

## **A SOUTH AMERICAN COUNTRY EXAMPLE: ENVIRONMENTAL LEGISLATION ENFORCEMENT IN MENDOZA, EXPERIENCE AND CHALLENGES**

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### **SUMMARY**

In the present paper both the state of development of environmental protection in the Province of Mendoza, Argentine Republic, and efforts towards enforcement of legislation on the subject are discussed. To that end, there are first described the geographic-cultural circumstances of mendocinian society, thus historically justifying the evolution leading to the creation of the Ministry of Environment in 1989. This administrative structure is analyzed in light of the process for its development and of present experience, from the legal institutional point of view and its associated problems as well as from the formulations, progresses and difficulties encountered in the enforcement program of the new environmental legislation. Finally, the challenges to be borne in mind in the environmental protection consolidation process for the provincial territory are posed.

### **1 INTRODUCTION**

The Province of Mendoza, located west of the national territory, and adjoining the Andes Mountain Range, is one of 23 provinces making up the Argentine Republic. Its most distinctive feature is that most of its territory—about some 250.000 Km<sup>2</sup>—is either arid or semiarid, with annual rainfalls in the range of 220mm., the main exception being the man-made oases (Northern Oasis, Central Oasis and Southern Oasis) which have developed through the exploitation for irrigation and potability of its main five rivers, all of them with annual modules lower than 50m<sup>3</sup> where almost the totality of mendocinians live. The total irrigated oases area does not exceed 3% of the provincial territory and is equivalent to that of the Great Buenos Aires Metropolitan Area. Almost 70% of Mendoza's population is located in the Northern Oasis—the largest of them—a region where Mendoza Metropolitan Area is situated with its 815,000 inhabitants, a population concentration ranking fourth amongst the Argentine cities.

#### **1.1 Mendocinian culture and environment**

In spite of the fact that one of the main productive activities of the Oases is agroindustry—wine, oils, vegetables and fruits amongst other products—it is not possible to distinguish, as it is for example in the Argentine Humid Pampa (Pampa Húmeda), a clear transition between rural and metropolitan areas, but instead urban and quasi-urban scale human interactions, making it more similar to European regions. Mendocinian culture is then an oasis culture, forged in the need for managing limited resources—fundamentally space and water—thus preserving and developing a propitious habitat based over a steady effort. *Therefore, environment preservation as a political objective of the Province of Mendoza, is not an occasional phenomenon, an accidental fact, but instead is the consequence of a long cultural, Provincial history, truly based process.* (1)

The 1884 General Water Law—still in force—and the creation of the General Irrigation Department through the 1916 Provincial Constitution as extrapowers body and responsible for irrigation water resource management subjects, are a clear example of the aforesaid, and probably, together with the settling of part of the large immigratory flow coming from Europe, are to a great extent the cause of the productive development held the end of last century to date. Likewise, urban

development of its principal district acknowledges through sanitary—environmental measures fostered by *Emilio Coni, Carlos Thays and Emilio Civit*—as representatives of the visionary end of the century's generation—the genesis of an environmental-civic culture, being the creation of General San Martín Park Law 19, 1896—and public trees fostering—two milestones strongly projecting onto our days. Mendocinian culture is also identified, with its trees and green spaces, as a biotechnological way of moderating climatic harshness and improving urban life quality. The success of the beginning of the century's environmental model is certainly based upon having arranged reasonable, economically viable measures which met great acceptance within the population. However, it is essential to point out that launching of such model responds to a crisis-catharsis mechanism, that is, a set of reactions to great eco-catastrophes being characterized by productive deterioration and emigration and mortality caused by the 1861 earthquake and great end of the century epidemics.

### 1.2 The beginning of the century environmental crisis model

During the second half of the century, and while productive and socio-cultural complexity in our Province was growing, new legislation and administrative measures were incorporated, as was sectorwise protection of natural resources. They were attempts to stop increasing conflicts which were beginning to appear in the urban, industrial, rural and natural ecosystems spheres interfaces. Environmental action is characterized during this stage by some features which are typical from the increasing crisis: a fragile financial situation, lack of information, capacity and technological investment, explosive development of urban districts due, to a great extent, to rural emigration, etc. and, on the other hand, excessive expansion of state intervention as unique means of counteracting increasing problems.

Take, as an example, water contamination: grounds on which Law 4479 as of 1980 stipulated that Obras Sanitarias (Sanitary Works State Company) would exercise sanitary police together with the Welfare Ministry, the Ministry of Economics, General Irrigation Department and Municipalities, notwithstanding whatever 1884 General Water Law has established and the police corresponding to each practice (2). Such a dispersion of responsibility and authority goes with the increasing complexity of environmental topics and with the increase in cases of unfulfillment of established rules, the latter due to either police power weakening or else to associated economic matters.

### 1.3 A century later

With the increasing deterioration in quality of life, and progressive natural environment degradation, both the initial model and sectorwise and by natural resource protection criterion reach an evident exhaustion stage. Initially some ecologist groups, to which researchers and academic units join later, alert to the problem thus finding a strong enough reason to impel to the restatement of the course. The political ambit quickly incorporates environmental discussion into their action guidelines and reacts in 1989 with the creation by Law 5.487 of the Ministry of Environment, City Planning and Housing, at the request of the Provincial Executive Power headed by then by Governor Bordón. A century later, mendocinian society retakes environmental conception and begins to develop an ecosystemic action modern concept where Provincial State bears the responsibility of "Environmental Policy Formulation" (3).

The Ministry of Environment is the first of its kind in the country and it is an attempt to homogenize efforts towards a *unique and coordinated conception* of State action about environment protection (4). Unlike other Argentine Provinces which have incorporated environmental references into their constitutional texts as amendments initiated around 1985, Mendoza Constitution remains unchanged since 1916 and it does not expressly provide either the right to a healthy and balanced environment or state and private responsibility for its preservation. For that reason, since the Ministry is born more out of a real necessity than out of a declaration of principles—again the crisis-catharsis mechanism is impelling to practical decision making—concrete results can possibly be expected from such a foundation. To that respect it should be pointed out that notwithstanding international

influence on the adopted political decisions, the Ministry fundamentally arises as a local response to local problems, what is projected onto policy design and execution in their early years.

## 2 ENVIRONMENTAL MANAGEMENT AFTER MINISTRY CREATION

Per se creation of a Ministry of Environment does not either guarantee the existence of an environmental policy or would answer for its execution. It should be born in mind, that as in the case of Mendoza, new structure—not only administrative functional, but also legal and even political conception—cohabits during a considerable transition period with the old one, there occurring several conflicts whose solution, almost one by one, ends up molding the institutional identity. For this it can be clearly distinguished a founding stage, which does not exhaust but starts with the formal creation of the Ministry, which is followed by a consolidation stage demanding a general rearrangement; at the beginning of the latter is where the present stage of the-still brief-ministry history can be placed. (Four annual administrative fiscal years).

Presently, the Ministry of Environment, City Planning and Housing specifically concerns an actually wide particular range of objectives, which could be basically grouped into the following fields:

1. Environmental Information
2. Development and up-dating of legal, institutional and techno-economic instruments for environmental protection.
3. Development of public environmental awareness.
4. Natural Flora and Fauna Preservation.
5. Environment Control and Sanitation.
6. Urban Regulation and Environmental Development.
7. Urban Services with direct environmental incidence (drinkable water, sewers, parks and public transportation)
8. Housing

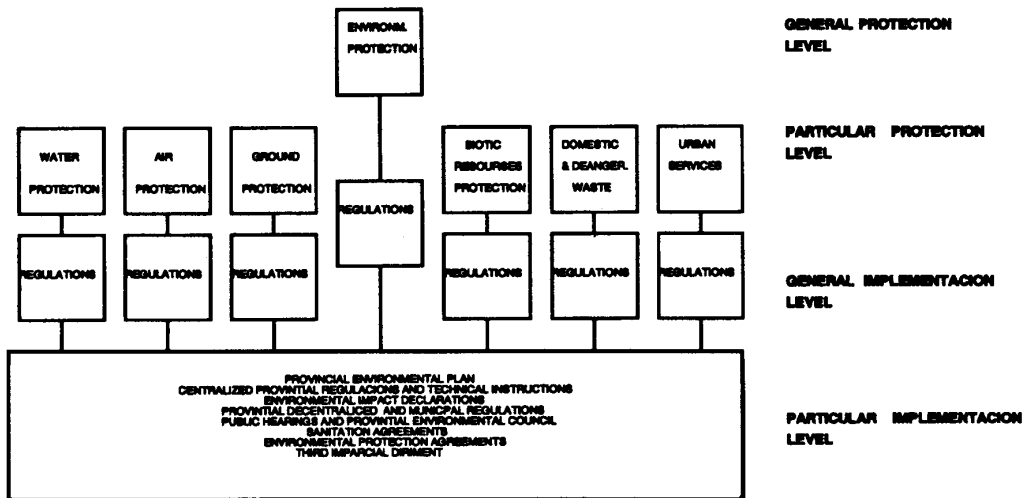
While the ministry has a direct jurisdiction (including the related policy power) over some of these areas, over most of them it has instead a promotion and coordination political responsibility, thus sharing the specific jurisdiction with other provincial, decentralized or municipal bodies.

Several types of conflicts had to be faced. Among them, legal voids and incompatibilities, jurisdictional coordination and competence (within the same provincial government, with self sufficient bodies, with the National State and finally with the Municipalities), a poor environmental state of control (with a deterioration of public awareness and a certain degree of general disbelief in state control mechanisms) and, of course, resources limitations.

### 2.1 Legal rearrangement

From the very start of the Ministry, an arduous evaluation process of the existing legal system and of the design of new and up-dating of existing legal instruments for compatibility took place. Necessary unity and coherence of the environmental legislative system is achieved through three principles of provincial environmental policy...

- a. Prevention: in the past legislation used to act mainly on consequences of environmental deterioration and contamination. At present, it tries to act upon the causes of such deterioration...



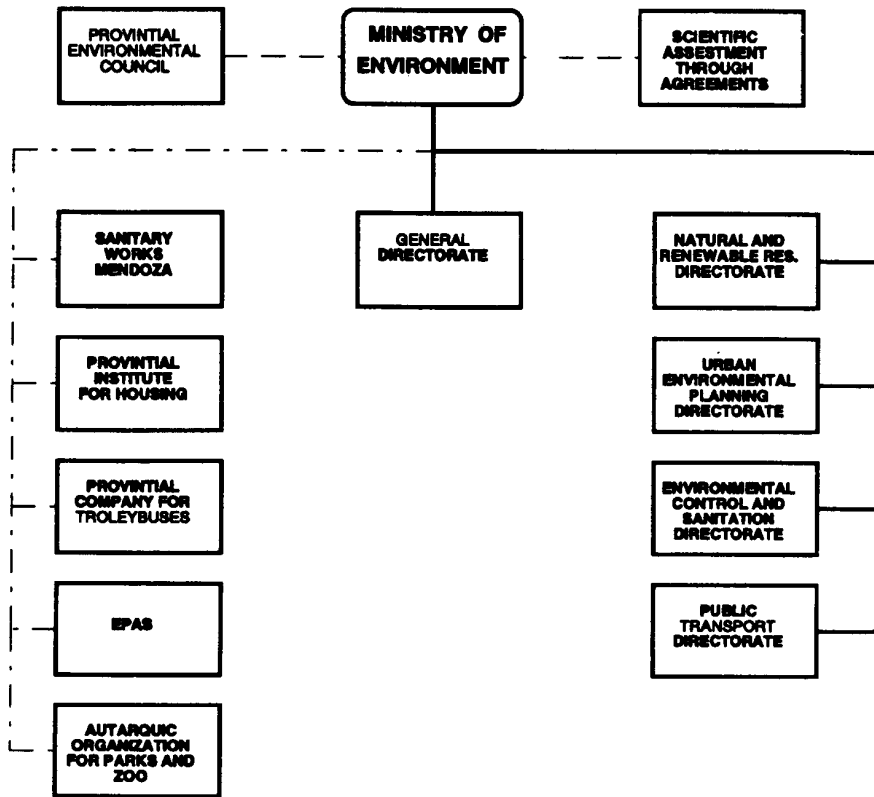
**Figure 1.** Environmental juridic structure.

- b. Participation: quality of life is both objective and subjective. Its concept is thus integrated by historical, cultural and social considerations typical of each people. For this, both its protection and improvement do require permanent consultation with population so as to know their hopes and experiences.
- c. Political and technical cooperation: technical cooperation is substantial in environmental problem solving. This new insight into the need for interdependence demands an interdisciplinary effort to search for solutions to environmental problems drawing upon different scientific specialities contributions (5).

Under this conception the sanction of important acts during the 1991-1993 period was achieved. Environment Preservation Law N°5961 unifies the new system through different legal institutes, such as Principles of Environmental Policy, Environmental Report and Plan, Environment Provincial Council, Jurisdictional Protection of Diffuse Interests and Environmental Impact Evaluation. It should be added: Law 5.917 in agreement with Dangerous Residues National Law N° 24.051, Institutional Rearrangement of Sanitation Services and Drinkable Water and Water Quality Protection Law N° 6.044, and the Law 6.045 institutionalizing a System for Natural Protected Areas, adopting the International Union Classification for Nature Conservation (6). The practice of new environmental legislation and re-interpretation of existing laws shapes a framework whose structure tends to consolidate according to chart in Fig. 1.

## 2.2 Institutional rearrangement

A second topic that demanded a practically parallel effort to that of legal rearrangement has been Provincial State administrative reorganization under the new Ministry to facilitate environmental policy coordination. Added to its initial four Directorates, and one dependent autarchic entity structure (Parks, Renewable Natural Resources, Environmental Urban Planning and Environmental Control, on the one hand), (and Provincial Housing Institute on the other hand), was a fifth Directorate (Public



**Figure 2.** Funcional and organic structure of the Ministry of Environment.

Transportation) and two decentralized entities more (Sanitary Works Mendoza: Obras Sanitarias Mendoza (OSM) and the Provincial Trolleybuses Company). An up-dated organic- functional representation of the Ministry can be seen in Fig. 2.

Reorganization is to be understood, on the other hand, from a wider criterion comprising State reform in general; thus during 1993 sanctions were enacted towards Obras Sanitarias transformation was achieved (aiming at private capital participation), and that of Parks Directorate (Dirección de Parques) (the same turned into a self sufficient entity). In the same transformation of OSM (Obras Sanitarias Mendoza) is comprised the creation of EPAS (Water and Sanitation Provincial Entity = WSPE) whose task is both to regulate new, fixed capital OSM operation as well as to become water quality regulating entity, when taken as drinking water source. The latter may lead to design, still pending, of both a legal as well as functional organization of hydrid management. Likewise, a decentralization tendency is consolidated through specialized organizations (governmental, non-governmental, mixed and even private) there reserving the political role for a reduced, centralized, ministerial and very executive structure. Within the foreseen reform projects, the Provincial Trolleybuses Company privatization can be found together with the transformation into a self sufficient entity of the Transportation Directorate (in charge of public transportation control and regulation).

## 2.3 Interjurisdictional relations

Institutional and legal rearrangement brought about substantial change which would show itself as a rearrangement of jurisdictional relationships between Provincial State and Municipalities, National Autarchic Entities and the very National State. These rearrangements are now fully developed and influencing the rest of the Ministry's relationships. A brief description may serve as an illustration:

### 2.3.1 With national or other provinces' jurisdictions

A broadly accepted interpretation, strongly supported by our Province, is that Art. 104 of the National Constitution makes environmental regulation province-dependent. Such interpretation also comprises Art. 128. Paragraph 19 of 1916 Mendoza Provincial Constitution. Likewise, if the potential or effective reduction in the individual or collective right to a healthy environment arises from territories exceeding one province, conflicts would be solved, either by the economic treaties stipulated by Art. 107 or else by the diplomatic jurisdiction ascribed to the Nation Supreme Court according to Art. 109, both from the National Constitution (7). So, a first treaty was subscribed in La Rioja Province during 1990. During 1993, 17 provincial governments founded the Environment Federal Council (COFEMA), approved by Mendoza by Law 5803. The evidence that the present discussion issue in not closed can be found by the Nation's sanction, issue or enforcement of acts or legal provisions which would either partially or totally invade provincial jurisdiction. Mentioning three cases will be enough:

1. Dangerous Residues National Law 24051: according to the aforesaid, it should only regulate upon the interprovincial transportation of the same, or upon their exportation and importation to the National territory. Instead, the same unduly absorbs civil and penal competences both legalizing and penalizing dangerous residues generation and final disposal.
2. Resolution 105 from Nation Energy Secretariat: technical rules are issued by the same regulating "up-stream" oil production environmental impact, being the Secretariat the control body.
3. National Decree- law 22477/56 and its modification by National Law 22246 creating Atomic Energy National Commission (CNEA): By the same it is established that the regulation and control authority regarding radioactive material throughout the national territory is the CNEA. Apart from the above said, the main producer, manipulator and user of such materials is the very CNEA, which is in charge of nuclear energy generation and uranium minerals exploitation.

At the request of the Environment Ministry, Mendoza Province has attempted to solve these conflicts either supporting national legislation (case 1) or incorporating national regulations (case 2) or establishing special agreements under penalty of denouncing the existing ones (case 3). The support or national ruling incorporation however, is not necessarily wholly performed, with the Province's reservation of specific locally conditioned regulations.

It should be mentioned, however, that the counterpart of the above mentioned position takes place when the Provinces, making use of their autonomous powers, do not regulate or apply their proper equivalent legislations so as to prevent their own or interprovincial resources degradation. COFEMA mechanism and that of the interprovincial basins agreements (as in the case of Colorado River, where Mendoza, together with other four provinces—Buenos Aire, Neuquén, La Pampa y Río Negro—constitutes the Interprovincial Committee for the Colorado River- COIRCO), should solve in Mendoza Province's criterion at least an important part of potential conflicts.

The case may be quoted of an important oil company located in Neuquén Province limiting with the south of Mendoza through Colorado River, which requested saline waters overturn permit in the mendocinian provincial territory. Said waters were a product of oil exploitation of a field shared with Mendoza but mostly neuquenian

(almost in a 90%) so as to prevent Río Colorado contamination to which Mendoza is jointly obliged together with the other provinces of the COIRCO. In spite of the pressures from the Basin Committee and from national authorities towards Mendoza's acceptance for such proposal, Province Government, through Ministry recommendation denied such permit and indirectly forced the oil company to begin reinjection works on the Neuquenian side, the same demanding a very strong investment. Upon establishment of a foreign residues non-importation principle, the Province also indirectly strengthened a much more rigid monitoring and control mechanism of the oil companies' either systematic or accidental overflows in said river. This question, on the other hand, forces the Province to carry to an extreme the means for the companies—this time located on the own border or on affluents of the interprovincial hydric resource originating in Mendoza- to prevent overflows and be subject to an early warning monitoring system permanently reporting to the COIRCO.

An important limitation upon such mechanisms, however, arises if a potential laxity upon application-in some provinces-of rules agreed upon within COFEMA, generates differential costs delaying the others's development-which do apply such rules-in the long term. Towards compensation of these last effects, Mendoza has additionally impelled the establishment of general regional agreements, as for example with neighboring provinces (San Juan, San Luis and La Rioja) through Nuevo Cuyo Covenant (Pacto del Nuevo Cuyo).

### 2.3.2 With municipalities and provincial decentralized entities

Municipalities are regulated in Mendoza through the Municipal Organic Law N° 1079, where among other things competences and powers are set. Unlike other provinces (especially those having lately amended their Provincial Constitutions), Mendocinian Municipalities are not autonomous but instead are self sufficient entities, which theoretically implies that objectives and responsibilities related to environmental action, remain subject to what the Province may suggest, through constitutional powers deals with environment preservation and protection. However, due to different practical reasons but also to a great extent due to historical municipal claims, there is in fact a tendency towards greater decentralization. The positive effects decentralization may have are opposed to the potential jurisdiction conflicts that are beginning to turn up, and are increased due to incongruence amongst territorial divisions and commonly accepted ecosystemic regions. That is why it is not risky to think that a great deal of urban environmental problems -new wrongly located industrial settlements, poor facilities environmental control, traffic congestions, etc., may have precisely originated in political and policy power "diffusion" within the different municipalities and provincial decentralized entities. Thus, and from its very creation, the Environment Ministry has faced the urgent need for reacquiring the scattered environmental political power for the Province, without weakening the decentralization objective. This has normally implied that in general terms the Ministry induces coordination, either through (1) multijurisdictional covenants formalization (implying either technical or financial support by means of specific purpose subsidies or else establishing joint legal actions against control object) or (2) by means of summoning provincial authority to make them exercise their specific policy power for every particular case, within the technical instructions framework issued by the corresponding ministerial bureau. In the particular case of the General Department of Irrigation—a special self sufficient body—it is likewise: thus regularly implying a partial agreements complex process while establishing joint issues coordination.

## **3 ENVIRONMENTAL CONTROL AND ENVIRONMENTAL LEGISLATION ENFORCEMENT**

Within the above described framework, tasks carried out by the Ministry have also undergone an equivalent evolution. A first stage is characterized by promotion, control and correction actions to

strengthen institutional presence, both at the citizen level as well as in the same government there followed another type where objectives are restated under a more strategical and integral concept. In spite of the fact that these actions have dealt with basic structural deficit and public demand on the subject, keeping initiative in new fields has been searched for, using it not only on preventive basis, but also and fundamentally, as a ministerial policy governing principles establishment tool. Each Ministry area has been shaping through its own action a part of this layout, thus defining in practice the basis of a provincial environmental plan. The definitive institutionalization, foreseen by Environment Preservation Act, is a recently initiated process and which will surely take the whole 1994 year.

That basically implies formulation of a preliminary document, a wide consultation process, including the Environment Council, sectorwise scientific and academic groups and even citizens in particular through public hearing, until a final documentation after political consensus which only then may be raised to Provincial Congress. Its approval generates the obligation to the Ministry of annually raising the Provincial Environmental Report, an instrument on which all government actions must be based, and to which the private ones must refer.

Even though the different Ministry agencies are to a certain extent differentiable on a task organization basis, environment preservation is complementary for equivalent functions- according to whatever the primary interest area may be. It has been the responsibility of the Environmental Control and Sanitation Directorate, in the widest sense, to coordinate efforts towards reduction and control of every type of produced contamination. The set of policies and action programs in that respect, shape in practice an Environmental Control Plan which horizontally cuts across general ministerial plan areas.

Environmental control policies implementation requires periodical planning evidenced by action management (the Administration Program), direct or indirect intervention in the environment (the Sanitation and Decontamination Program), promotion and development of new methods to prevent contamination (Development Program), or else as vigilance so as to keep contamination restricted (the Operations Program).

Since it is a matter of supervision aiming at the past, present and future of the environmental situation, only the continuous and joint execution of such programs within a predefined political framework can fulfill environmental legislation. Thus, each environmental control policy requires not only the corresponding legal framework but also actions which, to become viable, must be methodically executed through such programs.

It is the Operations Program in particular comprising monitoring, facilities inspections, analysis and penalization actions, which concentrates on the present environmental situation. It directly applies to ones own jurisdiction, or indirectly through the policy effecting corresponding institutions.

Regional environmental control started out from relatively low levels as of ministerial action. It has been a challenge, how to raise such levels within the framework of the evolving legal-institutional situation having such a wide range of problems to attack. The economic situation has been influential in preventing abrupt and generalized application of the new rules or of the ones already in force. Only recently since national economic rearrangement have negative economic pressures seem to have weakened to a certain extent. Thus, consideration of the relative importance of the environmental problem, the degree of the attainable public impact and finally, the possibilities of success. It should be mentioned, however that the decisions to open more than one parallel track, has been based not as much on available means in the organization—either legal, institutional, human or financial-technical—but instead on the need for establishing the soonest possible action at a public level from the ministerial group, as well as in distributing the official pressures to act.

As a consequence, enforcement of environmental legislation and environmental control itself, in its widest sense is not always present in a transition process like the one the Province is living. Even when it is obvious that they cannot oppose or that

sooner or later the second one should include the first one. Maybe this is the main reason why the environmental legislation general implementation level (regulations) is comparatively less developed than the laws it derives from, or than the same particular implementation level. (See Fig.1). They are then two currents of convergent actions, the one setting the legal framework and the other generating the particular implementation framework and only then is the individual subject to control affected. This movement leads, if successful, to bi or multipartite covenants whose fulfillment should be surveyed. The sum of resolved cases in time, either by their amount or by their importance or both makes the general application of law and its particular regulations viable.

A discussion follows about the state of evolution of the main current topics and policies related to environmental control in the Province.

### 3.1 Main environmental control issues and policies in the province

Among the eleven major environmental control policies adopted, it is important to briefly describe—how environmental legislation enforcement evolves—the following seven mainly related to pollution reduction and control.

#### 3.1.1 Atmospheric pollution by mobile sources

Due to meteorological conditions and to pollution concentration, air pollution is a problem confined to Great Mendoza Metropolitan Area. Its main pollutant is suspension particles originating mainly in diesel engine vehicles emissions. Emissions originating in gasoline engine vehicles are increasing levels of hydrocarbons and oxides of nitrogen, and consequently, occurrence frequency of photochemical smog, but these for the moment still are a lesser concern than the first one. Reduction and control policy comprise strategies such as public transportation reorganization (increase in electrified portion, natural compressed gas conversion and emissions post-treatment, journeys rationalization, etc.), urban traffic arrangement and green spaces enlargement in the city. Other strategies include lead free gasoline use promotion, catalytic agents use by gasoline engine vehicles and compulsory periodical technical supervision of vehicles, beginning with public and cargo transportation. Unification of municipal rules (which up to date are responsible for private vehicles emissions control in public thoroughfare), and for adoption of international emission rules for new vehicles and fuel quality (EURO I y II) are central problems to solve in the very short term. Coordination with national and municipal jurisdictions represents the main present drawback.

#### 3.1.2 Pollution by urban solid domestic residues

Once again the Metropolitan Area is the main focus of attention (with nearly 200,000 annual tons), though not exclusive since there are another two population concentrations in the Province of about 200,000 inhabitants, and several ones of a lesser scale. The problem is the incorrect final residue disposal, which generates an increasing hybrid pollution of underground layers of water and occurrence of clandestine dumping places. Reduction and corresponding control policy is concentrated on the immediate problem solving, from garbage adequate treatment and recycling of the same, thus promoting differentiated collecting methods. For this, all Metropolitan Area Municipalities have been integrated into a Integral Managing System by means of a multijurisdictional covenant amongst the same and the Ministry, meanwhile promoting the creation of other similar though smaller or monomunicipal systems. Amongst other things, such covenants grant important subsidies and set specific guidelines for collection, concentration and treatment and final disposal of residues. In particular, an effort is made towards control and deactivation of clandestine or unauthorized municipal dumping places. Covenants fulfillment control and municipal and police vigilance of clandestine overturns in unauthorized places is at the moment the main ministry concern,

there being foreseen in the medium term issue of rules reducing difficult treatment residues generation or promoting recycled material use.

### 3.1.3 Contamination by dangerous and special residues

It is an issue that only recently has acquired its true central magnitude. Service, industrial and hospital activities—amongst others—generate an amount close to 100,000 annual tons of special and dangerous residues in the provincial ambit, which in general either lack a safe treatment or directly are incorrectly arranged for through urban solid residues managing system, sewer system or directly contaminate irrigation channel beds. As of sanction of Provincial Act on the subject matter supporting national regulations, the Province has adopted a specific reduction and control policy consisting in opening a compulsory record of generators, carriers and operators and granting each generator condition a regularization term either by means of an situ treatment or else through said operators treatment. Since it essential to generate an adequate operators offer for the foreseen objective, and this offer depends on an exhaustive generators survey, the process has initiated by means of a compulsory provisional record, which after this first phase becomes definitive, beginning from this moment on, to be computed the regularization term. The call for enrollment has not met the expected response, in spite of the public diffution, perhaps because few of them feel they are comprised by that Act. Consequently, it was decided to summon and individually send forms to each of the 10,000 main facilities, preclassifying them within a set generator category. In the event of noncompliance, there officially proceeds definitive record, the same authorizing, after pertaining term, to adopt measures towards transitory or definitive closing if its residues arrangement is inadequate. A plan of parallel supervisions is executed so as to guarantee gathered information to be true.

### 3.1.4 Atmospheric pollution by fixed sources

It is a problem that may be considered for the moment practically restricted to industrial areas adjancencies, in particular in the Metropolitan Area and very localized cases in other positions, except under very unfavorable atmospheric conditions. The kind of pollution is basically related to particles, smells and to a lesser extent to other compounds like sulphur. Control task has been mainly based on environmental auditing produced by the Environmental Control Directorate and aiming at main cases amongst which calcium carbide, ferromanganese, metallic silicium and cement factories. The auditing consists in one or more surrounding air quality monitoring campaigns, emission correlation and modelling, an analysis of emission producing factors and finally a technical recommendation for treatment of the same. If the facility accepts the result and establishes a sanitation plan, a quasi-agreement is de facto created, which, depending on the case importance may acquire or not the form of an express covenant. Otherwise, a summon takes place through the corresponding Municipality which holds the policy power to close the facility. Followed up cases evolution, including legal conflicts, would evidence that this process is viable. Parallel, Environment Ministry has decided to regulate emissions after Federal Rep. of Germany model, and establishing partial objectives in time.

### 3.1.5 Industrial water pollution

Water pollution is extended to the three mendocinian oases, affecting rivers and irrigation channels. It mainly comes from small and medium companies. Among the most numerous food product factories (mainly wineries and preserved food factories), alcohol factories, tannery and textile factories. So far control and reduction policy has essentially based on two lines: enforcement by the General Department of Irrigation and by Sanitation Special Projects for important facilities. Notwithstanding the progress of these two lines, Ministry policy aims in the short term at operating on special and dangerous residues, thus forcing separation and independent action of water effluents total flow of dangerous substances. This is one of the most difficult problems to give a correct course to and where results seem more uncertain. Reformulation of Waters Act in this sense is an issue that

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will demand special attention from environmental management in the very short term if policy does not go ahead.

### 3.1.6 Contamination by oil exploitation

Mendoza is the main oil producer in Argentina with about 5,000,000 m<sup>3</sup> per year. Fields comprise a good share of provincial west, from north to southern boundary. Main contamination is due to saline effluents whose volume is in some cases three times oil production. These effluents contaminate both surface and subsurface hydric resources. Likewise, accidental oil spilling, as well as exploration and exploitation tasks cause impacts on the surrounding environment, on wild animal life or on cattle. Main factors are basically three: water-oil separation in large open sky water lagoons, saline waters arrangement in poorly situated dams with high risks of breakage and infiltration, and lack of oil pipelines proper maintenance. These factors make exploitation in northern fields specially conflictive in relation to agricultural production and in those in the south that can affect the Colorado River affluents (interprovincial hydric resource). In addition, inadequate exploration and exploitation tasks practice and facilities abandonment increase the risk of local flora and fauna affectation. The latter is of special importance in natural reservations frontier areas (Llancanelo and Payunia). Reduction and control policy has been generating in two stages. The first stage has meant both a complete survey and pertaining control supervisions. Starting as from there sanitation sites were advised notwithstanding local legislation application. The end of this stage has coincided with exploitation privatization. Companies are more receptive and concerned about environmental problem as of privatization. A second inspection stage has begun with new regulations (under the Environment Preservation and the Dangerous Residues Acts) which incorporated recently sanctioned national rules. There, an oil situation record is created and a initial status report is demanded, from where sanitation plans are drawn on the basis of existing regulations and ministerial technical instructions. A periodical supervision plan by the Environmental Control Directorate, and the obligation from the Company to report any accident within 24 hours as well as to submit the particular situation annual report, shape the drawn control layout. In the case of southern fields with Colorado River potential affectation, there exists a particularized mechanics including an early warning monitoring system and contingency plans elaboration before any overturn accident. Explorations and new exploitations must submit a previous environmental impact study and subject to a Public Hearing. This second stage is in an advanced state of development and it includes a close cooperation between the General Department of Irrigation and the Ministry. Infringements against sanitation or improver overturns are sanctionable by one or the other jurisdiction as it may concern. The drawn application plan has good possibilities of success.

### 3.1.7 Contamination by mining exploitation

There exist two main cases related to uranium minerals exploitation in charge of Atomic Energy National Commission. The first one is given by inadequate facilities abandonment where 500,000 tn of mineral tales are arranged (Malargüe) and the second one related to an open sky mine exploitation (the main in the country) (Sierra Pintada). The Directorate has officially carried out auditings in both cases and technically advised to adequately dispose in the first case and to carry caution measures to an extreme in the second one. Conflicts occurring have produced as a consequence a new exploitation covenant, after which there is progress in both senses. This includes more strict control mechanisms, sanitation project elaboration in Malargüe, and initiation of the first stage of Environmental Impact Study in Sierra Pintada by means of an international advisory office, with a very vast experience in the subject matter, and selected by both parties. Other cases involve new mining exploitations such as potassium salts (also in Malargüe and perhaps the main mining project in the country), which must subject to environmental impact evaluation. So far, mechanics adopted in both types of cases have produced positive results.

#### **4 CONCLUSIONS: CHALLENGES FOR THE FUTURE**

Four years after its official initiation—through the creation of the Environment Ministry—the second environmentalist wave in provincial history would seem to have reached an inflection point, from which and with the expertise gained— can a notable development of public as well as private actions be reasonably expected towards improvement and preservation of our provincial ecosystems. For that it has been necessary not only to generate new legislation on the subject matter but also to try different types of practical mechanisms—institutionally and tactically—which make application of the same viable. The consolidation process of the environmental management legal-institutional building will develop more and more in parallel with the greater or lesser capacity to achieve concrete environmental results besides compatible with the Province economic development. The principal challenges occurring in this sense ranges from interjurisdictions efforts and rules compatibilization (towards the interior and exterior of our Province), passing on technical capacity increase (operative and informative) typical of the State and of links with academic and scientific bodies, establishment of a strong international cooperation, highly trained supervision network maintenance, etc., up to substantial modifications both in state action structure as well as on the private one which permit to foresee and react more quickly and with a better coordination before environmental challenges, promoting in turn new financing ways to face the tasks it may demand. Probably a milestone in the incoming stage be the Provincial Environmental Plan institutionalization, which, based on a deep, sectorwise debate and reaching necessary public and political consensus, be suitable both for idearium as well as for practical recipe to reach the expected concrete results. The necessary seriousness and reliability will be achieved by supporting environmental control programs coherent in terms of time and space.

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5. Lafalla, Arturo, Minister of Environment 1992-1993, on "Environmental Legislation in Mendoza".
6. Source: Environmental Legislation in Mendoza).
7. Moyano, Amílcar, "Legal-Environmental Structure of Mendoza (Argentina) under Oil Industry Risk", 1993, unpublished, reserved for "La Ley" publications.