Environmental Degradation and Productive Transformation in Mexico: The Contradictions of Crisis Management

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ABSTRACT
Acute environmental deterioration has forced the Mexican government to begin to attempt to correct the most egregious problems. New legislation permits the nascent environmental movement to demand consideration of the damages occasioned by economic development. Most public and private investment programs still do not include the costs of this damage in their planning process; virtually none are redesigned, even when serious shortcomings are identified. Some grassroots organizations are involved in exceptional programs with positive impacts on the environment. With the deepening of the economic crisis, however, even basic local services, such as drinking water, garbage collection and disposal, and sewage treatment, will continue to be deficient and deteriorate further; official efforts to reduce air and water pollution are just beginning and still quite inadequate. Private investors can scarcely be expected to do bettter: the pending list of workplace health and safety problems only exacerbate the problems occasioned by the damage they inflict on the environment.

INTRODUCTION
Environmental problems seem to be a permanent feature of the landscape in developing countries. Gabriel García Márquez (1987) makes us painfully aware of them in his vivid evocation of life and love in a colonial Colombian seaport. The situation may have improved for some people on the Atlantic Coast of Colombia during the past two centuries, but for most of us living in Latin America, development has brought us not only the "modernization" but also the intensification of environmental problems; that is, we no longer simply have to deal with our own sludge from overgrown cities but now also with the detritus of imported styles of industrial growth as well as the dross exported from the so-called advanced countries.

In this article, I provide an overview of the environmental situation in Mexico. The dismal panorama is heightened by the deepening crisis. But Mexico is not significantly different from other countries in the Third World. A Ghanian leader is reputed to have retorted to a delegation expressing concern about environmental problems: "We wish that we would have to deal with the problems of industrial contamination, for it would mean that we were in a better position than we are at present." Such sentiments are common and find two common expressions in the "South": 1) the desire to have more environmental problems as a reflection of a higher stage of development; and 2) the frustration at the high cost of curbing any further deterioration of the environment as well as the prohibitive expense of reversing past damages. As people become aware of the damage wreaked on our bodies and our surroundings by the imported technological and political models of development, many are anxious to search for alternative routes for material and social progress. In the present international environment, where domestic poverty and international indebtedness are oppressive and seemingly permanent fixtures in many Third World countries, the attempt to implement an alternative model is indeed a labor of love; it is simply not on the political agenda of most governments. The Mexican story is unique, then, not because a great deal of progress has been made, but rather because the topic has become the subject of national debate: conditions have been deplorable for a long time and they are deteriorating in many areasr but now some sectors of public opinion are able to raise these matters at the bargaining table.

A MEXICAN OPENING
In March 1988, Mexico promulgated an "Ecology Law" which elevated a long history of declarations of good intentions to the level of formal committments to confront the problems of the deteriorating quality of the natural environment. In the words **[end p. 3]** of one of the country's more astute journalists, this initiative reflected a "collective concern and political commitment" to confront the problems resulting from the historical assault of the productive apparatus on the natural environment. He celebrated the event by noting that "For the first time, both the head and the heart know that the defense of our surroundings is also the defense of our development." But he also cautioned that "laws are never anything more than weapons that society might use" to advance its common weal (Alponte 1987).

This law is the latest achievement of the Undersecretary of the Natural Environment (Subsecretaría delMedio Ambiente), a branch of the Secretary of Urban Development and Ecology (SEDUE). It establishes a legal basis for its mandate to reverse the systematic process of environmental degradation which has devastated the country during recent decades. Its past efforts include eliminating particularly egregious sources of industrial pollution-including several paper mills and a chrome processing plant in the Valley of Mexico-and dealing with serious industrial accidents and missmanagement (like the explosion of a gas processing plant in the northern part of Mexico City and the inadequate disposal of radioactive and other

toxic wastes throughout the country). By its own admisssion, the SEDUE has been unable to meet most of these challenges while the growing consciousness of the problems has created an increased awareness of the ineffectiveness of present approaches to reversing environmental decline.

In this article, I examine the environmental problem in the context of Mexican development strategies. It is apparent that the concerted efforts of the economic authorities to confront the present economic crisis leave the rest of the policy apparatus with little room for maneuvering in their efforts to deal with other pressing social and environmental problems. Thus, as the gravity of the crisis increases, along with a new public awareness of its severity, [1] new initiatives are being approved and even subsidized regardless of their environmental impact. At the same time, ongoing programs designed to confront longstanding problems such as water treatment and waste disposal have been seriously cut back or even postponed because of the lack of financial resources and deep-rooted political opposition by vested interest groups who are presently charged with managing these areas.

THE STATE'S ROLE IN PROMOTING ENVIRONMENTAL AWARENESS

The Mexican state attempted to anticipate the environmental movement by encouraging the formation of special interest groups which helped shape a framework for a state response to environmental problems; the Movimiento Ecologista Mexicano is one such group. Not coincidentally, these new organizations were also instrumental in assisting the government in meeting the demands for coherent policy in this area which were being made by international banking and developmental agencies as a prerequisite for financial support. The activity of the state in this regard led it to participate in the formation of some groups while actively supporting the development of others. As was predictable, once formed, many of these groups assumed a life of their own, going beyond the narrow limits originally defined by their original conceptions or mandates. Such groups now regularly represent an independent source of pressure for environmental policies, often in direct contradiction with the exxplicit wishes or interests of their original sponsors (Mumme et al. 1988).

Although the state played an active part in the forging of the incipient movement, the role of environmental activists should not be understated. Vigorous efforts by environmentalists were essential in creating national parks, wildlife preserves, and various other facilities which promoted tourism and offered some permanent protection for a very small number of areas which were encompassed in these important but isolated initial efforts. In many instances, such as the duck hunting preserve in the northeastern part of the country (Tamauliipas) and the lake country in the southwest (Lagos de Montebello), the income generating potential from tourist activity was a decisive element in mobilizing local political forces to support innternational collaborative environmental demands (Figure 1). Ducks Unlimited participates actively in this program and is gradually extending its activities over a wider area. Other efforts to protect natural or historical treasures, such as archeological ruins, natural caves and lakes, and the coastline, from the ravages of human organization have only been partially successful due to inadequate administrative and financial support and lack of a systematic staff training program.

But the Federal District is Mexico's single most serious problem, and the one that continues to be the acid test of the official determination to resolve environmental problems. Although it is generally acknowledged that a substantial proportion (some say as much as 80 percent of the total) of all airborne contaminants in Mexico City come from internal combustion engines, the variety and volume of contaminants is so large as to constitute a profound challenge in any search for a solution. The problem of citizen awareness and participation **[end p. 4]**

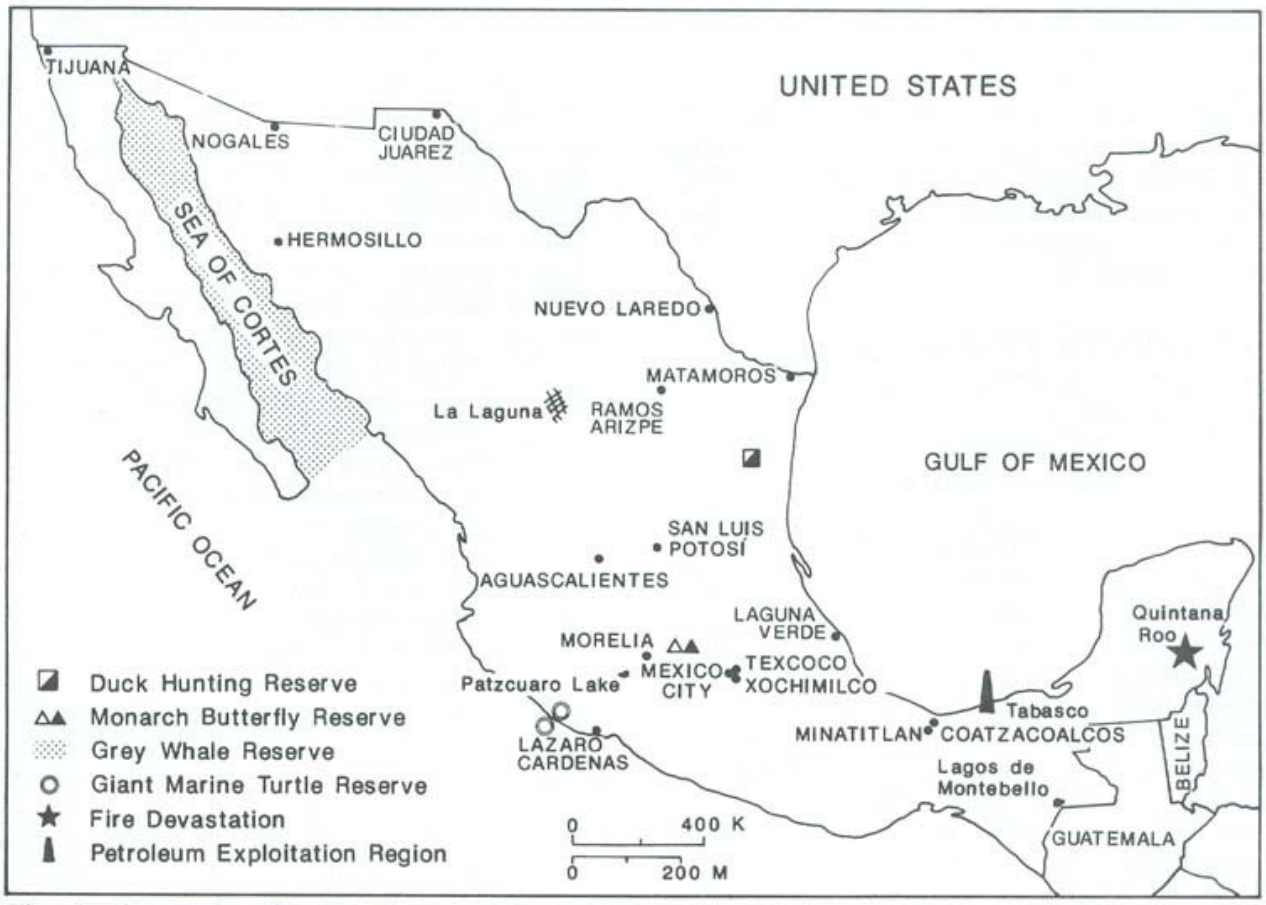

Fig. 1. Areas of environmental concern in Mexico.

in understanding and searching for solutions to the problems in this metropolitan area has been left almost exclusively in the hands of ecology groups until perhaps the last two or three years. These groups have undertaken a number of campaigns on specific points of individual interest, especially ones related to the use of private automobiles. No systematic program to involve the public in an understanding of or a balanced approach to the whole problem of pollution in the metropolitan area is at hand. A partial approach has begun: at last, mandatory emissions control testing was begun in the Valley of Mexico in 1989, and 1991 model cars will come equipped with pollution control equipment, long standard on export models. Official policy was historically concerned with supplying the city with the public services required for basic survival: water, sewage and drainage, garbage collection and disposal. There have been sporadic efforts to deal with the problems occasioned by the continual withdrawal of water from underground aquifers or the contamiination of the Xochimilco *chinampas* (water canals and cultivation areas). The partial reclamation of Lake Texcoco, in the east, is the result of the belated recognition of the impact of the dust storms on the area's air quality. In addition, individual researchers have pointed out the serious effects of lead accumulations resulting from high concentrations in fuels, paints, and other sources on pre-natal and infant development.

Ironically, more information about this reesearch is available outside Mexico than in the country. William Branigin of the *Washington Post* (November 28, 1988) reported at great length on this problem, including a survey of the major researchers examining the problem. In Mexico, this information is only available to the most speecialized of interest groups. These findings, along with some serious efforts at long-term planning, led to the redesigning of the collective transport system around an underground metro and a reshaped bus and trolley system, as well as a reformulation of the gasoline and diesel sold in the valley to reduce the content of lead and sulphur. But as often is the case, some of these solutions created problems as serious as--or more serious than-the ones they were designed to solve.[2]

Unfortunately, these measures have proved inadequate. Their greatest impact has been to gradually sow the seeds of greater public awareness of environmental problems: state intervention to **[end p. 5]** correct some of the worst effects of environmental deterioration has been ineffective in reversing or even stemming the problem. And isolated individual demands and scattered programs by interested groups have also been ineffective. The situation has become so serious as to

oblige the new (1988) Mexican president to declare environmental problems in the capital city of the highest priority for his administration.

THE CONFLICT BETWEEN PRODUCTIVE AND ENVIRONMENTAL IMPERATIVES

Mexico has demonstrated a fundamental inability to confront ecological imbalances in the face of other contradictions in the national development model. These contradictions are the result of a long history of competing demands on limited government financial resources to finance the development of private investment opportunities. These pressures historically have overwhelmed the popular (mass) demands for improvements in the quality of their material conditions. Profit-making activities have traditionally taken precedence over programs to enhance the natural environment or reduce inequalities in the social structure. In some instances the resolution was particularly cynical, as in the case of the high-level decision in the early post-war years to postpone undertaking a systematic program to improve drinking water systems in rural Mexico by subsidizing the sale of sugar to the soft drink manufacturers. But in most cases, it was simply a case of neglect of these "externalities" (as economists are wont to call them).

The conflict is most apparent when evaluating some of the environmental programs themselves. The most evident target of discord is the thermonuuclear electricity generation plant at Laguna Verde in the state of Veracruz (Figure 1). This plant, structured around a technology based on heavy water and using hardware no longer considered commercially or politically acceptable in most parts of the world, was placed "on stream" in late 1988. The antinuclear movement aroused a great deal of opposition to the plant; its previous success in achieving the cancellation of a projected research reactor on Lake Pátzcuaro created a momentum which is still evident. In response to the opposition from professional and citizen groups, the government resorted to a poorly regarded series of maneuvers, including visits by international "expert" groups. The government sought to proclaim the reactor's technical integrity and safety to the nation, while skirting the issue of its efficiency by pointing to the need for vast quantities of new power for the country.

The even more serious problem of radioactive waste disposal appears to have been shrugged off. Alternative proposals, such as fueling the plant with gas which is presently flared, were dismissed as unworkable. Some officials are also saying that the government is proceeding with its plans to build several more nuclear generating plants before the end of the century. These seem to be more expressions of hope (or defiance) rather than realistic plans, given the profundity of the country's economic woes during the coming decade.

The "Plan of 100 Actions," promulgated in 1986, was directed in large measure at the cappital city (Comisión Nacional de Ecología 1987). The program called for the decentralization of some particularly contaminating industries and for a voluntary program of citizen and industry collaboration to stem the increasing concentration of pollutants in the Valley of Mexico. The Plan also envisioned a broad-ranging series of measures to manage other environmental targets. It listed dozens of areas in which it proposed to correct problems related to soil and water contamination. It named 11 programs which would be part of its efforts to create sanctuaries and biosphere reserves for the protection of natural resources and endangered species. It also committed the government to control the use of agrochemicals and regulate the formulation of detergents as well as undertaking an ambitious program to establish more effective norms for evaluating the impact of these programs.

The Plan's practicality is perhaps most effectively questioned by the experience of the 1988-1989 winter in Mexico City. The government was unable to stem productive activities in industry or the use of private transport by the populace. in spite of the highest measured levels of contaminants in the air of any urban area in recorded history. By its own lax standards, the city was declared to be in an emergency situation on an alarming number of different occasions. Among the measures implemented in the framework of the plan were the highly disruptive program of extending the school year by canceling primary and secondary school attendance during January, the height of the period of thermal inversions. A related attempt was made to stagger working hours. Neither program was thorough enough or well enough coordinated with the structure of other activities in the metropolitan area to be an effective counter measure. Further complicating the task of reducing pollution is the inability of the responsible authorities to effectively modify the (foreign) design of the motors in the buses to reduce their emissions or to modify automotive exhaust systems to permit them to more completely burn the new lower lead-content fuels introduced **[end p. 6]** into the Valley of Mexico. The newly promulgated mandatory automotive inspection schemes are still quite inadequate.

Another related area of policy to improve ennvironmental conditions in the Valley of Mexico is the announced comminnent to decentralization of the government bureaucracy itself. Official decclarations notwithstanding, only about 30,000 buureaucratic positions (of a total of more than two million) have actually been transferred from the metropolitan area. This is far less than the cuttbacks in total government employment (nationally) of more than 50,000 imposed by the austerity meaasures of the national economic stabilization efforts of recent years.

These official centralized programs of corrective measures throughout the country floundered on the shoals of fiscal

austerity. The vast array of programmatic efforts to deal with soil and water contamination was postponed or delayed as the crisis deepened. In its stead, some sources of pollution disappeared as production declined with the severe reduction in the purchasing power; but, most have simply continued to grow even faster than urban growth. Meanwhile, the lack of concern with ennvironmental side effects takes its toll on the quality of life throughout the country.

Much more effective than these official atttempts is the impressive process of decentralization which has been observed in the 1980s. The border development program, based on off-shore assembly operations spurred by the change in macroeconomic policies towards a more realistic exchange rate, and the southward flow of agribusiness from California have created new development poles in northern Mexico. In the interior, new industries oriented towards export have located in such cities as San Luis Potosí, Aguascaliente, Hermosillo, and Ramos Arizpe (among others) in response to effective industrial park schemes and other incentives. Yearly, private enterprise is contributing to a geographic reordering of the productive map of Mexico. But geographic decentralization has not reduced the problem of the contaminating impact of these industries in their new locations or on the people employed in the plants. It simply transfers it to new regions and imposes it on new groups.

THE ENVIRONMENTAL COSTS OF INDUSTRIAL DEVELOPMENT

There is a belated recognition that many solutions to environmental problems are at variance with the prevailing pattern of concentrated, export-oriented development. There is an inability to confront these environmental problems when they impose costs on private investors and a lack of resources to resolve them when they require public funds. New industrial projects, like the expanding petrochemical complex on the Gulf Coast and the relocation of paper mills, are being designed without regard to the environmental consequences. It seems extraordinary that even now, new businesses are allowed to be established in the Valley of Mexico-further attracting population and increasing demand for overtaxed public services. Elsewhere, the result is a vast array of projects with deleterious environmental effects which are deepening the impact of the crisis on living standards by reducing the quality of life in many of the rapid growth poles of the country. Illustrative of such projects is the industrial complex at Ciudad Lázaro Cárdenas near the Pacific Coast in Michoacán which is being expanded to enlarge the capacity of the steel and fertilizer plants and to include new manufacturing facilities (Restrepo 1984 provides a wealth of details about this experience). These are being financed by direct foreign investment as well as by loans from multinational lending institutions. New industrial ports are also spawning new centers of urban blight while creating havoc with the coastal regions and the sea in the areas in which they are being constructed.

Throughout the country the conflicts between productive demands and the health of workers and neighbors are becoming more apparent as researchers delve into these issues. One recent study pinpointed the deleterious impact of assembly operations in the Nogales area on women workers by studying the birth weights of their children, a measure which is widely accepted as an excellent indicator of the health of the mother. On the basis of a sample of several hundred women, the study concluded that toxic materials and physical demands made on workers at the assembly plants, rather than nutritional deficiencies, seriously debilitated them, leading to a dramatically higher incidence of lower birth weights--triple that of the control group (Denman 1989). Other researchers have suggested that one of the major motivations for "runaway" shops is the great laxity with which worker health protection measures are enforced in many off-shore assembly areas (Fernández-Kelly and Gray 1986; and Fernández Kelly 1983). Incipient research on industrial accidents in Mexico points to a similar disregard for the problem on a much wider scope than the export assembly operrations. The extensive reporting of the problem of pesticide use and the systematic neglect of even the most common safeguards has been widely documented (Restrepo and Franco 1988; Wright 1986).

The conflict between the exploitation of the nation's natural resources and the need to protect its **[end p. 7]**natural heritage is a common theme among ecology groups. Perhaps one of the most tragic testimonies of the inability to resolve this problem adequately is in the area of forestry. Mexico has the world's sixth largest forest reserves but individual poverty and corporate greed have combined to denude the country of its varied forests without offering any reasonable alternative approach for creating a process of sustainable harvesting (Halhead 1984). As a result, the country imports large volumes of wood products for direct use and for processsing into paper. In 1989, however, the lack of care of the nation's forests turned tragic as more than 130,000 hectares in the state of Quintana Roo on the Yucatán Peninsula were decimated by fires which could have been controlled, had early warnings been heeded and preventive measures implemented (Figure 1). The damage to local flora and fauna is incalculable and further threatens a fragile ecosystem, part of which has been incorporated into the global network of biosphere reserves. Similar problems have emerged with regard to the nation's hydraulic resources, including the underground aquifers on the Pacific Coast and in the Sierra Madre which are the source of water for many hydroelectric plants and hundreds of thousands of hectares of the most fertile culltivated lands. These aquifers are being depleted and contaminated at a rate which threatens the very continuity of the productive activities which depend on them.

The government's inability and/or unwillingness to deal with these problems in a serious way is nowhere more evident than in the area of waste disposal. The examples go from the explosive to the mundane. There is the dramatic case of the theft (in Ciudad Juárez) of a container holding cobalt-60 pellets in an apparatus for medical diiagnosis. This container was purchased

by public health authorities but left unsecured. Once the machine was vandalized and sold for scrap, the remains were deposited in an open air landfill. Even after the problem was identified (quite by happenstance), no satisfactory measures were taken until press coverage made it the subject of an international scandal. Venality and incompetence have combined with bureaucratic indifference to convert this incident into an all too common occurrence. Toxic waste disposal companies from the U.S. have frequently been discovered "red handed" crossing the border with forbidden cargoes, misinforming customs agents and buying the right to dispose of their loads in Mexican garbage dumps.

But even within the country, commercial and citizen participation in garbage disposal and reecycling are virtually forbidden topics. When the Centro de Ecodesarrollo conducted a survey of the content of garbage and the nature of its disposal in Mexico City, practically every public school child in junior high school visited the public exposition of the results (presented in the city's Technological Museum). Unfortunately, attempts at channeling these efforts into a serious discussion of the problem have floundered (Restrepo and Phillips 1982). More recent marketing innovations such as the packaging of beer and soft drinks in cans and non-returnable bottles are widely advertised as major innovations, although their real cost to the connsumer and to society are not a permissible theme for polite conversation, especially in the SEDUE. Any reform efforts in this realm and others must confront vested political and economic interests which control solid waste disposal, sewage treattment, and recycling in general.

POPULAR EFFORTS TO DEAL WITH LOCAL PROBLEMS

Citizen awareness of environmental decay is relatively undeveloped in Mexico. There seems to be a pervasive attitude that the area outside one's own home is the responsibility of the "government." Willingness to deal with littering and public cleanliness in general (including rest rooms) is stymied not so much by ignorance as by a lack of resources and this collective attitude of indifference. Public waste barrels are scarce, at best, but creating more garbage dumps will not solve the problem as long as the formal waste collection systems are inadequate. The absence of adequate sewage systems and treatment plants complicates the sanitation problem. In the face of individual poverty and apathy these collective failings create often insurmountable barriers to resolving even the most basic problems. It is not surprising that there is virtually no open discussion of these crucial problems.

An urban-based ecology movement has emerged to champion a few causes. As mentioned at the beginning of this paper, some of these efforts were initiated or at least protected by the very government authorities who were to be influenced by the lobbying efforts. Most of them are based in the capital city and attempt to stimulate mass participation in improving the urban environment. They have concentrated on neighborhood projects (parks, trees) and issues around the private automobile. Their success has been limited and their impact in other parts of the country is virtually nil.

The largest single activity of these groups was focused on organizing a mass resistance to the nuclear power plant. Although it was successful in delaying the project, the movement doomed itself **[end p. 8]** by not planning a series of alternative activities for the moment when the inevitable decision to make the plant operational was taken.

The most effective non-governmental efforts involved the collaboration of Mexican groups with interested parties from abroad. Two of the best known were the organizations which worked to create biosphere reserves to protect the natural habitats for long distance migratory species: the grey whale (Baja California and the Sea of Cortés) and the Monarch butterfly (Michoacán) (Figure 1). Both reserves have permitted a flourishing tourist trade to bring thousands of visitors to enjoy the natural occurrence while providing a growing meaasure of protection for the species that come to Mexico as part of their regular migratory cycle. But the wealth of many of the visitors compares starkly with the poverty of the people living in the affected areas, and the small recompense they receive for reorganizing their societies as part of the effort to maintain the reserves. In Michoacán, the local residents have received potable water and electricity, along with improvements on the narrow dirt road that serves the area. Sadly, the local residents have neither the experience nor the resources to help organize the process and construct the tourist facilities so that they might improve the quality of the visit for the outsiders, create more employment, and capture a slightly greater proportion of the expenditures. As a result, there are many doubts about the long-term viability of the program.

A similar effort to study and protect the giant marine turtle is being developed along the Pacific beaches of Mexico (Figure 1) (Alvarado and Figueroa 1988). In Michoacán, the organizers are concerned with strengthening the project by integrating the local people into it; they are designing new productive activities to replace their hunt for turtles. With this in mind these scientists are investigating the possibility of creating a new industry--iguana farms--as an alternative source of employment and income. They are also trying to anticipate efforts to integrate this protected area into the national tourist campaign by developing a new concept of "ecological tourism" that would be compatible with their efforts to protect the biosphere reserve while creating alternative sources of sustenance for the communities that must, in the final analysis, be the social basis for the protection effort. This project, still in its conceptual stage, illustrates the possibilities for such development, but also the difficulties that local organizations will encounter when trying to find alternatives within the framework of the existing organization of production.

The SEDUE provides a long list of other projects which have enjoyed local participation by diverse producer and citizen groups (SEDUE 1987). This list includes 147 firms which have agreed to a series of measures to reduce their harmful impact on the environment. In addition, SEDUE reports mention a large number of other steps taken in collaboration with interested groups, local authorities, and international organizations in protecting endangered species, creating natural reserves, or undertaking direct action to resolve pressing health problems. One well-publicized example of the Ministry's efforts to involve local communities in the solution of their own problems is a project to filter arsenic and other salts out of water contaminated by agricultural activities. The program created a number of permanent jobs and guarantees a permanent supply of high-quality botttled water for the region. Unfortunately, however, even in the exhaustive list of its own actions, SEDUE provides little evidence of a concerted effort to correct the profound environmental distortions created by the pattern of economic development of recent decades. Its actions have not contributed to the redesign of these production facilities.

Interestingly enough, many local projects are not mentioned by the Ministry. These include reforestation programs and various other efforts to find productive uses for resources which will also contribute to reducing ecological deterioration. Although in many cases the problems are quite serious and widely recognized, the corrective efforts are generally inadequate. Such is the case with the many-faceted effort of the state petroleum company (PEMEX) to confront the broad swath of destruction its crews have caused in the tropical regions and the gulf coast of Mexico (Toledo 1983; Beltrán 1985; Barkin 1978). Toledo (1983) points out that the injurious impact of petroleum development could not be avoided because: 1) PEMEX attempted to disassociate production from its impact on the environment; 2) the program was predicated on the supposition of unlimited supplies of natural resources; and 3) it did not attempt to understand or measure its ecological costs. The "green campaign," splashed across the media by PEMEX, seems as incongruous and insensitive as the billboards mounted on flatbeds and pulled along Mexico City's major arteries by tractor trucks to sell products and boast of the sponsor's commitment to improve the environment while asking them to drive more courteously. In Tijuana and other border towns, local problems have acquired an international dimension and biinational committees are attempting to reduce the release of contaminated waters.[3] Less progress is being made in dealing with solid waste disposal in these areas because the waste does not cross international borders. **[end p. 9]**

In the Lake Pátzcuaro area a high degree of consciousness about the region's problems was developed during the past decade. Concern about the dumping of raw sewage and the erosion of vast volumes of topsoil into the lake led to the search for corrective programs. One program, sponsored by local environmental groups in connjunction with official agencies and funded in part with international support, involved the terracing of a large area and the planting of peach trees in the region. The program sparked the imagination of many groups and has proceeded apace since 1983. As the works advance and the trees mature, however, it is becoming increasingly evident that the original criticisms about the approach and the technical design were well-founded. It appears that the fruit trees were inappropriate for the region. Local wind patterns would condemn the fruit to not mature correctly. As a result the program appears doomed to be unable to correct the problems it was designed to attack while gradually undermining the enthusiasm and support of local groups for the solution to local problems. On a regional level, government red tape and budgetary limitations, along with a lack of determination by local leaders, continues to delay the installation of the primary sewage treatment plant needed for the region.

THE DECLINING PROSPECTS FOR ENVIRONMENTAL IMPROVEMENT

In the midst of crisis, it is unlikely that Mexico's long history of inaction on environmental issues will be modified. Declarations of good intentions have rarely been reinforced with the financial resources needed to implement them. At the present time, new productive programs are being approved without regard to their impact on their surroundings. The pressing problems of the time have thrust such concerns from the list of priorities.

There are exceptions to this bleak outlook. In the case of those local groups determined and able to mobilize local opinion, effort and resources (or foreign support), the inaction of central authorrities and the rhetorical commitment to confront the problem, provide opportunities to advance. This was the way in which the program to build a sewage treatment plant in Tijuana prospered. Similar dynamics favor the turtle program in Michoacán. In the absence of resources, the government has facilitated such efforts by imposing fewer barriers. Unfortunately, as the Pátzcuaro experience suggests, such local efforts are often plagued by lack of expertise and bad designs which only compound the problems created by corruption and greed.

The list of pending issues is long and the crisis will further lengthen it. The mundane problems of sewage treatment and solid waste disposal are sure targets of budgetary austerity programs. The ready alternative of declaring decaying lakes dead (as is being done in the Ciénaga de Cuitzeo near Morelia) has enabled local officials to declare themselves incapable of dealing with complex local problems while higher levels of government are washing their hands of the issue because of budgetary restrictions and political convenience. The avowed intention to curb dangerous agrochemical use in the countryside has been rendered unenforceable as the appropriate authorities lack the resources and will to impose production restrictions on the most influential group of farmers in the country. No effective measures have been taken in the face of the recognition of the mortal danger of waste from hog raising to the whole population because of cysticercus invading fruits

and vegetables through irrigation systems. Nor have any advances been made to halt the use of lead-sealed cans for foods. Beer and soft drink producers compete with each other to introduce disposable bottles and cans while these containers dot the countryside. No move has been made to even define the country's garbage dumps.

But the contradictions of the Mexican model of development go much deeper than these particcularly visible scars. Work place health and safety problems have not even been fully identified. The permanent damage from the many forms of pollution in the work place and the community is just beginning to be understood. When we add to these the fact that in spite of lower alcohol consumption levels than such European countries as France and Spain, the per capita material and human losses from drinking are much greater (Menendez 1989), the intimate connection between economic interest groups and the bureaucracies which are supposed to regulate them becomes more apparent.

The present development model, which privileges large scale export manufacture at the expense of all else, provides no effective means to reverse the tendency toward environmental decay. Industry will not, unless obliged by government regulation, integrate a social conscience into its calculus of profit and loss. In Mexico the state has shown itself unwilling to impose the costs of environmental controls on production, lest the drive for successful export promotion be thwarted. Some people argue that small scale industry and agricultural producction may be more consistent with an environnmentally sound pattern of development, but such considerations seem beside the point at a moment when macroeconomic policy has decimated small industrial firms and converted the country into a net importer of food, leaving millions of hectares **[end p. 10]**of land and millions of people idle (Barkin 1987; 1990). Official policy offers no solace in this regard: in place of a concrete set of programs to deal with the impending environmental crisis, the President only implores the "civil society" to raise its level of collective conscience. And what shall we ask of the producers?

NOTES

1. One of the notable features of crisis management in Mexico has been the extraordinary ability of the government to convince the people of its competence to restore the economy to its upward path in a short period of time, despite a real compression of personal incomes greater than that which occurred during the height of the military dictatorships in each of the southern cone countries. Until the July 1988 elections, the Mexican people did not appear to have lost confidence in the state's ability to administer the economy. Since the imposition of the most recent austerity measures, with the continuing fall in real wages and the deepening of the economic crisis, the political situation has continued to deteriorate. For a lengthy discussion of this situation see Barkin 1990.

2. For example, the introduction of new gasoline formulations have intensified the concentration of ozone (now the most important contaminant) in Mexico City's air. Another modification of gasolines sold in the valley will be available soon, lowering the lead content and raising the octane rating to assure fuller combustion.

3. A long-term effort to implement a new technology capable of dealing with the needs for sewage treatment is being evaluated in Tijuana with financial assistance from the California Coastal Commission and the World Wildlife Foundation. For more details on this see the work conducted by Ing. Carlos de la Parra and his colleagues based at El Colegio de La Frontera Norte, TIjuana.

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RESUMEN

El agudo deterioro ambiental está obligando al gobiemo mexicano a comenzar a corregir los problemas más notorios. Una nueva legislación favorece al naciente movimiento ambientalista para exigir que sean considerados los daños que ocasiona el desarrollo económico. La mayoría de los programas públicos y privados de inversión todavía no incluyen los costos de estos daños en sus procesos de planificación: casi nunca se reconsideran, aún cuando se identifican deficiencias importantes. Algunos grupos populares de base están involucrados en programas excepcionales con impactos positivos en el medio ambiente. Sin embargo, con la profundización de la crisis económica, aún los servicios públicos básicos, como son el agua potable, recolección y disposición de la basura, y el alcantarillado, seguirán deficientes y deteriorándose aun más; los incipientes esfuerzos oficiales para reducir la contaminación del agua y del aire aún son inadecuados. Difícilmente, podría esperar más de los inversionistas privados; la lista de problemas de seguridad y salud dentro de los centros de trabajos sólo exacerban los problemas ocasionados por los daños impuestos sobre el medio ambiente. **[end p. 12]**