ENERGY SECTOR MODERNIZATION TASKS 2006 - 2012

August, 2006
1. Presentation

- Energy is a strategic sector for Mexico. It is the foundation of our economy, an important factor in our relations with the globalized world, and has the capability of performing a priority function in driving our future development.

- It is so significant for Mexico, that the energy sector cannot be treated in isolation from the rest of the economy. In fact, in large measure the development of the sector explains the behavior of our basic economic variables.

- In the last 4 or 5 years, Mexico has experienced the most favorable international economic situation recorded in the modern history of the country.

- Because of oil high prices, oil export revenues in the Fox Administration will amount to more than 135 billion US dollars. More than twice that enjoyed by President Zedillo’s government. This means 70 billion US dollars of additional foreign currency generated directly by the energy sector during this six-year administration.

- Based on this oil bonanza, the Federal government has promoted PEMEX’s use of the mechanism known as Pidiregas in order to finance practically all of the productive investment that Congress authorized for Pemex during recent years (Pidiregas dfebt is now at US$43 billion). If we also take into account the unprecedented increase in remittances from Mexicans working abroad (US $60 billion); the substantial savings on the service of the public debt because of having enjoyed the lowest interest rates that have prevailed in the last 48 years (US $35 billion); and the effect on our trade balance as a result of the robust, sustained expansion our main trade partners have recorded (US $100 billion), we are talking about extraordinary funds, in foreign currency, of more than $300 billion US dollars.

- These elements largely explain the macroeconomic equilibrium attained. All three derive from external factors over which we have no direct influence. These truly extraordinary amounts were not available in previous administrations. The question we must ask ourselves is: What did the Fox administration do with this extraordinary flow of foreign currency that we received during this six-year government?
1. Presentation

- Unfortunately, these revenues were channeled basically to consumption. The Federal government captured the entire increase in revenues resulting from the higher prices of energy as taxes and duties, such that PEMEX’s fiscal contribution this year will be $70 billion US dollars, and the amount accumulated during the government administration will reach more than US $250 billion at the end of the year. This unprecedented amount was used in large measure for the current expenditure of the Federal government; it was not used for public investment, or for stabilization reserves or in productive activities that would allow us to maintain that level of revenues when the oil price situation turns unfavorable.

- Except for the funds channeled to relevant social programs, using the extraordinary proceeds for current expense has been a lost opportunity. The serious accidents experienced by many communities that border on PEMEX pipelines and other facilities are derived from the lack of maintenance of the oil installations.

- It is important to highlight that the Fox administration has committed the future revenues from oil, because in the next 6 years we will have to assign at least $30 billion US dollars to payment of the Pidiregas debt. This unrecorded debt already comes to $50 billion US dollars. This financial scheme has been abused to the point of having exhausted it. Simultaneously, we will have to address other liabilities of the energy government agencies that also grew to critical levels, fundamentally the labor liabilities of PEMEX, CFE and Luz y Fuerza del Centro that all together come to more than 55 billion US dollars, equal to 7 percent of Mexico’s GDP.

- These agencies are an instrument of the State for contributing to sustainable development of the country. They were designed to manage the hydrocarbon resources stored in the subsoil and to supply the electric power, fuels and basic raw materials our industry needs, in an efficient, competitive manner. And not just today’s needs, but those of future generations as well. Today, it seems that their sole function is the support of public finances.
2. Oil Production and Exports: Production-Reserves Ratio

- If we analyze the impact of the strategy adopted in recent years of maximum petroleum exploitation adopted in recent years, we must conclude that the outcome has been the exhaustion of proven reserves to critical levels. They have fallen 52% in the last 5 years, which means that they are only enough for 11 years at current production rates, when in year 2000 the production-reserves ratio was 23 years. The reserves replenishment rate with respect to extraction was only 18% on average in the last six years.

- Production of the super-giant Cantarell field has begun to decline irreversibly. We must remember that in 2005 this field still represented 60% of national production. In the best of cases, Cantarell’s production will drop by 500 thousand barrels per day by 2008; within two years. In such a short term, it is extremely difficult to have additional production available from other fields in order to compensate for this already announced fall in the Cantarell production.

- Crude volumes for export also reached their maximum level two years ago, in 2004. And if we analyze the oil products trade balance, including gasoline, diesel and fuel oil, we reach the conclusion that net exports of liquid hydrocarbons began to descend since 2003. This trend seems to be irreversible.

- We urgently need to design and begin applying a National Strategy for reserves, directed not just to the discovery of new fields, but also to the use of more efficient methods of utilization that make it possible to recover a larger proportion of the hydrocarbons stored in the subsoil, and from other deposits that can be attractive at current crude price, thereby converting fields with reserves currently classified as probable, into proven reserves.

- No matter what the scenario, great effort and substantial resources are urgent in order to reactivate mature fields, increase the production of marginal fields and develop new ones to compensate for the decline at Cantarell. In this context, it is of the utmost importance to assess the oil potential of the geological structures located in deep waters of the Gulf of
2. Oil Production and Exports: Production-Reserves Ratio

Mexico. We recommend the elaboration of an Integral Strategic Plan to confirm the real existence of oil deposits, and to do so seriously, with the greatest technical meticulousness. The oil future of our country depends on this great project.

First Task: State Energy policy

- We recommend establishing a National Council for Planning and Governance of the Energy Sector that will be participative, transparent and open. This council would be responsible for formulating a public policy on energy. Not Government, but State policy. With the contribution of experts from all areas of energy, the objective being to avoid the industry continuing to be a “fiscal deposit”; Which would establish the crude oil production and reserves replacement goals through realistic investment projects, with funds guaranteed for several years; And which conceives of the energy sector as a whole, so that we do not commit nonexistent volumes of gas for electrical generation without at the same time promoting natural gas utilization projects that ensure the supply Mexico requires.

Second Task: Strategic Associations

- The promotion of strategic associations with international companies, both public and private, will allow Pemex to comply fully with oil production goals and turn the energy industry into the indispensable driving force to accelerate the development of the country. The cases of STATOIL in Norway and PETROBRAS of Brazil are examples of successful state companies that develop appropriate technologies and meet aggressive exploration and production goals through international alliances.

- To achieve this, agreement between the executive and legislative branches is indispensable.
3. Energy Security: The Case of Natural Gas

- The topic of natural gas production and importation must be approached from a prospective of supply security for the country.

- Because Mexico is a net exporter of oil, we have not been concerned with the topic of energy security. We are used to thinking that this is a focus for traditional importers. The growing dependence on foreign sources of supply to meet our needs for natural gas, however, can endanger its availability for strategic uses, where in many cases practically speaking, it cannot be substituted, such as combines cycle power generation.

- The country’s vulnerability in terms of natural gas supply will remain at least for the rest of this decade: Around one-third of the gas sold domestically is imported by pipeline from the United States.

- In the mid-nineties, the Mexican government began a process of gradually opening up the natural gas market for the purpose of introducing healthy competition into the pipeline transportation, storage and distribution phases of gas. This new regulatory context is the one that has allowed the CFE to contract the long-term importation of liquid natural gas, to later process it through private re-gasification plants that are under construction in Altamira and Ensenada. We must remember that CFE is already the principal gas-consumer company in the entire North American market - including the United States and Canada.

- It is important to advance in the design of a new framework of rules and regulations for natural gas with the purpose of establishing the terms and conditions of gradual, orderly participation by private and social investment in production of dry non associated natural gas.

- The investment and production goals Pemex has announced for basins that produce non associated dry gas surpass $5 billion US dollars, just for the first 3 years of the next administration. Notwithstanding, the expected production increase resulting from this investment effort is barely one billion cubic feet per day. This figure will have to be doubled at least, in order to strengthen the country’s sovereignty in relation to gas supply security.
3. Energy Security: The Case of Natural Gas

**Third Task: Natural Gas.**

- We recommend establishing an interdisciplinary group of professionals related to the natural gas industry, assigned to design forms participation of social and private investment - exclusively Mexican in a first stage - in the exploration and production of non-associated gas. There must be a secure supply of natural gas in order to cover the estimated gap in domestic production and guarantee the supply of this strategic input for Mexico’s development.
4. Restructuring of the Electric Sector

- Electric power is the most important, generalized input of the Mexican economy. Its price, quality and supply reliability determine our economy’s level of competitiveness like no other factor does. Looking to the long term, thinking about the country we want to have around the year 2020, we have to design the structure of a strong, competitive electric industry capable of driving the rest of the economy toward the most advanced markets.

- If we want lower electric power rates, we need to generate our own electric power at lower costs, transmit it throughout the national territory efficiently, and distribute it to the smallest user competitively. Quality and security of supply are also critical for competitiveness.

- It is absolutely necessary to provide legal security for investments made by independent energy producers, and to attract bigger investments that make it possible to create a competitive, efficient electric power generation market. Every opportunity to generate cheaper, high quality electric power must be encouraged. Control of the electric industry in the hands of the State is guaranteed by the centralized ownership and operation of the national transmission system.

Fourth Task: Electric Sector

- We recommend a restructuring of the electric sector based on three main components: 1) creating a competitive electric generation market that ensures ever lower costs and permits participation by all the sectors through distributed energy systems; 2) Maintaining state control of the national transmission network, favoring access by the most efficient producers; and 3) Promoting regulated competition in the distribution and commercialization phases, thinking always of the benefit to the end consumer.
4. Restructuring of the Electric Sector

- We recommend placing the design of the strategies for operating these facilities in the hands of local governments where the power generation and distribution assets are located, for the benefit of the producer regions. This policy would drive development of the south-southeast part of the country: Tabasco, Chiapas, Veracruz, but also Guerrero, Colima and other states that are big energy resource producers and that until now have not been included in the direct benefits they generate for the rest of the country.
5. Reinforcement of State-owned energy sector companies.

The challenges our country will have to face in relation to energy require strong, competitive government-owned companies. We are convinced that, under current conditions, only the Mexican State can guarantee their operation and soundness for the benefit of the country. That is why radically reinforcing and modernizing these companies is indispensable.

- It will be indispensable to turn these Government-owned Energy Agencies into real companies: with autonomous management, without interference by other interests; with independent, professional corporate government bodies; transparent management of funds and a rendering of accounts to the entire population. Congress has already received bills to make structural changes in the organization and operation of the sector’s government-owned companies, to direct them toward these objectives.

**Fifth Task: Government-Owned Companies.**

- Two directions are required for reinforcing the government-owned energy companies: one fiscal and the other autonomous operation.

- We recommend finalizing and approving the proposal of a new tax regime for Pemex and for CFE. The bill recently approved by both houses, of a new tax formula for Pemex, not published yet by the executive branch, represents an advance, but does not yet allow it to put its finances in order again. We need to move decisively in the direction of effectively attracting profit from the utilization of hydrocarbons because they are nonrenewable resources, and tax the other productive activities of Pemex and CFE like any other industrial activity by virtue of a system that is equivalent to that of the Income Tax.

- We also recommend converting the sector’s government agencies into real government-owned energy companies; enacting a new
5. Reinforcement of State-owned energy sector companies.

The organic law that rules these state-owned companies is designed to allow them to compete in international markets, permitting them to explore and produce not just in Mexico, but beyond our borders as well. With autonomous operation, professional, independent boards of directors that respond to the mandate to maximize Mexico’s energy wealth.

- It is important to consider the advisability of distributing shares representing the capital of the government-owned energy companies to all Mexicans, because they are the real owners of Mexico’s oil wealth, as the most effective public scrutiny mechanism to make sure that the mandate to manage the sector to the benefit of the entire population is performed punctually.

- The indispensable complement of this bill for the overhaul of government-owned companies consists in the design of a legal framework and a new institutional architecture that are compatible with the energy policy and that guarantees the governance of the oil industry and of the electric industry, and directs them to the proposed objectives. The rule of the State over energy resources must also be modernized.

- Substantial changes to the regulatory framework of the sector are also required, as well as the creation and strengthening of independent regulatory entities. The presence of new participants in the sector demands that the Energy Regulatory Commission (CRE) be reinforced and that a new National Petroleum and Gas Office be created for sound management of the country’s oil and gas resources.

**Sixth Task: Regulatory Context.**

- The sixth task refers to the establishment of a new legal context for the sector that effectively applies the state’s energy policy, oversees our renovated public companies in their compliance with performance agreements to increase productivity, and provides for the equitable distribution of benefits that derived to the Nation from this strategic activity.

- The presence of new participants in the sector demands that the Energy Regulatory Commission be reinforced and that a new National Oil and Gas Office be created for sound management of our non-renewable resources. As important as the organization structure that is adopted, will be having the appropriate institutions and regulations.
7. Productivity of the Energy Sector's Government-owned Companies

- The number of people employed by the government-owned companies has increased significantly in recent years, particularly in the case of PEMEX. Furthermore, operating expenses as well as administrative expenses have grown at a pace faster than inflation and faster than the companies' level of activity.

- Labor liabilities of the sector's three companies also show high growth rates. And in no case have they been properly funded to insure the payment of pensions in the future. These trends must be reverted in the interest of increasing productivity, and austerity measures must be adopted that make it possible to lower the current expense, thereby releasing additional funds for productive investment.

**Seventh Task: Productivity Increase.**

- We recommend applying an extensive austerity program in the expenditure of Pemex, the Federal Commission of Electricity and Compañía de Luz y Fuerza del Centro, as well as undertaking a variety of initiatives to increase productivity. Do more with what we already have. Using the available resources with flexibility, to mobilize them toward the most productive projects.

- The austerity policy must encompass all the significant items of the entities' current expense and include the goods and services procurement contracts used for operating and maintaining facilities, as well as the costs of the investments the sector's government-owned companies make and set in motion. New contract models have to be adopted for works and for provision of the specialized services the sector's companies require, with the aim of achieving a commitment by the contractors and specialized suppliers to obtain productivity goals that will make us more competitive.

- The savings obtained would be channeled into productive investment of the same entities that create them.
8. Links Between the Energy Sector and the Domestic Industry

- The growing imports of oil products and petrochemical precursors for industry are the result of the oil industry’s chronic under-investment in refining activities and petrochemistry. This deficiency prevents adding value to our production of hydrocarbons, with the multiplying effect of this on employment, industrial production and the generation of taxes that would derive from such greater production.

- Mexico’s refining capacity has not grown for two decades. Because of this, we import more than a quarter of the country’s needs of products, which resulted in a trade deficit of these products for almost $5 billion dollars last year. During that same year, PEMEX Refinación channeled subsidies into the sale of gasoline and diesel equivalent to the investment cost of new refining capacity that would have substituted these imports permanently. The current administration’s explanation is that the refining and petrochemistry projects cannot cover the international reference (opportunity cost) prices of their oil input. The evolution of the international markets during the last years was a unique opportunity to adjust the current price formulas, align domestic prices to those that really prevail abroad and correct this situation. But as in so many other areas of public policy, the opportunity was just allowed to go by.

- For similar reasons, the domestic chemical industry that has the fundamental elements necessary to be one of the country’s most competitive sectors, also reports a trade balance deficit of more than $9 billion dollars and has experienced the disintegration and breakdown of its production chains.

**Eighth Task: Stimulation of the Production Chains**

- It is indispensable, through direct assignment of budget funds and the arrangement of strategic alliances in the sector, to promote the construction of at least 3 new, high-conversion, refining
modules, with capacity of 150 thousand barrels per day each, until attaining self-sufficiency in high quality refined products. The investment required to achieve this goal is on the order of $10 billion US dollars.

- A similar amount is what is required to reconfigure and modernize the existing refineries in order to produce gasolines and diesel that are ultra low in sulfur, to rehabilitate pipelines and storage and distribution terminals, as well as to stimulate new investments in infrastructure necessary to operate the new refineries.

- In the petrochemistry sector, the value chains of our chemical industry must be encouraged to integrate, guaranteeing long-term supply at competitive benchmark prices of basic input and raw materials produced by PEMEX.
9. Energy Prices as the Basis of our Economy's Competitiveness

- In relation to prices of fuels, raw materials for industry and electric rates, there is a clear misalignment of domestic in relation to international, prices. In good measure, this situation is a result of the uncompetitive tax system PEMEX and CFE are subject to. It is not valid to propose a reduction in energy prices without establishing how. Prices can be subsidized artificially for a time, but this would send us back very quickly to the black hole of inflationary public finances.

- It will not be possible to lower energy prices permanently without far-reaching reform. Lastly, it is the unit costs of the gas, oil and electricity, and how the benefits derived from their production are distributed, that must determine energy prices in Mexico.

**Ninth Task: Competitive Prices.**

- In a first stage, on the basis of the prevailing managed prices mechanism, we recommend adopting a price policy for our energy products that, under the principle of their cost of opportunity for the country, insures competitive costs for the industry, aligns consumer prices with international prices - making explicit the taxes that prevail on these products- and encourages the integration of the production chains inside Mexico and not abroad.

- In a second stage, the sector would be able to establish more dynamic mechanisms regulated by the competition of different supply sources so that prices stay competitive in the long term.
10. - Energy and the Environment

- The problems of maintaining the sector’s facilities and pipelines, as well as of adverse effects on the environment, require permanent, not crisis, solutions. The energy infrastructure has to be kept in good condition to avoid a future repetition of the natural and social disasters that their deterioration has caused.

- Climate change is a phenomenon with serious consequences for our country. In the coastal states we are at risk of experiencing devastating climate events, and even lose part of our coasts due to the rise in sea level. International comparative studies attribute to Mexico, 3% of the total effects of greenhouse gas emissions worldwide, and classify us as the biggest source of emissions in all of Latin America.

- Therefore, we have to work with the international community to stop global warming, drastically reducing the volume of polluting emissions that we generate. And it is the energy sector that directly or indirectly contributes with almost all the polluting emissions. It is crucial to transform it so that the products and processes of our energy industry will be compatible with care of the environment.

- At the same time, Mexico is rich in potential renewable energy sources. We have the highest solar index in North America; regions with great wind power potential like La Ventosa; geothermal fields, rivers and coasts, biomass and idle thermal capacity. The capacity of our countryside to produce ethanol from sugar cane and other farm products is outstanding. Sustainable development of the energy sector must have renewable energy sources as its backbone, an indispensable strategy for ensuring a clean, reliable, secure energy supply for the Mexico of tomorrow.
10.- Energy and the Environment

Tenth Task: Environmental Safety and Protection

- We must be inflexible in overseeing and supervising safety in all public and private energy sector facilities and plants. To do this, the necessary budget must be allocated in PEMEX for proper infrastructure maintenance, thereby reinforcing the environmental safety of the industry.

- Along this line, putting into motion all the viable options for electric generation from renewable sources is absolutely essential. As soon as possible, we must diversify the country’s primary sources of energy. For this purpose, we recommend expanding the geothermal fields; using the biogas generated by garbage and the biomass, such as cane bagasse, expanding generation by mini-hydraulics as well as the large hydroelectric plants, building large eolian energy fields in Oaxaca, Zacatecas, Hidalgo and Baja California, and investing in technological R&D to take advantage of the tidal energy potential on our coasts, solar energy, and any clean form of micro-generation that allows users to generate electric power for their own consumption and place their surpluses in the domestic transmission network.

- It is likewise necessary to bolster the energy saving and efficiency programs by assisting industries with loans to lower their energy consumption and reduce their polluting emissions, and by issuing Mexican official standards that improve the energy performance of home appliances, of machinery and of transportation equipment, without increasing costs. We recommend stimulating joint generation in industries that have usable thermal capacity and improving the quality of our fuels for transportation and industry.
11.- Conclusions

- To sum up, what our energy sector needs is a policy of reinforcement of government-owned companies that should be pragmatic, global and unbiased. With mechanisms that ensure effective distribution of the profit and benefits of the sector to the advantage of all Mexicans.