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**COMPLIANCE WITH ENERGY RELATED  
ENVIRONMENTAL STANDARDS  
IN THE ARAB REGION**

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# COMPLIANCE WITH ENERGY RELATED ENVIRONMENTAL STANDARDS IN THE ARAB REGION

Hosny Khordagui\*  
Team Leader of Sustainable Management of Environment Group  
UN-ESCWA  
Beirut, Lebanon

## ABSTRACT

Most of the Arab States have passed legislation for the protection of their environment from energy related activities with various but chiefly modest degrees of success in compliance. The main challenging problem contributing to such limited accomplishment is the lack of a comprehensive, cohesive and effective system for the implementation and enforcement of enacted standards. In most of the cases, the main stumbling blocks facing implementation of environmental legislation are the lack of enforcement capacities and coordination among local and national competent environmental agencies.

Compliance with environmental standards can be achieved through the following set of activities:

- a) Issue the required environmental requirements (laws, legislation, acts, standards, codes of conduct, etc.).
- b) Promote compliance through communication of legislation, publication of relevant information, consultation with affected parties, provision of technical assistance to affected parties, etc.
- c) Comply with energy related environmental standards legislation through the following:
  - Development of the inspection capacities, credible monitoring, and accredited measuring systems to verify compliance,
  - Preparation of procedures for investigations of violations and rules for assessment of penalties,
  - Identification of the measures taken to compel compliance without resorting to formal court action, and
  - Development of measures to compel compliance through court action.

The main objectives of the present study is to overview and assess the general state of compliance with environmental requirements related to energy production and use; to identify corroborated and feasible approaches for the enforcement of energy related environmental legislation; and to depict the capacity needed to ensure environmental compliance within the Arab Region.

## 1- RATIONALE

Many of the Arab States are taking action to protect public health from energy related environmental pollution and to restore and protect the quality of their natural environment. Most of

these States have either developed or are currently developing National Environmental Strategies (NES) and/or National Environmental Action Plans (NEAP) that incorporate management strategies and measures to either prevent or control of pollution resulting from activities related to the energy sector. However, the majority of the Arab States has practically based their environmental management strategies on legal requirements (environmental legislation and standards) that must be met by all sectors that cause or may cause pollution. These requirements are the most important foundation for an effective environmental management; nevertheless they are only the first step. The more important second step is compliance, i.e. getting all sectors including the energy sector to comply by fully implementing the environmental requirements. Unfortunately, compliance does not occur automatically once requirements are issued. Achieving compliance usually involves efforts to promote, facilitate, encourage, and ultimately compel the behavioral changes needed to achieve compliance.

Most of Arab States have passed legislation for the protection of their environment with various but chiefly modest degrees of success in compliance. The main challenging problem contributing to such limited accomplishment is the lack of a comprehensive, cohesive and effective system for the enforcement of enacted legislation. In most of the cases, deficiencies of environmental protection are not necessarily the results of poorly designed laws but to a large extent, the lack of enforcing capacities and inadequacy of key compelling systems. The principle of overlooking the enforcement of an environmental legislation is undoubtedly leading to the spreading of a social value or a culture that implies "non-compliance is tolerated and compliance is not important".

In general, the current environmental laws and their associated regulations in most Arab States are either inadequate or fragmented to address the scale of deterioration of their national environments. The majority of compartmentalized legislation, which have been historically dealt with by separate national and some times local institutions are outdated, overlapping, ineffective, and non-cohesive. In some instances, the government owned energy facilities were found to be the violators of environmental laws and regulations set by the same government. It has also been noticed that environmental legislation is often unenforceable because they are either technically inappropriate or economically unaffordable.

Compliance means the state of conformity with environmental laws <sup>1</sup>. It occurs when environmental legislation is met and desired changes are achieved. If the environmental legislation is poorly designed, then achieving compliance and/or desired results will be hard if not impossible. It is traditionally known that in order to secure compliance, governments of the region should ideally take the following three consecutive activities:

- a) Issue the required environmental requirements (laws, legislation, acts, and codes of conduct, etc.).
- b) Promote compliance through communication of legislation, publication of relevant information, consultation with affected parties, provision of technical assistance to affected parties, etc.
- c) Enforce the legislation through the following:

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<sup>1</sup> Environmental Protection Agency, United States of America, (1992), "Principles of Environmental Enforcement".

- Development of the inspection capacities, credible monitoring, and accredited measuring systems to verify compliance,
- Preparation of procedures for investigations of violations and rules for assessment of penalties,
- Identification of the measures taken to compel compliance without resorting to formal court action, and
- Development of measures to compel compliance through court action.

The main objective of the present paper is to assess the general state of compliance with environmental requirements related to the energy sector; to identify corroborated and feasible approaches for their enforcement; and to depict the capacity needed to ensure their compliance.

## **2- FACTORS AFFECTING ENVIRONMENTAL COMPLIANCE IN THE ARAB REGION**

One of the primary goals of environmental enforcement in Arab States is to change the present behavior so those environmental energy requirements are adhered to. Achieving this goal involves motivating the regulated community to comply, removing obstacles that prevent compliance, and overcoming existing factors that encourage non-compliance. In many Arab States, the public sector (i.e. owned by the government) dominates the energy services in national economies. In most of these cases, enforcement of environmental legislation by one government organization against another government organization is usually difficult for many reasons. For instance, monetary penalties imposed on government-owned non-complying energy facilities are usually paid for out of central budget of the same government. Furthermore, the loss of such money generally has little or no impact on the individual energy operation.

In most Arab Region government systems, it is very difficult to hold managers and/or operators of publicly owned facilities accountable for failing to comply with environmental requirements. Generally, managers in energy sector are receiving conflicting signals. In numerous cases a signal would come from one government organization (usually Environmental Regulating Agency - ERA) requesting compliance with environmental requirements and standards, meanwhile, a signal from another government organization would come demanding higher levels of production and returns regardless of the associated environmental implications. For all aforementioned reasons, it appears that managers in government owned energy sector might have little incentive to ensure that their facilities are in compliance with the enacted environmental requirements.

Among the main factors found to influence environmental compliance in most Arab States we can include the following:

### **2-1- DETERRENCE**

The phenomenon of people changing their normal behavior to avoid a sanction is called deterrence. Enforcement deters detected violators from violating again, and it does deter other potential violators by sending a message that they too may experience adverse consequences for their noncompliance<sup>2</sup>. According to the most optimistic assessment, deterrence is considered at its infancy stage in Arab States. Apart from some cases of oil spills incidents in the marine

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<sup>2</sup> Marguglio, B.M. (1991), "Environmental Management Systems" Marcel Dekker, Inc. New York, USA.

environment, particularly, in the Persian Gulf and the Gulf of Suez, competent environmental authorities do not practice genuine deterrence. The penalty either in the form of jail sentences and/or monetary values is unpredictable, determined arbitrarily and is not based on a clear methodology for penalty calculation that incorporates the deterrence proportions. Most of Arab States charges a flat rate penalty for noncompliance without regard to the seriousness or extent of the inflicted environmental damage.

## 2-2- ECONOMICS

The regulated energy sector will be more likely to comply in case (1) where enforcement officials can demonstrate that compliance will save money, or (2) when the government provides some form of subsidy for compliance.

To eliminate any economic gain reaped by violating environmental requirements, the monetary penalty for violation would, ideally, at least equal the amount the facility would save by not complying<sup>3</sup>. This deters deliberate economic decisions not to comply, and help treat compliers and noncompliers equally.

In Arab States, the modality for elimination of economic gains resulting from noncompliance to environmental regulations is almost not existing except in cases limited to the protection of marine environment from oil spills and preservation of coral reefs in some other cases. Clear methodology needed for penalty calculation is nearly nonexistent in the Region.

## 2-3- INSTITUTIONAL CREDIBILITY

Each country in the Arab Region has its own social norms concerning environmental compliance. These norms derive largely from the credibility of the laws and institutions responsible for their implementation. In most of Arab States, the history of noncompliance can be attributed to one or more of the following reasons:

1. The enacted environmental regulations and standards are unenforceable due to defects in their design.
2. The institutions responsible for enforcement are lacking the political power.
3. The implementing institutions do not possess adequate resources for the enforcement of environmental legislation.
4. Regardless of their environmental performance and due to their heavy contributions to the national economies, energy sectors are sometimes considered to be beyond the need to comply with certain environmental regulations. For instance, some large corporate (for instance large multinational oil corporate) denies access to environmental inspectors, withhold environmental monitoring data, and ignore environmental reporting requirements.

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<sup>3</sup> Jonathan, L. (1996), "Making the polluter pay: EPA's experience in recapturing a violator's economic benefit from noncompliance" In "Fourth International Conference on Environmental Compliance and Enforcement" April 22-26 in Chiang Mai, Thailand.

## **2-4- PSYCHOLOGICAL FACTORS**

One of the major factors observed in the Arab States and common to human nature is fear of change. Most of the operating engineers in the power production and industrial sectors believe that familiar old ways of operating with environmental standards are safe. Following the operation manual and maintaining the prescribed production efficiency is always given the highest priority in the region. Any new required way of environmentally friendly production is always assumed to be risky at the least. This feeling of fear is well mostly pronounced among expatriate workers serving in the GCC Region since changes might represent unnecessary and probably unacceptable risk to their job security.

## **2-5- KNOWLEDGE & TECHNICAL FEASIBILITY**

As a regulated party, the energy sector in some cases do not simply know that they are subject to certain environmental requirements. They do not usually understand what steps they have to take to achieve compliance. Furthermore, they do not have access to the necessary technology to prevent, monitor, control, or clean-up pollution. Lack of knowledge and technology is representing an additional barrier to compliance in some Arab Sates.

## **3- CREATION OF ENVIRONMENTAL REQUIREMENTS FOR COMMAND & CONTROL APPROACHES IN ARAB STATES**

At the heart of regulatory command & control approaches are environmental requirements or standards. These are defined as specific practices and procedures required by law to directly or indirectly reduce or prevent pollution. Ensuring compliance with these requirements will evidently require enforcement<sup>4</sup>.

The first step in fostering compliance is to ensure that the environmental requirements themselves are enforceable, i.e. that laws provide the necessary authorities for enforcement, and that requirements are clear and practical. The enforceability of environmental requirements has great impact on the effectiveness and cost of enforcement and on the ultimate level of compliance. Requirements that rely on expensive, unreliable, or unavailable technologies will be difficult or impossible to comply with. Requirements that are unclear, imprecise, ambiguous, or contradictory may be difficult to comply with.

This chapter describes the evolution and basic framework of various environmental requirements it also discusses the principles of the various approaches adopted by Arab States to make these requirements enforceable. The following are the vehicles often used in the Arab Region for implementing environmental requirements.

### **3-1- ENVIRONMENTAL LAWS**

Most Arab States have issued environmental laws giving various degrees of authority to the environmental regulators. The environmental laws in the Arab Sates have also established the institutional framework required for enforcement by broadly describing "who" will be responsible for implementing "what". However, some of the environmental laws were not consistent,

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<sup>4</sup> Bina, B., (1996), "An integrated approach to environmental enforcement – A case study" In "Fourth International Conference on Environmental Compliance and Enforcement" April 22-26 in Chiang Mai, Thailand.

fragmented, overlapping and some times conflicting with existing laws issued earlier concerning natural resources management; water resources protection; energy uses; occupational health, etc.

### 3-2- ENVIRONMENTAL REGULATIONS

Regulations establish in greater detail than can be specified by environmental law the general requirements that must be met by the regulated community <sup>5</sup>. This might include how harmful substances should be tested, registered, handled, monitored, emitted, discharged, and/or disposed.

Most of the Arab States have either developed or developing a number of environmental regulations (called acts) using some times the participatory approach called for by the UN. Generally, different sectors of the government including the energy sector were involved in the process to secure maximum participation and transparency.

In nearly all cases, the developed environmental regulations are suffering from fragmentation. In order to avoid problems resulting from such fragmentation, it is important for Arab States to invest in the additional efforts needed to sensitize and integrate these regulations. A very successful air emissions reduction program for energy sector, for instance, can merely transfer the pollutants to another media. Successful measure to treat discharges could simply result in the creation of masses of sludge that are subsequently land-filled, causing soil contamination and underground water pollution, not to mention health and safety hazards.

A non-integrated approach also tends to encourage traditional, end-of-pipe controls (e.g. filters, scrubbers, cooling towers, electrostatic precipitators) which not only tend to transfer pollutants from one medium to another, but which, despite considerable investment costs, bring no economic payback. On-the-other-hand, an integrated approach in the design of the environmental regulations, encourages at-source, cleaner production measures, reducing the amount of waste to be disposed of, minimizing energy and raw material consumption, and preventing pollutants from appearing in any medium.

To enforce single medium regulations, Arab States should respond by developing system of single medium monitoring, inspection and enforcement. Inevitably, this causes a situation where those enforcing air pollution laws are at odds with those enforcing water pollution laws. Compliance with air pollution standards, for instance, might lead to reduced air emissions but increased effluents for water authorities to deal with.

A single medium approach also means that different agencies or departments are inspecting the same energy facility, requiring facilities to fill out forms and provide much of the same information. This can cause confusion for a company not to mention added paperwork, duplication of effort and disregard for public authorities' administrative complexity, and inconsistency.

Other problems, which can be caused by the fragmented requirements and implementation structures to control pollution in energy sectors in Arab States, include:

- Impeded cooperation between energy related environmental policy and other policy sectors.

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<sup>5</sup> Bulska, I.R. (1995), "The role of law in environmental management at the national level" In "Environmental management: Issues and solutions" Atchia, M. & S. Tropp ed. John Wiley & Sons, New York.

- An inaccurate assessment of energy related pollution problems and the development of solutions that might not work.
- The difficulty of setting priorities among problems.

To avoid these problems, the development of an integrated approach by Arab States is called for during the preparation of their environmental regulations (environmental acts). The single medium focus needs to be shifted to a multiple media focus on all releases of pollution from their source, namely energy facilities. Such an integrated approach allows pollutants to be followed from one medium to another.

The types of requirements typically used with command and control approaches for environmental management of the energy sector in the Arab Region are discussed below.

### **3-2-1- Requirements in the form of Ambient Standards**

Ambient standards (also called media quality standards) are goals for the quality of the ambient environment <sup>6</sup>. These standards are usually written in units of concentration such as Parts-Per-Billion (PPB). They set maximum allowable levels of pollutants in the receiving medium either air, water or soil.

Ambient standards are very useful in establishing environmental priorities. Setting ambient standards requires an explicit agreement on the environmental quality objectives that are desired and the costs that society is willing to accept to meet those objectives.

Most Arab States has established ambient standards particularly for air and water with less emphasis given to soil. Due to very high cost and the lack of technical capacities necessary for the development of environmental standards, most of the ambient standards were not developed by Arab States but rather adopted from other places. The main resources used for the extraction of recognized environmental criteria and standards in the Region were from the European Union, US-EPA standards, and/or Canadian-EPA standards. Internationally recognized standards recommended by United Nations organizations such as World Health Organization (WHO) were also widely utilized. During the selection process, several Arab States resorted to the assistance and advisory services provided by international expertise or UN specialized Organizations such as United Nations Environmental Program (UNEP) or UN Regional Commission (ESCWA).

In most of the cases, national committees of local experts were formed under the auspice of the national competent environmental authorities to study, analyze and then adopt the suitable ambient standards that are most appropriate to their specific environmental settings. Priority in most of the cases was given to the development of primary ambient standards with the aim of protecting the public health and reducing the health hazards associated with environmental exposure to harmful substances. Secondary ambient air and water quality standards are nearly not existent in the Arab Region. During the selection process of primary ambient quality standards, issues such as the techno-economic feasibility and societal costs associated with the enforcement of the adopted standards were not given enough considerations. Moreover, management systems, implementation

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<sup>6</sup> Environmental Protection Agency, USA, (1995), Interim economic guidance for water quality standards – Workbook), EPA-823-B95-002. Washington, D.C.



modalities and capacity necessary for monitoring and inspection were not given the proper weight or attention they deserve.

### **3-2-2- Requirements in the Form of Performance Standards (emission & effluent standards, & pollution loads)**

These standards are widely used for regulations, permits, and monitoring requirements. Performance standards limit the amount or rate of particular chemicals or discharges that a facility can release into the environment in a given period of time <sup>7</sup>. They provide flexibility because they allow sources to choose which technologies they will use to meet the standards. Often such standards are based on the output that can be achieved using the Best Available Technology (BAT). Sampling and monitoring are the only means to measure compliance with emission standards. Depending on the kind of control or monitoring equipment required, compliance can be difficult and/or expensive to enforce.

In Arab Region, performance standards come next in importance to ambient standards. Efforts are currently underway to compile performance standards. UNEP/ROWA and the League of Arab States (LAS) are promoting and encouraging these attempts in the Region. Meanwhile, ESCWA is attempting the approximation then the harmonization of these standards in the Region. At the current stage, emission standards of energy related activities in the Region are inadequate and do not cover the wide spectrum of complex and modern pollutants emitted to the natural environment of the region.

The lag in the development and/or adoption of emission standards, performance standards and pollution load as compared to ambient standards, by Arab States, can be attributed to the following elements:

1. Inadequacy of comprehensive environmental information, database, and inventories (mass balance) on energy processes and their associated emissions or effluent discharges to the environment.
2. Fragmentation of environmental authorities controlling environmental aspects of energy in the region.
3. Lack of national expertise in the area of environmental risk assessment of emitted pollutants; identification of their potential toxicological and environmental effects; identification of their technological control measures; and development of environmental management systems.
4. Inadequate environmental monitoring stations and laboratories needed for the characterization of emitted pollutants and their potential fate, transport and transformation in the natural environment.
5. Lack of experience in the assessment of total pollution loads emitted or released from various point and non-point (fugitive) sources in large energy facilities.
6. Lack of expertise in mathematical simulation modeling to project the transport, dispersion, dissipation and dilution of the emitted pollutants to propose threshold limits for emission.

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<sup>7</sup> Ravi, K.J., (1993), "Regulatory framework: United States, Canada, and Mexico" In "Environmental Strategies Handbook" Kolluru, R.V. ed. McGraw-Hill, Inc. New-York.

7. Lack of experience in relating emission loads to impacts on ambient environment and to define its assimilation capacity.

Alternatively, emission standards can be established in Arab States by estimating the discharges that are compatible with ensuring that, receiving areas around the energy facilities meet the ambient standards defined for the pollutants. However, this will require both considerable information on both sources and the ambient environmental quality and will vary from one area to another.

### **3-2-3- Requirements in the Form of Technology Standards**

Technology standards require the regulated community to use a particular type of technology such as BAT, or more recently Best Practicable Technology (BPT) and Best Available Technology Not Entailing Excessive Cost (BATNEEC) to control and/or monitor emissions. It is relatively easy for inspectors to determine whether facilities are in compliance with the technology standards by simply observing if the prescribed equipment are in place and operate properly <sup>8</sup>.

The implementation of technology standards has never been considered by Arab States. However, the performance of EIA policies, currently prevailing in most Arab States, might be the perfect modality for incorporating technology standards in the adopted command approach.

In many cases the suggested approach is referred to as New Sources Performance Standards (NSPS) in which standards are only applied to new plants. These standards should be considered as a special form of grandfathering since emissions from the existing plants are treated differently from emissions from new plants. Where NSPS are significantly stricter than standards imposed on existing plants and therefore costly, they may have the effect of prolonging the economic life of existing plants. On the other hand, it is easier for new plants to adopt cleaner processes and to incorporate treatment requirements in the initial design stages and therefore the costs of well designed NSPS need not to be excessive.

### **3-2-4- Requirements in the Form of Practice Standards**

These standards require or prohibit certain work activities that have significant environmental impacts. Like technology standards, it is easy for enforcement officials to inspect for compliance and take action against non-complying sources, but difficult to ensure ongoing compliance <sup>9</sup>.

In Arab States, practice standards are widely recognized and implemented particularly in the banning of leaded gasoline and in the management and control of hazardous chemicals generated from energy related industrial processes. However, these practice standards suffer from severe fragmentation and in many cases overlap in responsibilities among various enforcement bodies.

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<sup>8</sup> Ibid 1

<sup>9</sup> World Bank, UNIDO, UNEP & WHO (1997), "Types of Environmental standards" In "Pollution Prevention and Abatement handbook" World Bank, Washington, D.C.

### **3-2-5- Requirements for Reporting Information (Self Monitoring)**

These requirements are very different from the standards described above in that they require a source of potential pollution (i.e. an oil refinery, power plants, cement factory, etc. involved in generating, transporting, storing, treating and disposing of certain waste) to regularly generate and report information to the ERA. Sources emitting pollutants might also be required to monitor, report on, and maintain records of the level of pollution generated and whether or not it exceeded performance (emission) standards.

This sort of self-monitoring, self-inspection and self-reporting requirements is not familiar in most of the Arab Region. Practically, the duty of monitoring and inspection is carried out by the regulating agency itself. No matter how much budget and resources will be allocated for monitoring and enforcement by Arab States, the necessity of relying on a well designed and managed self-monitoring, self-auditing, and self-reporting programs is becoming indispensable. Self-monitoring programs are originally designed to monitor, document and report compliance with all regulating emissions standards to the ERAs.

It is therefore recommended for environmental authorities in Arab States to creatively cater their requirements to be based on factors such as size, assimilation capacity of surrounding environment, pollution loads, environmental and public health risks posed by the regulated communities. It is also recommended that requirements be gradually implemented in a phased approach to facilitate compliance. The first phase involves the less stringent requirements with minimum burden on the regulated facilities. Some time later, a second phase involving more stringent requirements can be implemented.

### **4- PROMOTION OF ENVIRONMENTAL REQUIREMENTS AND THEIR MEANS OF COMPLIANCE IN THE ARAB REGION**

Once created, promotion of environmental requirements and producing means for their compliance are always considered as an inherent part of any successful enforcement strategy. Compliance promotion is defined as any activity that encourages voluntary compliance with environmental requirements<sup>10</sup>. It helps overcome some of the compliance barriers discussed earlier. Most compliance strategies involve both activities to promote and enforce requirements. Policymakers in Arab States will need to determine and implement the most effective mix of compliance promotion and enforcement responses.

Experience from around the world has shown that promotion alone (carrot alone) is often not effective. Enforcement (stick) is important to create a climate in which members of the regulated community will have clear incentives to make use of the opportunities and resources provided by promotion (carrot). Experience has also shown that enforcement alone (stick alone) is not as effective as enforcement combined with promotion (carrot + stick). As a part of their comprehensive initiative, Arab States should promote compliance with their energy related environmental legislation and acts through a combination of the following measures:

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<sup>10</sup> Environmental Enforcement, "1997 North American Annual Report on Environmental Enforcement", The Commission for Environmental Cooperation. Green Lane, Canada.

## 5-1- FIRST: BY EDUCATION, INFORMATION DISSEMINATION AND TECHNICAL ASSISTANCE

Education, information dissemination and technical assistance to the energy sector lay the groundwork for its voluntary compliance. They are essential to overcome barriers of ignorance or inability that otherwise lead to noncompliance. Education and technical assistance make it easier and more possible for the energy sector to comply by providing information about the requirements and the modalities of meeting them. Provision of technical advice helps the sector take the necessary steps for compliance. Education and technical assistance are particularly important in the early imposition stages of new requirement-based program, and whenever the program requirements are amended.

In most of the cases, Arab States fell short from conducting the proper education and technical assistance campaigns needed to promote compliance of their energy sectors. This is chiefly attributed to the lack of perception and adequate resources, resulting in deficiency of information needed to establish sound enforcement programs.

### *Information to Energy Sector to Comply with Environmental Regulations.*

- ➔ **Publications**: Such as brochures and guidance manuals, created specifically for educational purposes, and distributed or made available to energy sector. These are the most common used means for dissemination of information in the Arab Region. However, the amount and quality of disseminated information is very limited. In most of the cases, these publications provide a narrow description of the environmental requirements and devoid of any technicalities on the means for compliance. In Arab Region the distributed publication, in many cases, has the dual-objective of informing regulated groups and more important the self-advertising for the regulating agency. These publications are mostly used to publicize the achievements and justification for the mere existence and spending of the ERA to the society.
- ➔ **Training Programs**: These are programs designed specifically to educate the energy sector about environmental requirements and compliance. They are inadequate in the Arab Region. This is mostly due to the lack of allocated financial and technical resources.
- ➔ **Conferences**: Following the issuance of environmental regulations, some Arab States have held orientation conferences that brought together officials from the regulating agency, the regulated communities and interested parties. These conferences were designed only to inform specific sectors on the content and effective date of the new regulation. Unfortunately, in all these conferences, enforcement officials played a minor role in providing guidance or assistance on the proposed means for compliance.
- ➔ **Hot-lines**: In most Arab States (except in Egypt and few others) there are no known dedicated telephone numbers that the regulated parties can call to ask questions and receive administrative, legislative and technical information on means of compliance.
- ➔ **Technical Assistance**: There are three means by which technical assistance can be provided. (1) By trained personnel who are made available by the regulating agency to visit individual members of the energy sector, and assist them taking the necessary changes for compliance. This form of assistance is nearly non-existent in Arab States. (2) By inspectors who provide technical assistance as part of their inspection. This service is partially provided but on ad-hoc bases and subject to the, experience, mood, views, attitude and personality of the assigned inspectors. (3) By special

assistance programs, set up for example at academic institutions and research centers that provide a central resource for information and technical assistance on compliance.

- ➔ **Media Announcements:** This sort of information is widely used in the West to distribute information through newspapers, television, or radio. The use of media to disseminate reports of enforcement has proved to be very effective in deterring other potential violators and in creating public pressure for compliance. In the Arab Region, apart from very few generic articles in the local newspapers regarding the passed environmental requirements and some unspecified cases of noncompliance, the media at large is hardly used to inform about environmental requirements, the ways to meet them and the corresponding enforcement activities.
- ➔ **Universities:** In Arab States, universities and research institutions play a pivotal role in educating the energy sector through their conferences and publications. Throughout the Arab Region, a culture of resorting to universities for information does exist particularly among alumnae (recipients of diploma from these universities) working and occupying high-ranking positions in the regulated community.

## **5-2- SECOND: BY BUILDING PUBLIC SUPPORT & PARTNERSHIP**

The public can be a powerful associate in promoting compliance with the issued energy related environmental requirements. They can also serve as watchdogs that alert officials to undetected cases of noncompliance. In addition, public support can create a social ethic or culture of compliance <sup>11</sup>.

Although, public participation and support are viewed in the developed world as indispensable for achieving compliance with environmental regulations, most government agencies in the Arab Region are neither willing nor able to cooperate with their citizens in this domain. In Arab States the level of public participation is limited to very few NGOs with environmental interests and concerns. However, most of the environmental authorities have a legacy of paternalistic or technocratic, if not authoritarian, relations with their public and the relevant NGOs.

## **5-3- THIRD: BY PUBLICIZING SUCCESS STORIES**

Publicizing success stories of compliance, by regulated energy facilities that have been particularly successful in achieving compliance, can provide an incentive for the rest of the regulated community. With the prevailing wave of environmental concern and awareness in the Arab Region, positive publicity about a firm's compliance success can enhance its reputation and public image. It can also create a positive social climate that encourages compliance.

## **5-4- FOURTH: BY DEVELOPING ECONOMIC INCENTIVES**

An obvious economic reason for compliance is that regulated facilities normally respond to both positive and negative incentives <sup>12</sup>. If expected penalties are sufficiently high, the threat of being punished for noncompliance should be an adequate reason for compliance. However, ERA monitoring

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<sup>11</sup> Canadian Environmental Protection Act (CEPA), 1996 "Enforcement and Compliance Policy", Green Lane, Environment Canada, Canada.

<sup>12</sup> Cohen, Mark, (1998), "Monitoring and enforcement of environmental policy" New Ideas in Pollution Regulation, World Bank, Washington, D.C., UAS.

activities in Arab States are quite limited, leading to lower probability of detection. Moreover, even if discovered to be in noncompliance, associated fines and fees are either low or do not commensurate with the damage inflicted to the environment.

Banking and insurance industries in the Arab Region are becoming increasingly aware and directly involved in enforcement by requiring assurance of compliance with environmental requirements (particularly in the preparation of EIA of large-scale energy projects) before they will issue a loan or insurance policy to a facility.

#### **5-5- FIFTH: BY BUILDING ENVIRONMENTAL FOCAL POINTS IN ENERGY FACILITIES**

It is important to promote the concept of establishing internal Environmental Management Systems (EMS) within energy facilities to promote compliance and generally improve environmental quality. One of the main fundamental aspects of building internal EMS is the performance of environmental auditing.

Environmental audits are internal evaluations by energy facilities and government agencies, to verify their compliance with legal requirements as well as their own internal policies and standards<sup>13</sup>. They are conducted by companies, government agencies and others on voluntary basis, and are carried out by either outside consultants or employees of the company or facility from outside the work unit being audited. Audits can identify compliance problems, weaknesses in management systems, or areas of risk. The findings are usually documented in a written report.

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<sup>13</sup> UNEP & UNIDO, (1991), "Audit and reduction manual for industrial emissions and wastes" Technical series No. 7, UNEP Industry and environment Office, Paris.