions targets should be allowed to do so.

- In addition, we should find a way to institutionalize an effective dialogue with the private sector. I believe your country had expressed concern on this issue and we are hoping that we can resolve these concerns and bring all of the other governments on board on this proposal. We need to find a mechanism through which the private sector can provide input into our Ministerial discussions without interfering with the government-to-government dialogue.

- We should also highlight the actions we have taken and will take to implement the Santiago Summit's mandate to accelerate the integration of our energy markets, as well as address the issue of establishing a permanent secretariat for the Hemispheric Energy Initiative.

- On other matters, I wish you success in your efforts to promote an expanded role for the private sector in electricity, but I understand that there is resistance to your proposal.

The Secretary of Energy
Washington, DC 20585

April 13, 1999

Mr. Luis Tellez K.
Secretario de Energia
Insurgentes Sur No. 890
17 Piso
Mexico, D.F. 03100

Dear Luis:

Greetings from Washington! I hope all is well with you and that your many initiatives are making progress. I appreciate your sending Under Secretary Chavez here with your message on electricity last month.

I am pleased that my Deputy, T. J. Glauthier, and Under Secretary Chavez will be able to lead the first meeting of the Sustainable Energy Working Group on Thursday. These meetings will give our ministries the opportunity to exchange views and ideas on energy issues related to climate change. I hope you will have an opportunity to meet with T. J. during his time in Mexico.

I also want to provide you an update on my plans for the Hemispheric Energy Initiative Ministerial Conference this summer. I appreciate having the opportunity to host the conference this year. I believe it is important that we stay in close touch as the Conference approaches.

As you and I have discussed, the theme for this Conference will be creation of the energy infrastructure to meet the economic and environmental needs of the hemisphere in the 21st century. In this context, I would like the discussions to focus on regional integration, open markets, and development of the natural gas markets. The Conference should give us the opportunity to make a clear statement about our commitment to creating the cleanest, most efficient energy systems possible. We can highlight the progress we have made together in these areas, including the work of the Sustainable Energy Working Group meeting this week. I would like to see the Conference issue a statement that makes the link between our progress on clean energy and climate change.

I also believe we should find a way to institutionalize an effective dialogue with the private sector. As has been discussed before, we need to find a mechanism through which the private sector can provide input into our Ministerial discussions without interfering with the government-to-government dialogue. I would like to see a Business Advisory Board established this summer.

Finally, we should highlight the actions we have taken and will take to implement the Santiago Summit's mandate to accelerate the integration of our energy markets, as well as address the issue of establishing a permanent secretariat for the Hemispheric Energy Initiative.

T. J. will be able to discuss preparations for the ministerial with you and your staff. I know members of his delegation will also meet with Lourdes Melgard to go over our plans in greater detail. I look forward to seeing you when I am next in Mexico.

With warm regards.

Yours sincerely,

Bill Richardson

Bill Richardson

MEMORANDUM FOR THE DEPUTY SECRETARY

From: Calvin Humphrey
Acting Assistant Secretary for Policy and International Affairs

Subject: Breakfast Meeting with U.S. Industry Representatives

Setting: Mexico City, Charge D'Affairs' Residence, Friday morning, April 16, 1999

Participants: Don Hamilton, Charge D'Affairs
David Pumphrey, Director, Office of the Americas
Kathy Deutsch, Staff, Office of the Americas
Kathy Simonds, U.S. Embassy, Mexico City
Industry Participants (list to be provided by Embassy)

Background:

U.S. companies look upon Mexico as a major opportunity for business. One of the key areas for these opportunities is in the energy sector, particularly in energy services (oil and gas, and construction) and in the ownership and operation of natural gas facilities and electric generating plants. Early this year, the Zedillo Administration submitted proposed legislation to restructure the electricity sector and ultimately privatize generation and distribution almost completely, while retaining the transmission system under state ownership but setting it up for "open access" operation. The proposed legislation, not surprisingly, has run into some heated opposition.

Other important opportunities have also developed but many companies have commented on the slow, bureaucratic pace they have confronted. This is particularly true in electricity, where efforts to promote increased cross-border electricity trade through construction and operation of interconnections have been frustrated by unclear rules and lack of decision-making.

Another apparent opportunity which has not materialized to any significant degree is the ability to bring U.S. natural gas into Mexico. While natural gas suppliers now have the right to market gas directly to Mexican end users, they are subject to an import tax, currently set at three percent. This tariff has effectively limited this apparent opportunity and efforts to negotiate accelerated removal of the tariff have not been successful.

For further details, see the Background paper.

BREAKFAST MEETING WITH U.S. INDUSTRY REPRESENTATIVES

SUGGESTED TALKING POINTS

- Thank you Charge Hamilton for the opportunity to meet with the members of this Chamber.

- I am pleased to have this opportunity to meet with you and to share views on issues of common interest.

- Mexico has made some important strides in defining and developing new opportunities in the energy sector for private industry.

- Allowing private sector participation will help to establish a competitive energy market in Mexico that will help keep energy prices at reasonable levels - an important goal for all governments to support. I understand that U.S. industry interest in Mexico continues to be strong.

- Most recently, the Mexican Administration has submitted important Constitutional and legislative proposals to restructure and ultimately privatize the electrical sector. This is a major initiative milestone which, I understand, has been received with mixed reactions. I would like to hear your views about it's chances for adoption and when this may be achieved.

- I also understand that some of you continue to be frustrated by the pace of decision-making, particularly in the electricity sector, and I would like to hear more about this.

- Finally, I want to hear your views on doing business here in Mexico, your successes and your concerns.

- One issue that we have tried to resolve, unsuccessfully, was the accelerated removal of the tariff on imported natural gas, now at three percent. This tariff will phase out by year 2002. In your view, is this issue still important for us to push on?

INVITED

Guest List for Breakfast for Deputy Secretary Glauthier and U.S. Energy Executives, April 16, 8:00-9:30 am, the Charge d'Affaires Residence, 1115 Virreyes, Lomas de Virreyes, Mexico, D.F.

The Charge
Deputy Secretary Glauthier+3
ECON Bill Brew
FCS Tom Moore
Andy Wylegala, FCS Officer

OPTIONAL FORM 99 (7-90)

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U.S. Department of Energy

Hemispheric Energy Initiative Update

May 1998

In December of 1994, at the largest summit ever to take place in the Western Hemisphere and the first such gathering in 27 years, President Clinton and the 33 democratically elected Heads of State of Western Hemisphere met at the first Summit of the Americas in Miami, Florida. The Summit provided the opportunity for the region to solidify the strong political and economic transformation sweeping the Western Hemisphere. On energy, the Summit's Plan of Action specifically provides the political guidance to initiate cooperation on the development of consistent policy framework and information exchange to facilitate private investment in clean energy production and use.

FRAMEWORK FOR HEMISPHERIC COOPERATION

Summit Action Plan

At the 1994 Miami Summit, 34 Western Hemisphere Heads of State signed the Summit of the Americas Action Plan. The Plan included two action items addressing energy -- action item 12, Energy Cooperation, and action item 21, the Partnership for Sustainable Energy Use. These initiatives are the basis for the countries commitment to promote economic growth and environmental protection.

Hemispheric Energy Symposium/First Hemispheric Energy Ministers Meeting

The U.S. Department of Energy and Venezuela's Ministry of energy and Mines agreed to host the Hemispheric Energy Symposium/ the First Hemispheric Energy Ministers Meeting in October of 1995 in Washington. During the Symposium, public and private energy representatives presented national energy policies, discussed regional issues and steps for implementing the Action Plan. The participants identified over 40 collaborative actions as next steps for the *Hemispheric Energy Initiative.*

To ensure implementation of these actions, each Minister designated a representative to an implementing body which is the Hemispheric Energy Steering Committee. The committee's members are drawn from national governments, and they periodically meet along with representatives from several multilateral and international organizations.

Second Hemispheric Meeting of Ministers

A second hemispheric meeting of Energy Ministers was held in Santa Cruz de la Sierra, Bolivia in July of 1996. The Ministers confirmed the key role of the energy sector in the achievement of sustainable development and recognized the need to promote private investment in the energy sector. Additionally, the Summit participants recognized and endorsed the work of the Hemispheric Energy Steering Group in advancing sustainable development in the Americas.

Third Hemispheric Meeting of Energy Ministers

The Third Meeting of the Western Hemispheric Energy Ministers took place on January 15-16, 1998, in Caracas, Venezuela. Twenty-six countries, including the United States, were represented. The meeting was co-chaired by the Department and the Venezuelan Minister of Mines and Energy.

At the Caracas meeting the Energy Ministers agreed to: (1) the promotion of policies that facilitate trade in the energy sector; (2) promotion of policies facilitating the development of infrastructure; (3) achievement of regulatory frameworks that are transparent and predictable; (4) promotion of local and foreign private investment; (5) expansion of rural electrification; and (6) activation of the working group on climate change and the environment.

Coordinating Secretariat

The Ministers also agreed to the establishment of a coordinating secretariat to facilitate cooperation under the Hemispheric Energy Initiative. This Secretariat is composed of representatives from Venezuela, the United States and OLADE. The Secretariat functions on a virtual basis, relying heavily on electronic communication to coordinate the activities of the Initiative. Venezuela serves as the focal point for the Coordinating Secretariat.

The Second Summit of the Americas

The principal themes of the Second Summit of the Americas held in Santiago, Chile this past April were democracy, poverty alleviation, and regional integration. On energy the Plan of Action contains commitments to further the integration of energy markets and to exchange information on climate change related issues.

HEMISPHERIC ENERGY COOPERATIVE INITIATIVES

The following is an overview of the actions of under the Hemispheric energy Initiative since December of 1994 to further energy cooperation and partnerships for sustainable energy use.

Developing Markets for Sustainable Energy

One of the most important aspects of the Hemispheric Energy Initiative has been cooperation on the strengthening of market mechanisms that will support sustainable development goals of the Miami Summit. Efforts have included support for the creation of markets for new technologies and efficiency, development of strategies for the integration of natural gas markets, and discussion of regulatory frameworks to support private sector investment.

Making Energy Production and Consumption Cleaner

The Summit governments recognize the importance of cooperation in the search for, and application of, clean technologies. Through its working groups, the Hemispheric Steering Committee's efforts include the promotion of clean energy technology in the restructuring of electric power markets, developing national action plans to phase out lead as a gasoline additive, establish a Hemispheric Environmental Forum for Petroleum and Gas, and efforts to promote alternative fueled vehicles in heavily polluted cities.

Using Energy More Efficiently

The countries of the Hemisphere have a wide range of experiences, policies, strategies and programs to improve the efficiency of energy use and to stimulate investment in more efficient technologies. A major objective of the cooperative efforts under this initiative has been to establish a framework for sharing experiences, therefore benefiting from the efforts of individual countries. A key body of work has been the coordination and standardization of energy efficiency standards and testing procedures for the Hemisphere.

Meeting the Energy Needs of Rural Communities

Access to dependable and reasonably priced energy is critical in providing basic health services, education and employment opportunities. Both the Miami and the Santiago Summits recognized rural electrification as one of the most important energy issues for the Hemisphere. Within the Hemispheric Energy Initiative a working group was established to promote and accelerate the deployment of economically sustainable rural electrification solutions to increase energy services in rural and indigenous communities.

Sustainable Energy Use and Climate Change

Sustainable economic development requires hemispheric cooperation in the field of energy. Consistent with the Framework Convention on Climate Change governments and the private sector are working together to promote increased access to reliable, clean, and least cost energy services. At the Third Energy Ministers Meeting it was agreed to activate a working group on Climate Change in order to exchange information and analyze cooperative activities.

KEY MILESTONES

December 1994, *Summit of the Americas Miami, Florida*

October 1995, *The Hemispheric Energy Symposium/First Hemispheric Energy Ministers Meeting, Washington, D.C.*

February 1996, *First Hemispheric Energy Steering Committee Meeting in Santiago, Chile*

July 1996, *First Hemispheric Conference of Hemispheric Energy Regulators*

July 1996, *Second Hemispheric Energy Ministers Meeting, Santa Cruz, Bolivia*

December 1996, *Hemispheric Summit on Sustainable Development, Santa Cruz, Bolivia*

January 1998, *First Energy Business Forum of the Americas, Caracas, Venezuela*

January 1998, *Third Hemispheric Meeting of Energy Ministers, Caracas, Venezuela*

April 1998, *Summit of the Americas II Santiago, Chile*

CALENDAR OF EVENTS

Summit Steering Committee Meeting

The next Summit of the Americas Energy Steering Committee is scheduled for May 10, 1998, In Trinidad & Tobago.

Meeting of Energy Minister

The Fourth Hemispheric Meeting of Energy Ministers will be held in Mexico during 1999.

CONTACT INFORMATION

Additional information on any of the subjects addressed within, and other energy related Summit of the Americas activities, in which the Department has been involved, can be found on the Internet or by contacting the Department of Energy Headquarters.

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