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## ENVIRONMENTAL LEGISLATION APPLICABLE TO GEOHERMAL DEVELOPMENT

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### ABSTRACT

Environmental concerns have influenced public policies and have led to a new way of thinking called “sustainable development”. This is the beginning of new policies, institutions and laws. The environment includes: “the media but also the conditions around humans and things. These conditions can be physical (cool, hot, humid, draft, illumination, noise), social or psychological (happiness, sadness, ignorance, misery, wealth), biological or natural (tropics, mountains, desert) and even anthropological (city, industrial area, rural area). When referring to the environment, it is not restricted to natural or ecological aspects, but also includes social and cultural matters. Environmental laws are intended to protect the quality of the environment as a function of the quality of life for humans.

Environmental protection is a fundamental right, which can be claimed by anyone through a “legal appeal”. Environmental crimes constitute public crimes; in other words, any person can legitimately denounce them, and in all cases the Public Ministry (in Costa Rica) can carry out an investigation and present a legal demand. International agreements started the so-called “green era”. It is from this point onward that the legislative establishment of standards began to develop the concepts that were discussed in international treaties, changing laws and even creating constitutional reforms. New laws indicate that “damage or pollution to the environment can take place by an action or omission, and they are imputable to all legal or civil persons responsible for those actions or omissions”. The environmental legislation applicable to geothermal projects is discussed in this document.

### 1. INTRODUCTION

Environmental Law is changing legal systems worldwide. It is noticeable in the huge number of standards or norms that have originated on this topic, from national laws to international treaties. Its impact has affected everything from the highest standards to those of lower ranks. Environmental topics have influenced public policies, leading to the development of a new way of thinking called “sustainable development”. This is the beginning of new policies, institutions and laws. In Costa Rica, environmental awareness began its evolution in the 1970s, when the government implemented the protection of lands through the designation of national parks, conservation areas, wildlife refuges and protected zones; this represented a new way of handling the national territory taking the environment into account.

The “environmental phenomenon” starts in 1994 when there is a reform of Article 50 of the Costa Rican Political Constitution, which incorporates the right to a healthy and ecological environment in equilibrium. Since then, many constitutional reforms have taken place, along with an important quantity of environmental legislation and an extraordinary number of decrees and regulations. It can be said, in a way, that the standards have “greened out” our entire legal system.

Before the grand constitutional reform of 1994, Costa Rica had subscribed to many International Treaties that deal with environmental protection. Since that time, laws related to nature conservation have proliferated. The United Nations also supported these environmental issues; for instance, with the Stockholm Declaration on the Human Environment in 1972, which is the Magna Carta of International Environmental Law. Later on, other documents were written, such as the World Charter for Nature of 1982, the report of the Environmental World Commission (Brundtland Report: Our common future, where the term “sustainable development” is first addressed) in 1987, the Earth’s Summit, the ONU’s conference on Environment and Development in Rio de Janeiro in 1992, and the Kyoto Protocol in 1997.

The implementation in Costa Rica of the Environmental International Laws can be summarized in three phases:

Phase 1: Environmental International Laws were developed through International Treaties

Phase 2: Local congressmen helped to implement local laws

Phase 3: Laws of lower rank were modified within the legal system.

Due to the constant growth of the Environmental Laws, all kinds of professionals (not only lawyers) that are involved in environmental affairs are forced to know the implications of this complex environmental legislation.

## **2. ENVIRONMENT AND ENVIRONMENTAL RIGHT**

Before defining legal discipline, it is necessary to know the meaning of Environmental Laws. Based on a definition from an ecological dictionary, the environment includes: “the media but also the conditions around humans and things. These conditions can be physical (cool, hot, humid, draft, illumination, noise), social or psychological (happiness, sadness, ignorance, misery, wealth), biological or natural (tropics, mountains, desert) and even anthropogenic (city, industrial area, rural area) (Salazar and Cajiao, 2004). When speaking of the environment, it is not restricted only to natural or ecological aspects, but also to social and cultural matters. Environmental laws are intended to protect the quality of the environment as a function of the quality of life for humans.

Then, the environmental laws are “the group of standards and national principles (including international laws) that rule and give orientation to the relationship between humans and their natural or urban surroundings, with the purpose of reaching an equilibrium that allows the satisfaction of the human needs through social, productive and cultural processes, taking into account the integrity and conservation of the natural resources”. (Salazar and Cajiao, 2004)

## 2.1 Principles of the Environmental Laws

Before examining the laws applicable to geothermal projects, it is necessary to list the principles that govern the environment laws. These principles allow a better understanding of the meaning of the laws, especially when it is necessary to interpret them.

The principles involved in the Costa Rica Environmental Organic Law are the following:

1. *The environment is common heritage of the inhabitants*: this is to say that the environment belongs to everybody, and therefore, the inhabitants have rights and obligations,
2. *Right to a healthy environment that must be protected*: Everybody has the right to enjoy a healthy environment that is ecologically sustainable,
3. *The nation must see to the rational utilization of the environment*: the rational utilization of resources allows the development of future generations. This is also known as the “equity principle” between generations, that is, instead of inheriting the Earth, “it has been taken as a loan from our children”,
4. *To damage the environment is considered a crime*: the nation must utilize the penal, civil and administrative mechanisms to prevent or sanction any damage to the environment.

Some additional principles have come from international agreements, such as:

1. *Principle of nation’s sovereignty*: In accordance with the Letter from the United Nations, nations have the right to exploit their resources in agreement with their development and environmental policies, while avoiding damage to the environment in other countries.
2. *Principle of participation, consultation and access to information*: It appears granted in Article 10 of the Rio de Janeiro Declaration, when it was established that in the country, any person should have access to information regarding what is determined by the environmental public authorities, particularly if it affects his or her surroundings.
3. *The one that contaminates must pay*: This principle states that the one that contaminates the environment is responsible for the damage done. The cost of the measures taken to avoid or minimize the damage done to the environment is to be covered by the lawbreaker. This can be found in Article 16 of the Rio de Janeiro Declaration.
4. *Precaution principle*: Found in Article 15 of the Rio de Janeiro Declaration, it refers to the protection of natural resources. A preventive attitude must exist, that is, damage should be minimized, and prevention should be the dominant principle.
5. *In dubio pro natura*: In case of doubt, the final decision is to be made in favor of the environment.

## 2.2 Constitutional Treatment of the Environmental Laws (1)

Before discussing specific legislation related to geothermal projects, it is necessary to know the highest standard or norm of the legal system, which lower-rank laws cannot contradict because it is the foundation for these laws. Furthermore, environmental protection is a fundamental right, which can be claimed through “legal appeal”.

In Costa Rica the Political Constitution Law states: “the nation will procure the major welfare of all inhabitants in the country, organizing and stimulating the production and the best share of wealth. Every person has the right to a healthy and ecological environment that is in equilibrium. For this reason, anyone can denounce acts that infringe upon this right, and demand remediation for the damage done. The nation will guarantee, defend and preserve this right. The law determines the responsibilities and the corresponding sanctions”.

This Article 50 establishes three concrete obligations of the nation: to guarantee, defend and preserve this human right to enjoy a healthy environment. This right binds with constitutional Article 21, which says: “human life can not be violated”. Based on this, the Constitutional Courtroom makes a connection between the right to life and welfare, and environmental protection. The jurisprudence in this sense originated from claims made by the inhabitants that saw their health affected because in their communities there were polluting activities such as swine or bird farms that discharged untreated residual liquids to surface waters and /or soils.

The right to a healthy environment is equivalent to the desire to improve the quality of life of the inhabitants, in such a way that exceeds the criteria of natural conservation to be involved with common personal activities, such as family and labor activities as well as the media where the person lives. This is the reason why the environmental right is a “transversal right”, that is, it covers the entire legal system, modeling and interpreting its institutions. Ecological equilibrium is related to the balance that should exist between the society and the conservation of the natural resources.

### 3. INTERNATIONAL ENVIRONMENTAL RIGHT

As mentioned above, the international agreements started the so called “green era”. It is from this point on that the legislation of standards began to develop the concepts that were discussed in international treaties, changing laws and even creating constitutional reforms. The nations undertook efforts to reform their internal laws, in order to take into account the commitments regarding environmental protection. This “legislative revolution” has exemplified the severity of the environmental situation and also has influenced systems of production.

For this reason, it is important to highlight at least the most relevant treaties.

1. *Declaration on the Human Environment, Stockholm, Sweden, June 16<sup>th</sup>, 1972*. In this declaration, the following fundamental aspects are included: a) the human right to live in a healthy environment b) preserve natural resources for the present and future generations and c) confirm the relationship between economical and social development, as well as the preservation of the environment.
2. *World Charter for Nature, New York, USA, October 28<sup>th</sup>, 1982*. This letter refers to: a) that all species should be maintained in sufficient quantity to assure their survival, b) the necessity to understand conservation in a global manner, to protect all forms of life in all areas of the globe, c) that nations should take responsibility in implementing nature conservation in their development and planning programs, d) that environmental impacts should be evaluated in the activities that may cause environmental damage and that activities whose environmental consequences are not known should be prohibited (the precaution principle), e) the right of all inhabitants to participate in the decision-making process that directly affects their environment and to have access to legal resources when the environment has been damaged.
3. *Declaration on Environment and Development, Rio de Janeiro, Brazil, June 14<sup>th</sup>, 1992*. This declaration confirms the agreed-upon concepts that were treated in the previous documents and incorporates the following new ones: a) stipulates that policies and environmental regulations should not justify any discrimination in the international market, b) establishes that the nations should adopt laws and effective environmental measures, especially related to the responsibility for environmental damage, c) promotes recognition of nations with indigenous peoples and their participation in decision making for sustainable development.
4. *Kyoto Protocol, Kyoto, Japan, December 11<sup>th</sup>, 1997*. This protocol seeks to: a) reduce greenhouse gases such as carbon dioxide, nitrous oxide, methane, hydrofluorocarbons and sulfur hexafluoride, which are natural and anthropogenic gases that absorb and re-emit infrared radiation and form part of the atmosphere, b) foment energy efficiency, c) promote investigation, promotion, development and expansion of new alternative energy options and renewable energies that utilize technologies for trapping carbon dioxide and advanced new

technologies that are ecologically rational, d) limit or reduce methane emissions by recovering them as well as decreasing their utilization in waste treatments and during energy production, transportation and distribution, and e) limit or reduce the gases that produce the greenhouse effect due to fuel utilized for international transportation (by air or/and by sea), working together with the International Civil Aviation Organization as well as the International Maritime Organization, respectively.

## **4. ENVIRONMENTAL LEGISLATION APPLICABLE TO GEOTHERMAL PROJECTS**

### **4.1 Constitutional Environment Law (2)**

In this law, Article 98 indicates that “environmental damage can take place by an action or omission and is imputable to all legal or civil persons responsible for those actions or omissions”

This law also indicates that the violators of this law or the ones that regulate environmental protection (legal or civil persons) will be collectively and individually responsible for the damages done. Also, no matter if the damage is by action or omission, the leaders of the projects or companies are individually responsible for the damage done. This law provides the general background for issuing specific laws regarding various environmental topics such as: water, air, biodiversity, energetic resources, etc.

### **4.2 Biodiversity and Wildlife Laws (3, 4)**

Biological diversity is fundamental to the quality of sustainable life on the planet. Even though there are strong campaigns to avoid the extinction of plant and animal species, unfortunately their destruction still continues. This topic is very important because of the extent of biodiversity that is under threat.

To address this topic, there are two very important international agreements:

1. *Convention on Biological Diversity, Rio de Janeiro, Brazil, June 13<sup>th</sup>, 1992.*
2. *Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere, Washington, 1940.*
- 3.

Regarding Costa Rican legislation, it should be noted that:

The law defines wildlife as “the group of continental and insular fauna that lives in natural, temporal or permanent conditions and the flora that lives in natural conditions in the national territory”. It also declares natural fauna as public domain and natural flora as of public interest (Article 3, Law for the Conservation of Silvestre Life).

Biodiversity is defined as the “variability of living organisms of any source in land, air, marine or aquatic ecosystems as well as any other ecological complex”. Also it declares that the government has complete and exclusive sovereignty regarding the elements of biodiversity. Article 49 of this law states the need for the government and all citizens to maintain ecological processes. It grants the administration the right to request an environmental impact evaluation for those projects that may affect biodiversity (Article 92).

This is such as an important topic that Article 105 states that “all persons can legitimately act in an administrative or judicial role in defense of biodiversity protection”.

Moreover, Article 111 transcribes “regarding crimes committed by public workers or professionals carrying out their professional duties, the judicial authority may impose a sanction of incarceration for up to a maximum of 5 years.”

### **4.3 Land Use, Management and Conservation Law (5)**

For some judges, land legislation is related more to agriculture than to industry. However, in practice, courtrooms have integrated both agriculture and industry as regards protection of the environment.

At the international level, there is the United Nations Convention to Combat Desertification in countries affected by extreme drought or desertification, particularly in Africa.

At the national level, the Land Use, Management and Conservation Law has the function of protecting, conserving and improving lands by an integrated and sustainable management process with other natural resources, through better environmental planning. It provides land management practices that help to avoid leaching and the accumulation of industrial sludge. It controls the use of heavy machinery, tools and items that could damage physical, chemical or biological land characteristics. Also it states that the person(s) that contaminate or deteriorate soils purposely or accidentally must repair the damage caused to the environment. All of this is included in Articles 29, 30 and 52.

The Environmental Organic Law, in Articles 53, 54, 68, and 69, refers to the control of practices that cause erosion and other forms of soil degradation, as well as the obligation of civil and legal persons, public and private, to avoid soil contamination from inappropriate accumulation, storage, collection, transport or final dumping of waste and toxic substances of any kind.

### **4.4 The Atmospheric Resource**

This is perhaps one of the most protected resources worldwide, given the increased problems that contamination and other human activities have generated with respect to the ozone layer, global warming and acid rain.

At the international level we have the following instruments that have contemplated this matter:

1. The Vienna Convention for the Protection of the Ozone Layer.
2. The Montreal Protocol on Substances that Deplete the Ozone Layer.
3. United Nations Framework Convention on Climate Change, or Kyoto Protocol.

At the local level, Costa Rica has an Executive Decree (No. 30221), published on January 18<sup>th</sup>, 2002, which regulates the Emission of Atmospheric Contaminants. Also the Constitutional Environment Law, in Articles 49, 62 and 63, considers atmospheric contamination as the concentration of solid particles, dust, smoke, vapor, gases, unpleasant odors, radiation, noise, imperceptible acoustic waves and others that are present in higher concentrations than those permitted in the aforementioned regulation.

### **4.5 Cultural and Archaeological Heritage and Scenic Beauty**

It is here where the problem of visual contamination is addressed. Although it is an increasing problem, usually it is ignored. Billboards, signs, flashing lights, etc., are part of this problem. All of this degrades the cultural heritage and the scenic beauty.

According to UNESCO (the United Nations Educational, Scientific and Cultural Organization), culture deals with all forms of life and expressions in a given society. This includes customs, beliefs, religion, etc.

Cultural heritage covers monuments and places with historical, esthetic or archeological value. Scenic beauty deals with subjective aspects; it is composed of a wide range of natural resources: rivers, mountains, volcanoes, lakes, forests and biodiversity.

Environmental degradation has affected the quality of scenic landscapes as a result of the waste disposal, areas of eroded soil, logging, and contaminated waterways and rivers, causing an ample range of visual contamination.

UNESCO is the entity responsible for the legal international protection of the cultural heritage, through international agreements such as:

1. Convention concerning the Protection of the World Cultural and Natural Heritage. Paris, October 17<sup>th</sup> – November 21<sup>st</sup>, 1972.
2. Recommendation concerning the Preservation of Cultural Property Endangered by Public or Private Works. Paris, November 22<sup>nd</sup>, 1968.
3. Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere, October 24<sup>th</sup>, 1940, Washington, USA.

Regarding legislation in Costa Rica, the most outstanding is the following:

- a) Article 89 of the Political Constitution states: “Among the cultural duties of the Nation are: to protect natural beauty, conserve and develop the historical heritage and the national artistic heritage as well as to support private initiatives for scientific and artistic progress,
- b) the law that created the Costa Rican Tourism Institute on July 30<sup>th</sup>, 1955, and
- c) the Constitutional Environment Law in its Articles 71 and 72, which takes into account visual contamination and conservation of landscapes; and points out as sources of contamination actions or installations that surpass the applicable and established technical regulations.

#### **4.6 Noise Pollution**

Noise pollution can be easily recognized at night, when it disrupts the right to rest, particularly if the polluting activity occurs near housing complexes. The entity responsible for noise pollution in Costa Rica is the Health Ministry. In Costa Rica, Executive Decree 28718-S, published on June 15<sup>th</sup>, 2000, regulates the control of noise pollution.

Noise is understood to be unwanted and disturbing sound that psychologically or physically affects humans or exceeds the established limits in the mentioned regulation. The unit of measurement is the decibel (dB).

Among the specific prohibitions mentioned in this regulation, Article 18 states in Section e): “It is prohibited to install or use heavy machinery or equipment that exceeds the basic limits of noise that were established by this regulation because they are considered to be excessive perturbing noise contaminants”. Article 23 of this same regulation makes an exception for the noise produced during the installation and repair of essential public services. However, Article 24 establishes that “the exceptions mentioned do not impede the Health Ministry from requiring the best commercial and available technology for noise control, when the activity is carried out”. In addition, the Constitutional Environment Law sets controls for noise pollution in its Article 60, paragraph e).

#### **4.7 Water Resource (6)**

Access to clean water is fundamental for life, and therefore it is considered to be a human right. It is a resource that only nature can provide to us, because man has not been able to develop the technology to produce it. Previously, it was considered a renewable resource, but due to its scarcity and the degradation of its sources, nowadays we cannot say the same. Water resources are considered to be the most important of all natural resources. However, although there are sufficient laws and administrative entities created for its protection, the degradation of this resource still continues. For example, watersheds are suffering great deterioration as a result of deforestation, landslides, and degradation of waterways, aquifers and groundwater due mainly to the increase in industrial, domestic and agricultural waste. There is a continuous decrease in amount of drinking water available.

As stated previously, there is abundant legislation for water protection: watershed administration, water quality norms, and regulation of the reuse and evacuation of residual waters, as well as the Water Law, in which the contamination of water is prohibited. The Constitutional Environment Law dedicates Chapter XII to water, where it can be seen that water is of the public domain and that its conservation and sustainable use are of social interest.

The Health General Law (7), in its Article 275 states literally: “it is prohibited for any civil or legal person to contaminate surface waters, groundwater and waters in the land-maritime area, directly or indirectly by draining or discharging or storing, voluntarily or negligently, liquid, solid or gaseous residue or waste, radioactive or non radioactive, waste water or substances of any type, that renders the physical, chemical or biological characteristics of the water unusable for domestic, agricultural, industrial or recreational use, endangering the health of persons or animals (land and water)”. Article 261 of the Criminal Code establishes a sentence of three to ten years in prison for persons that poison or contaminate water or dangerously adulterate it. If the consequence of such actions causes the death of another person, the prison sentence will be from eight to eighteen years.

Within all of the existing norms, the “Regulation for drilling and groundwater exploration” No. 30387 Environment and Energy Ministry and Agricultural Ministry, published on April 29<sup>th</sup>, 2002, should be specially addressed. This regulation determines the principles that govern national policies regarding the management of water resources and its stipulations shall be incorporated in working plans of public and private institutions. Article 15 of this regulation states that “contaminating substances such as solvents, oils or biodegradable detergents may not be used during well drilling, nor may they be dumped in soils near the well”. Article 30, on the other hand, states that “drilling and exploration for groundwater will be governed by the laws and applicable regulations that take into account the regulation and protection of water sources, regarding their management and possible sources of contamination”. Finally, Articles 6 and 121, paragraph 14 of the Political Constitution establish the complete and exclusive sovereignty of the nation regarding water.

More than two thirds of the surface of the planet is covered by water, therefore constituting an ever-more important natural resource that needs greater protection each day.

#### **4.8 Sanctions for Environmental Crimes**

All of the previously discussed laws include sanctions for civil or legal persons that infringe upon what is established in them. It should be noted that if there is an infraction, there will be a corresponding sanction. The sanctions can be of two types: penal or administrative.

Penal sanctions are the most serious, because they are a consequence of “environmental crimes” and their sanction is sentencing to prison (8). Currently there are twelve environmental laws and a total of eighty-two environmental crimes.

For example, the Biodiversity Conservation Law contains 16 conducts that qualify as crimes. One of them is “the use of poisons, explosives, insecticides and herbicides, or any other method capable of eliminating wild animals, in such a way that it endangers their subsistence in a zoogeographic region”. This conduct is sanctioned by sentencing to prison for one to two years.

Water contamination that endangers health, according to Article 261 of the Penal Code, will result in a sentencing of three to ten years in prison. Crimes for health-endangering air pollution have a sanction of one to five years in prison. In this case, the sanction is applied based only on proof that the violator knows that the substance emitted to the environment is an air contaminant.



Article 90 of the Wildlife Conservation Law sanctions unauthorized persons who destroy plants in official areas with a fee of US\$20 to \$40. Article 23 of the National Archaeological Heritage Law sanctions persons who destroy archaeological monuments with six months to three years of prison.

It is important to mention that environmental crimes constitute public crimes, in other words, any person can legitimately denounce them and in all cases the Public Ministry can carry out an investigation and present a legal demand. Also, the Attorney General of the Republic, Non-Governmental Organizations and the Public Defense can denounce environmental crimes.

For all other actions that do not form part of crimes, but are still damaging to the environment, the Nation can apply protective measures and sanctions according to Article 99 of the Constitutional Environment Law, such as warnings, sanctions, restrictions, cease-and-desist orders, foreclosure of acts, cancellation of permits, imposition of compulsory obligations, modification or demolition of constructions, enrollment in environmental educational courses, or environmental community service work.

## **5. INTERNATIONAL STANDARD: ISO 14001:2004**

Apart from legal mechanisms, which must be obeyed, there are voluntary options regarding environmental protection, such as the International Standards Organization (ISO) norms. Companies utilize these norms to guarantee their commitment to the environment and by doing so they obtain an economic benefit reflected in their clients' confidence that their products and services meet the necessary environmental requirements, therefore making them more desirable.

ISO is a worldwide federation of national standards organizations (members of ISO). The development of international standards is normally done by ISO technical committees. The principal task of these committees is to prepare the International Standards or Norms. The projects for International Standards that are accepted by the technical committees are sent to their member organisms to be voted on. The publication as an international standard requires the approval, of at least, 75% of the member organizations. (Inteco, 2004)

The majority of the organizations are interested in achieving and demonstrating solid environmental performance through the control of environmental impacts in their activities, products and services, which should be in accordance with their policies and environmental objectives.

The International Standards on environmental management have been prepared to give to the organizations the elements of an effective system of environmental management, which can be integrated with other requirements, in order to help the organizations achieve their environmental and economic goals. The international standards specify the requirements for an environmental management system, which allows any organization to develop and implement policies and objectives that take into account legal requirements and information on significant environmental issues. The intention of these norms is to be applicable to all types and sizes of organizations and to be adjustable to diverse geographical, cultural and social conditions. (Inteco, 2004)

The success of the environmental management system depends on the commitment of all levels and functions in the organization, and especially the commitment adopted by the leaders of the organization. A system of this type allows the organization to develop an environmental policy, establish the objectives and processes needed to achieve the policy goals, take the necessary actions to improve output, and to demonstrate the acceptance of the system by fulfilling the requirements of the International Standard. The global objective of this International Standard is to support environmental protection while maintaining a balance with social and economic necessities.

The International Standard describes the requirements of the environmental management system of any organization, and it can be used to certify the environment management system. The International Standard can also be used as a guide (without certification) in order to provide assistance to any organization to establish, implement or improve an environmental management system. If the environmental management system is successfully implemented in an organization, it can be used to demonstrate that the company or organization is protecting the environment and meeting its legal requirements. (Inteco, 2004)

The International Standard 14001 is divided in the following chapters:

1. Objectives and field of application
2. Standards to consult
3. Terms and definitions
4. Requirements of the environmental management system

General requirements

Environmental policy

Planning

Environmental aspects

Legal requirements and other requirements

Objectives, goals and programs

Implementation and operation

Resources, functions, responsibility and authority

Competence, formation and conscience

Communication

Documentation

Document control

Operational control

Preparation and response to emergencies

Verification

Follow up and measurement

Evaluation of legal fulfillment

Non conformity, corrective and preventive action

Register control

Internal audit

Management review

The adoption of this International Standard does not guarantee optimal environmental results. In order to achieve the environmental objectives, the environmental management system can stimulate organizations to consider the implementation of the best available techniques when it is appropriate and economically feasible, and to take into account the relationship between the cost and efficiency of these techniques. (Inteco, 2004)

This International Standard does not establish absolute requirements for environmental performance, but it ensures that:

- a. All the commitments are fulfilled, including the ones in the environmental policy,
- b. The legal requirements are fulfilled
- c. Any other requirement that the organization has accepted, is also fulfilled
- d. Pollution is prevented
- e. There will be continuous improvements in the environmental management system.

## 6. CONCLUSION

After examining a broad list of international as well as national legislation related to the environment, it can be seen how energy resources and specifically geothermal energy may have a direct impact on other elements such as the atmosphere, soil, water, flora, fauna, noise and also the surrounding landscape.

Since geothermal energy is considered to be a renewable energy source, it is important that its interaction with these other elements should not generate negative impacts or contamination. This is where the public or private worker must be fully informed and updated, so that when a technical problem arises, the person is aware of the environmental implications of his or her decision.

The Constitutional Environment Law has established guidelines that must be obeyed and respected in order to develop projects in harmony with the environment. One of the characteristics of the legal discipline is that it has undetermined spatial dimensions. This means that environmental problems tend to be common internationally: air pollution, soil degradation, disappearance of fauna and flora, etc. Since these environmental problems are common in geothermal fields worldwide, the legal response should also be similar to that in other countries. If the country has signed international treaties on these matters, the legal responses are going to be very similar among the participating countries. Another important characteristic of the Constitutional Environment Law is that it needs strong technical support from other disciplines. The opinions of biologists, physicists, engineers, and other professionals directly influence and improve the environmental legislation.

The knowledge of environmental laws should not be reserved exclusively for lawyers; rather, any professional or technician that works in a geothermal field should have knowledge of them. Private or public workers need to know about the legal implications of the environmental laws in their jobs. It is important to be aware that environmental laws are intended to prevent and not to repress. It should be noted that the protection of the environment is a common responsibility, and that responsibility increases when there is a direct contact between the environment and the job being done, such as in the development of geothermal fields.

Environmental crimes constitute public crimes; in other words, any person can legitimately denounce them and in all cases the Public Ministry can carry out an investigation and present a legal demand.

Environmental Laws have generated transcendental and diverse changes in social, political and economic issues. The response to all of these changes from the government, communities and public or private workers must be correct and in time.

This document compiles an array of environmental legislation that must be known by anyone involved with the exploration, development, exploitation, operation and maintenance of a geothermal field. The fulfillment of these laws in geothermal developments can only assure the success in the generation of this type of energy in harmony with the environment.

The global objective of the International Standard (ISO 14001:2004) is to support environmental protection and prevent pollution in a way that is balanced with social and economic necessities. These standards may be a way to avoid legal sanctions.

An environmental law researcher, Campanella, has said: “knowing how to read nature, is like knowing how to read the book of God.” May this sentence remind us of the necessity to respect natural laws and those established by man, in order to protect our Planet.

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