Republic of Lebanon

Office of the Minister of State for Administrative Reform

Center for Public Sector Projects and Studies

(C.P.S.P.S.)

National Compliance Action Plan and Strategy & Brainstorming Report Concerning The Suggested Compliance Action Plan and Strategy

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July, 2001

TABLE OF CONTENTS

INTRODUCTION

A Compliance Action Plan (CAP) puts in place a suggested strategy to be adopted and followed by concerned parties in view of complying with some existing regulations.

International experience whether in developed countries or especially in developing ones has demonstrated that preparing a sound CAP, capable of securing compliance with pollution regulations is considered as a difficult task. Thus, the ultimate success of such an initiative would depend highly on a detailed preparation of an adequate strategy. The latter has to set a series of achievable objectives based on the government's means of support, monitoring and enforcement. On the other hand the same strategy should also take into account the overall situation of the country and its industrial sector, taking into consideration the possible needs and limitations regarding the implementation of the proposed plan.

The Strengthening the Permitting and Auditing System for Industries (SPASI) aims through this present report to provide a CAP and corresponding strategy for the needs of the Lebanese industrial sector. This comes as a next step within SPASI's objectives, following the development of the National Standards for Environmental Quality, the National Environmental Auditing Manual and the on-going preparation of a monitoring strategy.

This present paper will be divided into two main sections; while the first part will cover the analysis of research and interviews conducted, the second part will take into consideration the Lebanese situation relative to compliance issues and will be followed by the suggested strategy and CAP.

Following this brief introduction, the next section is to provide further details about the general methodology adopted in view of developing the National Compliance Action Plan.

METHODOLOGY

The methodology that has been applied to develop the CAP entails four main activities:

Activity I: Information Gathering

- Conducting a thorough literature and Internet review concerning CAP experiences mainly in developing countries;
- Conducting meetings with governmental representatives (i.e. experts from the Ministry of Environment (MoE), Municipalities, etc.);
- Conducting meetings with different Lebanese industrialists, their respective representatives and other concerned parties.

Activity II: General Analysis

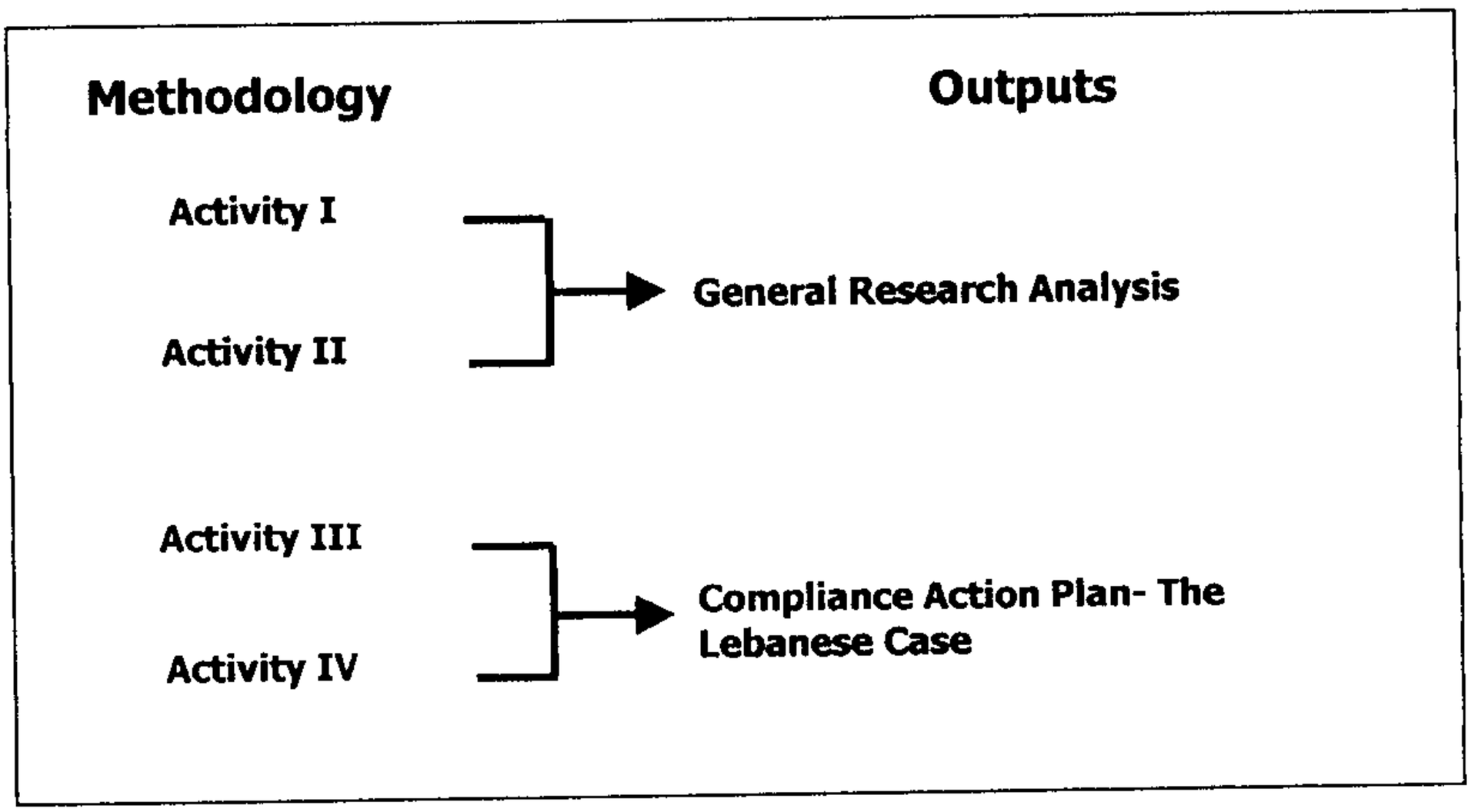
- Analyzing gathered information relative to positive and negative CAP experiences;
- Compiling the main elements constituting a successful CAP;
- Setting baseline information needed to develop national compliance action plan.

Activity III: Lebanese Situation

- Using gathered information to provide an overview of the current situation of the concerned Lebanese agencies (actual regulations, monitoring equipment, etc.);
- Using gathered information to provide an overview of the current situation of the Lebanese industrial sector (environmental performance, etc.).

Activity IV: Developing the National Compliance Action Plan

- Suggesting a successful strategy to help achieve the desired environmental objectives;



GENERAL RESEARCH ANALYSIS

1- International Experience of Some Developing Countries

As seen in the above methodology, a thorough research relative to international experiences was to be considered for the final development of the Lebanese CAP. International experience has shown that governmental environmental agencies in developing countries often face an uphill battle regulating industrial pollution. Considering this latter fact and in an effort of limiting repeated mistakes, it was decided to review and profit from previous experiences in different countries. A special attention was given to the cases of developing countries as their situation often reflected the present Lebanese conditions.
Thus, after a general review of various international scenarios a focus was to be made on the cases of the four following countries.

- Indonesia
- Mexico
- Tunisia
- Egypt

This selection of four developing countries was necessary as Lebanon itself is a developing nation, facing more or less identical challenges.
Furthermore, the different outcomes and strategies applied in those four situations provide a rich example of what could be a successful or a wrong strategy.

Thus, in this next section the selected cases will reflect two positive outcomes based on the case of Tunisia and Indonesia. On the other hand two negative outcomes will also be analyzed based on the experience of Egypt and Mexico. Such analysis will provide us with a better idea of what could be a successful or a negative strategy.

1.1 Indonesian Case

Situation Overview

Indonesia's Environmental Impact Management Agency (BAPEDAL), in charge of promulgating the country's environmental regulations was experiencing in the late 1980s difficulties in enforcing and ensuring the required compliance levels. As BAPEDAL's regulations to counter the increasing pollution from a booming manufacturing sector, found limited results, the Indonesian environmental agency often had to settle for voluntary agreements, out-of-court settlements and other ad hoc approaches. Such limited results led the Indonesian government to adopt a new strategy to favor the adoption of environmentally friendly measures.

Compliance Action Plan: Brief Overview

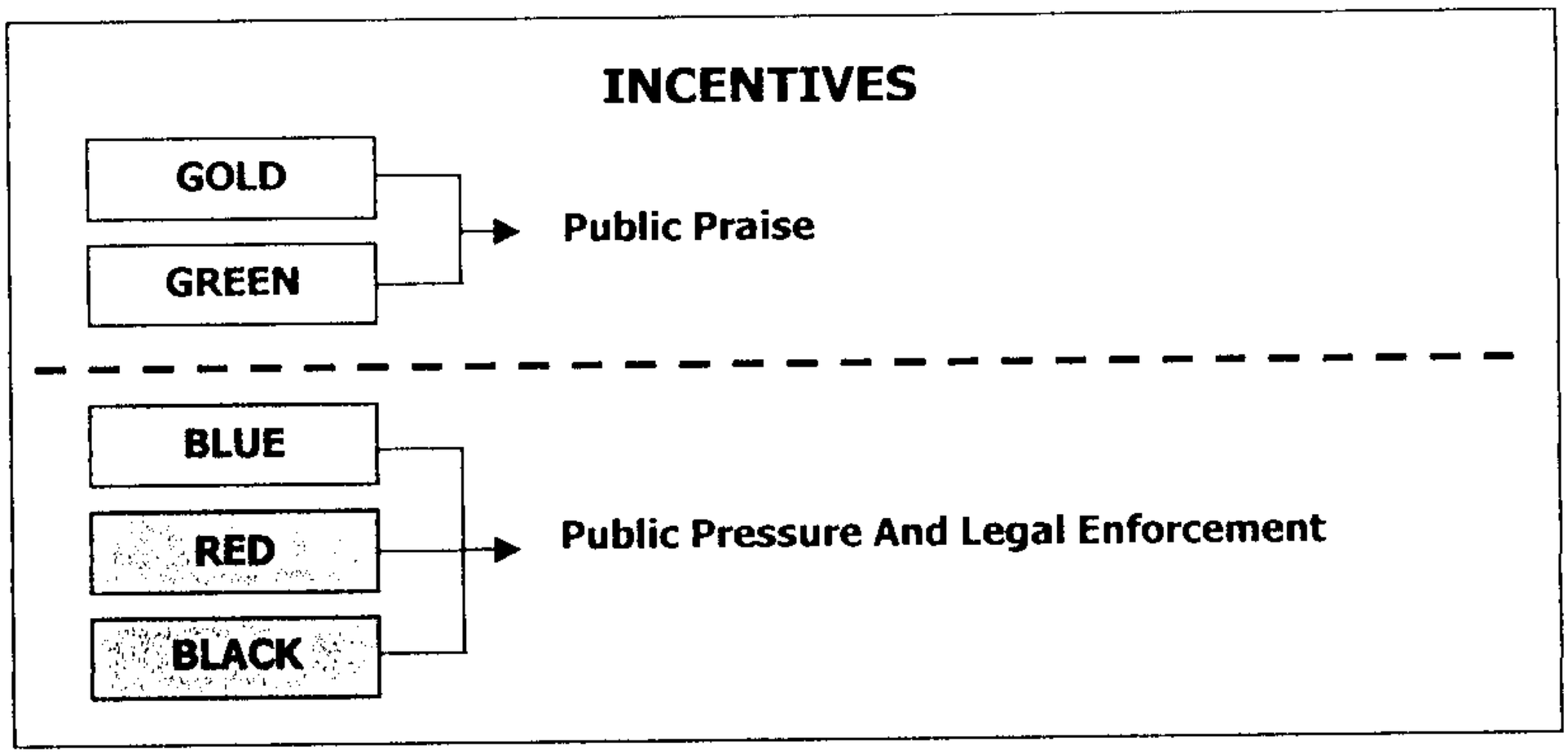
As its enforcement and monitoring strategies were yielding a limited result relative to the overall industrial environmental performance, BAPEDAL commenced experimenting with potential alternatives and in 1993 started developing the Program for Pollution Control Evaluation and Rating (PROPER). Two years later in 1995 PROPER was introduced to the public, as a new mean for reaching, enforcing and encouraging the industrial compliance. **PROPER's objective was to receive pollution data from factories, analyze and rate their environmental performance and disseminate the ratings to the public.**

BAPEDAL- PROPER Program Ratings		
Compliance Status	**Color Rating**	**Performance Criteria**
Compliant	**Gold**	All requirements of the green rating, plus similar pollution control for air and hazardous waste. Polluter achieves high international standards by making extensive use of clean technologies, minimizing waste, preventing pollution, recycling, and so on.
	Green	Pollution level is significantly lower than the discharge standard. Polluter also disposes of sludge properly, ensures good housekeeping, keeps accurate pollution records, and maintains the wastewater treatment system.
	Blue	Polluter applies effort sufficient to meet the standard.
Non-compliant	**Red**	Polluter makes some effort to control pollution, but not enough to achieve compliance.
	Black	Polluter makes no effort to control pollution, and causes serious environmental damage.

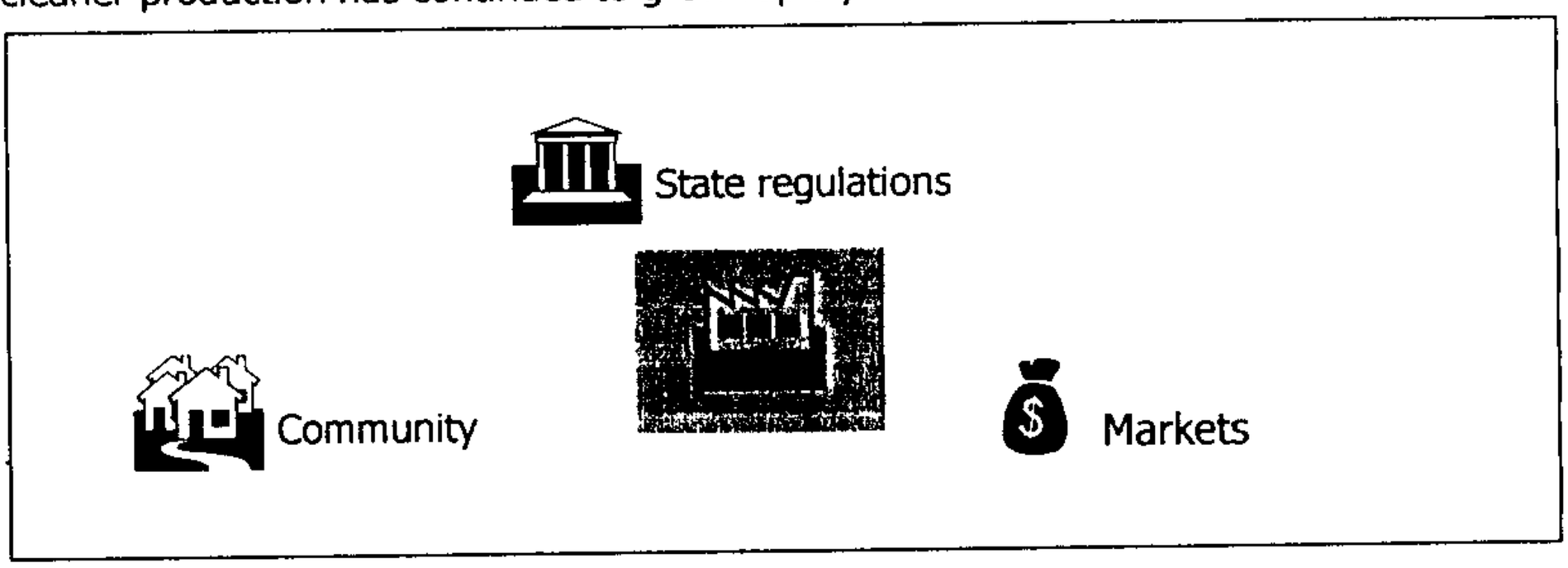
The coloring classification was to serve as a source of external pressure, forcing highly polluting industries to enhance their environmental performance. This new approach to

regulation in Indonesia demonstrated that local communities, the media, and market forces can be powerful allies in the struggle against industrial pollution.

The idea behind PROPER was simple: by providing information about pollution in a form that nonspecialists could understand, the initiative sought to tap the growing power of the media and public opinion to promote cleaner industry. Specifically, BAPEDAL hoped that the public performance ratings would attract two major allies to the pollution reduction effort: local communities, which would pressure nearby factories with poor ratings to improve; and the financial markets, which might react adversely to firms with low ratings.



The Environmental Impact Management Agency (BAPEDAL) has moved forward rapidly in Indonesia since the establishment of its Cleaner Production Program PROPER. Large multinational companies in particular have subscribed to the concept and many have established cleaner production working groups to review and develop their cleaner production programs. **Small- to medium-sized enterprises are, however, still hindered by a lack of finances** and often have insufficient knowledge to implement cleaner production programs. However progress has been steady and the need for cleaner production has continued to grow rapidly.



Final Outcome

The final outcome of the PROPER project confirmed the efficiency and the important role played by the public and the financial market as a potential source of pressure. The results shown in the table below after just 18 months following the application of the program reflect clearly its success especially considering the very low costs related to its execution.

PROPER's Impact after 18 Months				
	Number of Industrial Facilities			
	June 1995	December 1996	Change	% Change
Gold	0	0	0	0
Green	5	5	0	0
Blue	61	94	33	+54%
Red	115	87	-28	-24%
Black	6	1	-5	-83%

An analysis of the findings showed:

- Facilities privately owned by Indonesian nationals were the worst performers;
- PROPER had a disproportionate impact on small factories, whose marginal abatement costs are typically high;
- Facilities owned by multinational companies were the best performers. This was explained by the fact that multinationals tend to be larger than Indonesian-owned companies, and their greater size may offer economies of scale that make environmental management more affordable;
- The environmental performance was much worse in poorer, less educated communities.

Moreover, BADEPAL through a series of other projects in addition to PROPER continues pursuing its main objective relative to pollution abatement. One example could be the US$77 million Regional Network Project which objective is to ensure the necessary human resources, incentives, legislation and support to help achieve the necessary compliance.

Finally, the Indonesian positive experience achieved through PROPER encouraged other developing countries to adopt similar strategies to improve the general industrial compliance levels. One example could be the case of the Philippines, which also led to positive results.

Summary of Indonesian CAP	
• Used a limited number of measures very efficiently • Applied CAP to limited number of Industries, then gradually increased the number of facilities • Involving public as a source of pressure	• Pressure from financial institutions • Applied a cheap yet very effective strategy • Indirect incentives through image promotion
Government relied successfully on public and financial institutions pressure to compensate for the limited resources available.	

1.2 Mexican Case

Situation Overview

In Mexico, an institutional response to the industrial pollution problem began in the late 1980's and has accelerated during the past few years. In its first phase of development, the national regulatory system has had an emphasis on command-and-control regulation. While the environmental management in Mexico has been a multi-institutional administration, the environmental performance of polluters was evaluated according to compliance with numerous licenses and permits issued to each plant.

Compliance Action Plan: Brief Overview

The compliance strategy of the Mexican government was to be mainly based on the following issues:

- Conducting inspections;
- Conducting monitoring activities;
- Conducting capacity building activities;
- Providing technical assistance;
- Developing the necessary environmental regulations.

In Mexico, industrial pollution control has been the responsibility of different units. Among the principal agencies is the Procuraduria Federal de Proteccion al Ambiente (PROFEPA), in charge of factory inspections and enforcement of pollution regulations for toxic emissions. During the 1990's PROFEPA expanded its activities from a few inspections per year to several thousands, however as the Mexican pollution control system was still relatively new, many Mexican factories could not be covered.

In addition to PROFEPA, the Instituto Nacional de Ecologia (INE) is one of the other principal units involved in developing and implementing the necessary compliance measures. INE's was mainly in charge of formulating national environmental regulations to be followed by the industrial sector.

Parallel to the above mentioned governmental agencies, the United Nations have established in Mexico a National Cleaner Production Center (NCPC) to provide the necessary technical assistance and to support the industrial efforts towards complying with the environmental regulations (see Annex I).

Final Outcome

The Mexican experience has demonstrated that additional efforts need to be conducted to achieve the desired objectives. Experience on the ground has shown that a large number of facilities was still highly polluting as they were pursuing their production processes without any consideration towards existing regulations. In a study entitled "Opportunities for Improving Environmental Compliance in Mexico" Sustima Dasgupta related the poor performance regarding the Mexican experience to two types of obstacles; external and internal.

External obstacles:
High interest rates, problems related to uneven technical assistance, lack of environmental culture in Mexico, government bureaucracy, scarcity of information regarding policy requirement and scarcity of resources for training.

Internal obstacles:
Lack of emphasis on environmental aspects, higher priorities given to economic aspects, lack of training at management level, lack of access to environmental consultants and counselors, lack of interest of workers in the environment, dearth of suitable programs, dearth of recognition of training and dearth of interest of the workers.

Moreover, the Mexican case demonstrated that plants, which have experienced regulatory inspections and enforcement, were significantly cleaner than their counterparts. In addition, plants with highly educated workers had achieved greater environmental management effort and performance. The latter meant clearly that education could be another tool for promoting cleaner production. This is also true for capacity building and environmental training seminars, which proved to be more effective when directed towards all plant personnel than developing a cadre of environmental specialists.

Furthermore, the assessment of Mexican firms confirmed that variation in compliance level depended also on the following three factors: plant size, ownership and sector of production.

In conclusion, Sustima Dasgupta's study showed that maintaining close contact with non-compliance firms, designing targeted programs and pursuing them systematically should increase firms' responsiveness to regulations and promote a more effective environmental management in Mexico.

Finally, the negative Mexican experience pushed the government to look for new strategies towards developing a public disclosure program inspired from the Indonesian strategy.

Summary of Mexican CAP	
• CAP applied to all industrial sectors • CAP measures applied unevenly • Low awareness level • Shortage of resources	• Poor monitoring capacity • Economic difficulties • No financial incentives
CAP was widely applied to all industries in an unorganized manner without the sufficient means of support and without taking the exact situation needs into consideration.	

1.3 Tunisian Case

Situation Overview

Tunisia's main environmental objectives are included in a national strategy for sustainable development in compliance with the principles of the 1992 Rio Conference. The Tunisian government, in an effort of achieving the desired environmental goals has put into force, a long-term strategy and an action plan to be implemented through the creation, or reinforcement of tools in the financial, institutional, legal and technological fields. Thus, old regulations relative to industrial classification, etc. were to be supported in the nineties by additional measures to help limit the pollution levels generated by the industrial sector.

Furthermore, and in addition to national initiatives a large number of European countries provided financial contributions to support the environmental efforts of the Tunisian government.

Compliance Action Plan: Brief Overview

To achieve the desired environmental objectives relative to limiting industrial pollution, the Tunisian government prepared a national action plan based on the following three elements.

- Pollution prevention;
- Pollution reduction;
- Monitoring activities.

Pollution Prevention

In an effort of limiting the pollution level generated by the industrial sector the Tunisian government required that demands relative to the opening of classified industries be supported by an Environmental Impact Assessment (EIA). The EIA was to be presented to the National Agency for the Protection of the Environment (ANPE) for evaluation prior to its submittal to the Ministry of National Economy for its approval. Thus, pollution prevention was to be supported through the execution of a mandatory EIA which has become the principal tool in the national strategy for pollution prevention. The table below represents the evolution of the total number of applications with their respective EIA submitted to the ANPE for permit evaluation.

Evaluation of EIA cases for classified industries									
	1991	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Number of cases	231	335	438	658	768	1165	1054	1121	1083
Number of approvals	231	238	304	329	691	734	599	557	489

In an effort of supporting pollution prevention efforts and parallel to the introduction of a mandatory EIA the Tunisian government implemented additional measures such as the rehabilitation of existing industrial zones.

Pollution reduction

Pollution reduction was to be achieved in two ways. First the Tunisian government through various programs started building the necessary wastewater treatment plants, waste sorting plants and other core infrastructure to facilitate the disposal of the waste generated. Second, in addition to the above, the Tunisian government through a series of financial incentives was to encourage the industrial sector to start implementing environmentally friendly strategies. These incentives were to be divided into three categories:

1- Tax reductions especially relative to the acquisition of environmentally friendly equipment.

2- The creation of the Fonds de Dépollution (FODEP) for co-financing environmentally friendly projects for the industrial sector. The fund was to be financed through the public money and through the money coming from penalties paid by polluting facilities. Thus, since its initiation, the number of projects supported by FODEP encouraging facilities to adopt environmentally friendly measures has been constantly increasing.

Number of cases accepted and co-financed by the FODEP						
Year	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Number of Cases	09	21	32	39	61	65

3- Finally, through incentives attributed to facilities having proven some level of distinction relative to their environmental performance. An example being the Great Prize of the President of the Republic, which corresponds to an important financial reward.

Monitoring Activities

The objective of monitoring activities was to make sure that facilities were complying with the required environmental standards. The table below provides an overview of the evolution of the number of monitoring inspections conducted between 1991 and 1999.

Number of Monitoring Visits Conducted by the ANPE									
Year	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Number of Cases	102	632	1665	3300	5563	6117	6812	6684	7720

Any monitoring activity leading to negative results pushed the government to take the necessary legal measures requiring polluting facilities to pay the corresponding penalties.

The implementation of the above mentioned plan was to be facilitated through the technical support, R&D and other support services provided by the Tunis Center for Environmental Technologies (CITET, see Annex II for details).

Final Outcome

The overall Tunisian compliance action plan proved to be quite successful as Tunisia is considered presently as one of the least polluting countries in the Mediterranean region. It is through the implementation of the correct financial incentives, technical support, sufficient number of human resources, support programs and legal measures that the Tunisian government has managed to reach its desired objective.

Finally, the important concern of the Tunisian government relative to reaching a high level of environmental compliance continues to be pursued and large amounts of money are invested in numerous plans. An example could be Tunisia's Ministry of Environment has laid out an ambitious $2-3 billion development plan for the next 5 - 10 years with a considerable portion of the planned spending directed toward wastewater treatment, agricultural land management, and the clean-up of Tunisia's largest industrial environmental problem: tailings from years of phosphate mining and fertilizer production.

Summary of Tunisian CAP	
• CAP applied to all industrial sectors • High availability of resources • High awareness level	• Important financial incentives • Efficient support measures • Easy access to all necessary information
CAP was applied with a major success, as all the necessary means (human and financial) were available. Moreover, the necessary means of support (i.e. R&D centers, cleaner production centers, information centers) were also made available with an easy access.	

1.4 Egyptian Case

Situation Overview

The poor environmental performance of Egyptian industries and their low compliance level with existing regulations led the government in 1994 to re-establish the Egyptian Environmental Affairs Agency (EEAA) through law 4. Egypt's Environmental Law was to permit the EEAA to act as a core agency in charge of managing the environmental agenda in conjunction with other "concerned administrative agencies". Law 4 granted the public and private sector establishments existing at the time it was issued, a 3 year grace period starting from the date its executive regulation was issued (i.e. February 95) to comply with its requirements following which non-compliance would lead to fines and penalties.

Compliance Action Plan: Brief Overview

As it had become clear that the overwhelming majority of the regulated community will still be non-compliant by the end of the 3 year grace period a CAP was introduced in 1997 to help the non-complying facilities reach the desired objective. The idea behind the compliance action plan was to address the unproductive deadlock between the regulators and the regulated. It was also an attempt to turn a threat into an opportunity to establish a more cooperative interaction pattern between the two parties.

Thus, the CAP was to provide a conditional extension of 2 years until February 2000 for companies, which would have proven a certain environmental progress over the 3 year period extending from February 95 to 98. The evaluation of the various levels of compliance of each facility was to be done by the Project Implementation Unit (PIU) within the EEAA. The PIU formulated the grace period extension system, based upon the submittal of a CAP by each industry for evaluation.

The implementation of the CAP was to be accomplished in 3 different phases:

- Phase 1: Conducting an extensive awareness campaign, providing technical advice, etc. to instruct and inform the industries about the program from which they could profit. In the mean time the implementation of the CAP was to be developed by the required governmental experts. (April 97 to August 97)
- Phase 2: In this second phase, industries were to submit their suggested CAP for evaluation by the governmental experts and to see if they were eligible to profit from the 2-year extension time. Phase 2 was mainly to allow a review, evaluation and modification if necessary of the different CAPs submitted by the industrial facilities. (September 97 to February 98)
- Phase 3: This phase corresponded to the monitoring and inspection periods as well as the planning of activities concerning the follow up on ratified CAPs.(March 98-Present)

The success of the overall strategy was to be facilitated by the following issues:

- Enforcement efforts of municipalities and other regulatory agencies, as well as NGOs, academics and media were showing an increasing interest in the issue;
- Large state investments in infrastructure and especially sewerage systems made the industrial investments more affordable;
- New developments relative to the international level of cleaner technology were made available;
- The World Bank's Egyptian Pollution Abatement Project was to provide the additional expertise and help necessary through its PIU unit to help achieve the desired objectives.

Furthermore, and in an effort to ensure the final success of the CAP, EEAA based its strategy on total transparency involving the industrialists and the public through its decision making process.

Final Outcome

The Egyptian CAP put in place was not very successful. Among the different handicaps that prevented the EEAA from reaching its objectives were two main issues.

1- Contextual constraints

- Impossibility to address all environmental problems of Egyptian industry at once due to limited resources;
- Capacity of industrial establishments to react to sudden pressure was questionable;
- Only a sketchy characterization of the industrial scene concerning environmental performance was possible.

2- Problems encountered during the projects execution

- The grace period was too tight and insufficient time was available to plan and execute the CAP strategy correctly.
- The lack of professional experts could not allow for a sound and detailed evaluation of the different CAPs submitted by the industrial facilities.
- The limited availability of financial resources restricted considerably the good execution and implementation of the desired objectives. In addition to limited financial resources, the lack of necessary equipment (i.e. monitoring equipment, etc.) weighed negatively on the overall success of the planned strategy. Finally, the execution of the CAP lacked the necessary political support which led to a certain confusion as to a potential extension of the grace period.

Summary of Egyptian CAP	
• Wide application of various CAP measures • CAP applied to all industrial sectors • Low awareness level • Shortage of time • Shortage of human resources	• Shortage of financial resources • Poor monitoring capacity • No political support • Limited financial incentives
CAP was applied in a wide strategy that did not take into consideration the specific needs of the industrial sector or the situational challenges (i.e. available infrastructure, etc.). Furthermore, there was a major lack of political support and resources.	

1.5 Lessons Learned from International Experiences

CAP- Summary		
Country	**Key Issues**	**Final Outcome**
Indonesia	• Used a limited number of measures very efficiently • Applied CAP to limited number of industries, then gradually increased the number of facilities • Public involvement as a source of pressure • Pressure from financial institutions • Applied a cheap yet very effective strategy • Indirect incentives through image promotion	Successful CAP
Mexico	• CAP applied to all industrial sectors • CAP measures applied unevenly • Low awareness level • Shortage of resources • Poor monitoring capacity • Economic difficulties • No financial incentives	Unsuccessful CAP
Tunisia	• CAP applied to all industrial sectors • High availability of resources • High awareness level • Important financial incentives • Efficient support measures • Quick and easy access to all necessary information	Successful CAP
Egypt	• Wide application of various CAP measures • CAP applied to all industrial sectors • Low awareness level • Shortage of time • Shortage of human resources • Shortage of financial resources • Poor monitoring capacity • No political support • Limited financial incentives	Unsuccessful CAP

1.6 Brief Summary of the Evolution of Environmental Policy Instruments

The figures below represent a summary of the general evolution and overall measures adopted relative to compliance strategies. A clear trend appears relative to the passage from simple command and control measures in the early 70s to a mixed policy model in the 90s.

Environmental Policy Instruments- Early 70s

Command and Control **OR** **Economic Instruments**

Environmental Policy Instruments- Mid 70s

Command and Control **AND** **Economic Instruments**

Environmental Policy Debate- Late 80s

Command and Control

Economic Instruments

Public Information

Voluntary Programs

New Approach of the 90s

Command and Control

Economic Instruments

Mixed Policy Model

Public Information

Voluntary Programs

2- *Compliance Action Plan: Applicable Measures*

The previous section has just demonstrated that the implementation of any CAP could sometimes vary considerably from one country to another. Thus, **there is no single strategy or a universal CAP** that could be adopted and easily implemented in any country. The development of a sound CAP should **take into consideration the specificity of each country's needs, limitations, advantages and disadvantages**. However, this does not prevent planners from finding a number of common measures implemented in various CAP strategies. This section will provide a list of those general measures that could be adopted as part of an overall strategy to help industrialists implement the necessary actions for complying with environmental regulations.

2.1 Baseline Information Relative to CAP Measures

Industrial compliance should be achieved through the implementation of a strategy acting on two levels:

- First it has to be an enforcing one, based on the appropriate environmental regulations and enforcement measures;
- Second the plan has to be accompanied with the necessary incentives to encourage and facilitate the implementation of the required measures.

Hence, what is most commonly known as the **carrot and stick strategy** should also provide the basis for a sound CAP. International experience has demonstrated however that this strategy could only be successful if applied efficiently, meaning that corresponding regulations and incentives should reflect the exact situation and needs of the concerned sectors. Furthermore, a set of adequate means (i.e. adequate sewerage systems, wastewater treatment plants, waste collection systems, sufficient human resources, etc.) should also be available to facilitate the overall execution of the plan.

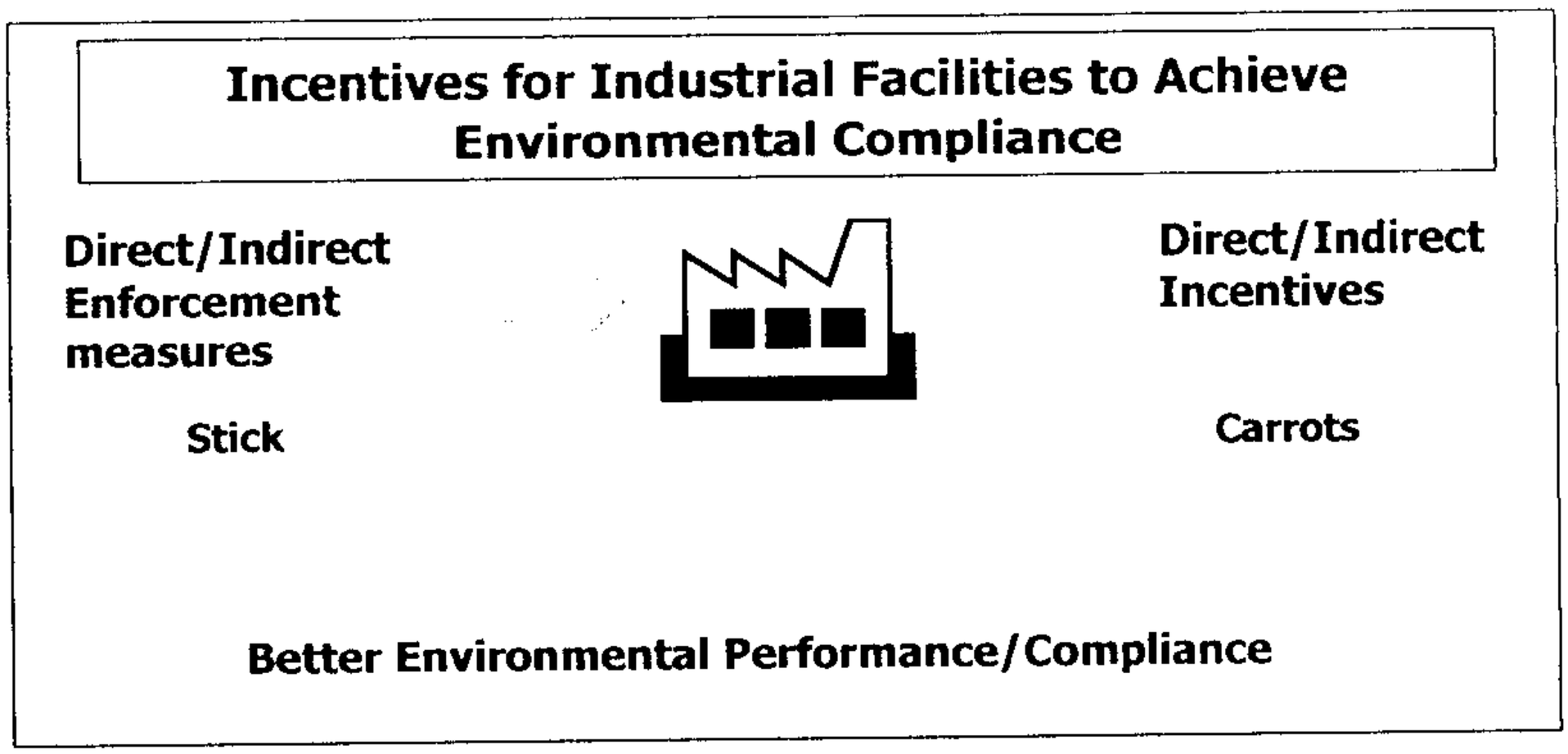
"Stick"

Experience has shown that official regulations limiting emissions of pollutants and waste into air, water and land have been a crucial influence on industry decisions to improve environmental performance.

Additional regulations could also be present indirectly through international treaties signed. Thus, there could be two types of regulations the ones related to the actual country and its national standards and another type of international regulations leading the local industry to comply with additional standards.

"Carrot"

On the other hand, governmental agencies should provide the industrial sector with a wide range of incentives to help them achieve the required compliance level. While the most efficient strategies are usually the ones based on financial subsidies, tax breaks, etc. there could be also a wide variety of other non-financial incentives such as the delivery of green certificates for environmentally friendly industries...


Incentives for Industrial Facilities to Achieve Environmental Compliance
Direct/Indirect Enforcement measures
Stick
Direct/Indirect Incentives
Carrots
Better Environmental Performance/Compliance

2.2 General Measures to Promote Compliance

Based on the outcome of international cases and research results, this section is to provide a list and description of the main measures, which could be possibly included in a CAP. One should be very careful relative to the final outcome of any of those measures, as it will depend ultimately on the situation's context and on the chosen strategy. This might explain sometimes the results' discrepancy relative to the efficiency of two identical measures applied in different countries (i.e. the same measure could lead to different outcomes in different situations).

Although not an exhaustive one, the list below provides a number of measures to be included within a CAP. Those measures are not necessarily directed towards industrial facilities and could target directly or indirectly one or more of the following categories below:

- Industrial sector;
- Concerned governmental agencies;
- Other key players (i.e. public, private banks, environmental NGOs, etc.).

Awareness

Awareness is considered as a key issue related to the overall success of a sound CAP. There is no doubt that a high environmental awareness level will permit a quicker and better response from concerned parties relative to the implementation of green issues. For best results, the awareness level has to target all key players (i.e. industrial sector, governmental agencies and concerned key players) as they tend to be interrelated.

Enhancing the total awareness is a task that could be assumed in general by governmental agencies, by qualified NGOs or also by delegating this action to specialized consultancy firms (this last alternative could prove very expensive).

Awareness could be enhanced in various ways; through marketing of compliance guides, seminars, information services, and other means of assistance.

Thus, the ultimate objective of an appropriate awareness campaign is to **provide the industrial sector with a better understanding of the advantages related to environmental issues**.

Capacity Building

Capacity building is another key issue related to achieving a sustainable level of compliance by ensuring that qualified personnel in the management of the different facilities will be qualified enough to remain up to date relative to environmental responsibilities and available technologies. Capacity building should be directed towards governmental personnel as well as the industrial personnel.

Capital Markets

Among the different means of pressure used to enforce compliance is the role Capital markets sometimes play. The latter appear to react to the announcement of

environmental performance of publicly traded companies. While fines and penalties used may have fallen short of creating incentives for pollution control, capital markets have penalized firms suffering from adverse environmental events, and rewarded firms with positive environmental news. These results suggest that in numerous circumstances market forces (even in developing countries) have not remained idle upon receiving signals of the environmental performance of firms.

Cleaner production/NCPC

Cleaner production is considered as one of the main measures to be adopted towards achieving compliance. Cleaner production is a wide umbrella covering a multitude of initiatives ranging from very simple and straightforward measures (i.e. Good Housekeeping, raw material modifications, etc.) to more complicated and costly applications (i.e. Installing end of pipe treatment and conducting major process changes, etc.). Industrial facilities should ultimately be applying various cleaner production initiatives to achieve the appropriate compliance levels.

Focus should be made on the fact that cleaner production should not be seen as an additional burden on the industrial facilities. On the contrary, through adequate cleaner production measures, one could achieve important financial savings as well as enhancing its product quality and marketing image.

Furthermore, the existence of National Cleaner Production Centers providing an adequate and efficient support could prove very helpful to the overall success of the Compliance Action Plan, through the implementation of cleaner production. Experience has shown that support centers with qualified experts could be an important tool for providing guidance and support for the industrial facilities as well as to the concerned governmental bodies.

Enforcement measures

The governmental agencies should be capable by law to enforce the application and the respect of the necessary regulations. A sound strategy should make sure that enforcement measures such as penalties or polluter-payer principle exist as ultimate means of pressure.

Experience has shown that regulatory pressure works as plants, which have experienced regulatory inspections and enforcement, are significantly cleaner than their counterparts.

Financial Incentives

The strategy for the implementation of a sound CAP should be a strict yet flexible and achievable one. One way of encouraging compliance with the necessary legislations is to provide industrial facilities with a series of financial incentives. These incentives could come in the form of soft loans, tax exemptions on environmentally friendly technologies, subsidies, etc.

Financial Resources

In this case financial resources refer to the sufficient amount of funds available to governmental agencies if they are to implement the required measures for facilitating compliance. Thus, the available amount of resources will determine the priorities and limits to be respected. Financing pilot studies, awareness campaigns, etc. could necessitate large amounts of funds to facilitate compliance.

Human Resources

The execution of the CAP should take into consideration that sufficient human resources are available from the governmental agencies to supply the adequate support, services, to conduct the necessary monitoring measures, evaluate potential problems and enforce the necessary compliance.

Human resources are one of the key priorities to be considered within the development of any CAP. There is no doubt that any lack of personnel could result in an overall slow down of the CAP execution and eventually might lead to its collapse.

Information

To ensure a continuous and efficient execution of the CAP the government should always allow an easy and complete access to all the necessary information related to compliance issues. Experience has shown that it is much easier to manage pollution more cost-effectively once regulators have high-quality information, more integrated information systems and stronger public participation.

On the other hand the government should also be able to secure an efficient access to all relevant information and be constantly updated relative to issues facilitating the execution of the chosen CAP. This could be implemented through a continuous exchange of information with other countries as well as a regular update on the latest technologies available, etc.

Infrastructure

Governmental agencies should make sure that the necessary infrastructure such as appropriate sewerage systems and wastewater treatment plants, hazardous waste treatment plants etc. are available to facilitate the compliance of the industries. Should there be a need for such systems, the government should initiate the necessary initiatives and include them as a major part within its strategy.

Legislation

The basis behind any CAP is to have the necessary legislation put in place based on which the necessary compliance measures will be determined. It is only through the existence of a set of environmental regulations that industries could be asked to reduce their total pollution load.

Monitoring Equipment/Monitoring

The governmental agencies should make sure that the adequate monitoring equipment is available to be able to ensure the necessary verifications relative to compliance with regulations. It is only through regular and efficient verifications that a sustainable compliance with required standards could be achieved.

Non-financial Incentives

Another efficient form of incentives, which could help promote compliance, is the issuing of green certificates for environmentally friendly facilities. Such certificates could help promote considerably their marketing image which ultimately might lead to increased market shares.

On-site assistance

The government should be able to consider the possibility of providing a wide range of tools and assistance to facilitate compliance with regulations. Thus in parallel to providing the necessary information and response, governmental experts should be capable of providing in certain cases the necessary on site support to help industries in complying with the required regulations. Additional support could also be provided with the assistance of academia, private sector consultancy firms, etc.

Participation

A strong participation involving the governmental agencies and the industrial sector could be included as part of the overall CAP strategy. This could involve the municipalities, the Ministry of Environment as well as concerned industrial sectors collaborating together towards the development and implementation of various strategies. Such partnership related to compliance issues is one way of developing the overall level of trust between the different key players.

Public's involvement

In recent studies, it was found that informal regulatory pressure is pervasive in developing countries and, under appropriate conditions, quite effective in reducing industrial pollution. One crucial element seems to be public information about the sources and risks of industrial pollution as citizen complaints do appear to bring about an improvement in the environmental performance of firms. Citizen role and intervention could be summed up according to the following steps:

- First, a large number of events are initiated by citizens complaints;
- Second, these complaints typically give rise to interventions by the environmental regulator;
- Third, the vast majority of the events initiated by complaints of citizens ultimately give rise to the firm investing in pollution abatement.

Although many questions about appropriate implementation of public involvement strategies remain, the fundamental lesson is clear: Public dissemination of information about polluting facilities looks like an extremely cost-effective complement to formal regulation, this could be clearly seen in the example below relative to the survey conducted by Gallup International Institute.

Survey conducted in 1992 by Gallup International Institute	
How much of an effect individual citizens have on solving environmental problems?	
Chile	47% answered "A great deal"
Mexico	59% answered "A great deal"
Philippines	57% answered "A great deal"
The average percentage of citizens in high-income countries providing a similar answer was 43%.	

Research & Development

R&D could help in the development of green technologies needed, in verifying compliance with new regulations, or in the dissemination of information pertaining to pollution prevention technologies.

Research and Development comes usually as a final measure to be implemented within a CAP. The implementation of such an initiative being usually very demanding and costly, it is preferable to include it among the last steps within a CAP strategy. This is often true within developing countries with limited budgets. Especially that a sound and continuous access to worldwide information concerning the newest discoveries could limit the need for the early existence of an R&D unit.

Transparency

Total transparency is a must in ensuring a good cooperation between the different concerned parties as well as in limiting the level of misunderstandings and confusion. Full transparency will contribute highly to building trust and ensuring a smoother execution of the required measures.

2.3 External Issues Influencing CAP Measures' Success

The overall success of **CAP measures will be partially affected by a number of external issues** specific to the concerned country or facilities. Such issues could be hard to control or impossible to change and should be always considered carefully in the development and execution of the strategy. Based on the previous international examples as well as literature review, below is a list of some major points that should be accounted for while preparing a successful compliance strategy.

Plant Size

A sound CAP should always consider the final size and capabilities of the targeted industries, especially when dealing with a multitude of small facilities with limited financial resources.

In general the pollution load of a firm is closely related to, and grows with scale of operation. Scale also works through a "visibility effect": larger polluters are generally more detectable by surrounding communities, and may well be under stronger pressure to abate. Thus, the implementation of environmentally friendly measures becomes more urgent for large polluting industries which usually find less difficulties in finding the necessary financial means to adopt new techniques or implement the required measures.

Ownership

Examples from the previous international cases have shown that environmental performance of a firm affects its stock price in both developed and developing countries. On the other hand, companies that are privately owned will have to be dealt with differently especially when they could not be affected by stock market variations.

Sector

Industrial sectors vary significantly in their average pollution intensity of production. Accordingly different measures and grace periods should be given to various sectors after assessing their respective situation, both economically and environmentally.

Economic situation

The country's general economic situation could play an important role in facilitating the implementation of the CAP's objectives. This is especially true on two levels:

- Industries operating in a healthy economy could have an easier access to the financial means needed for the implementation of the CAP objective. In numerous cases it is the industrial facilities themselves which will be covering a large portion of the necessary expenses;
- Governments experiencing a serious economic slowdown or crisis might have to turn to external assistance for providing the required financial incentives to help in the implementation of the CAP.

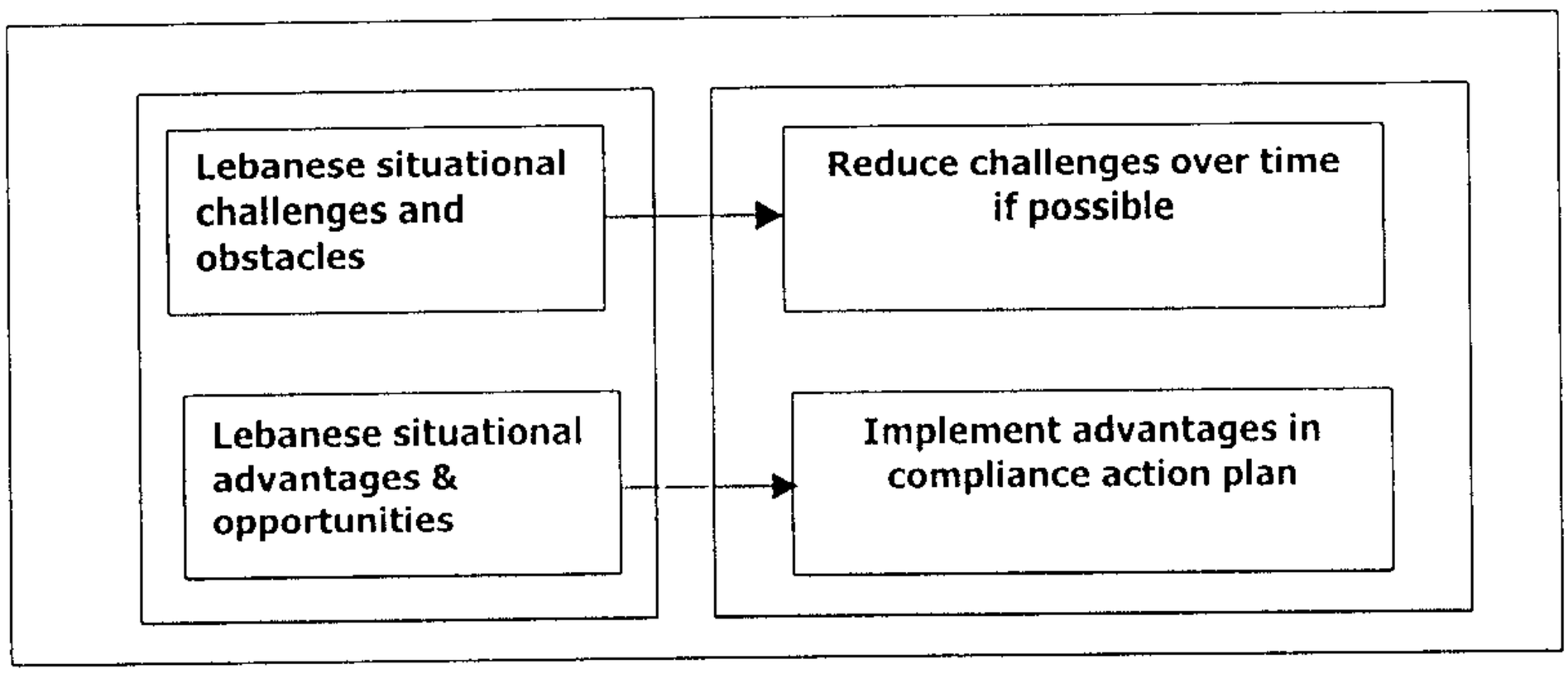
COMPLIANCE ACTION PLAN – THE LEBANESE CASE

3- Present Lebanese Situation

3.1 Overview of the Lebanese Context

Developing a sound compliance strategy should take into consideration the present Lebanese situational context by focusing on the following issues:

- Determining the present needs and challenges that could represent a potential obstacle;
- Profiting from the existing advantages and opportunities and including them into the CAP strategy.



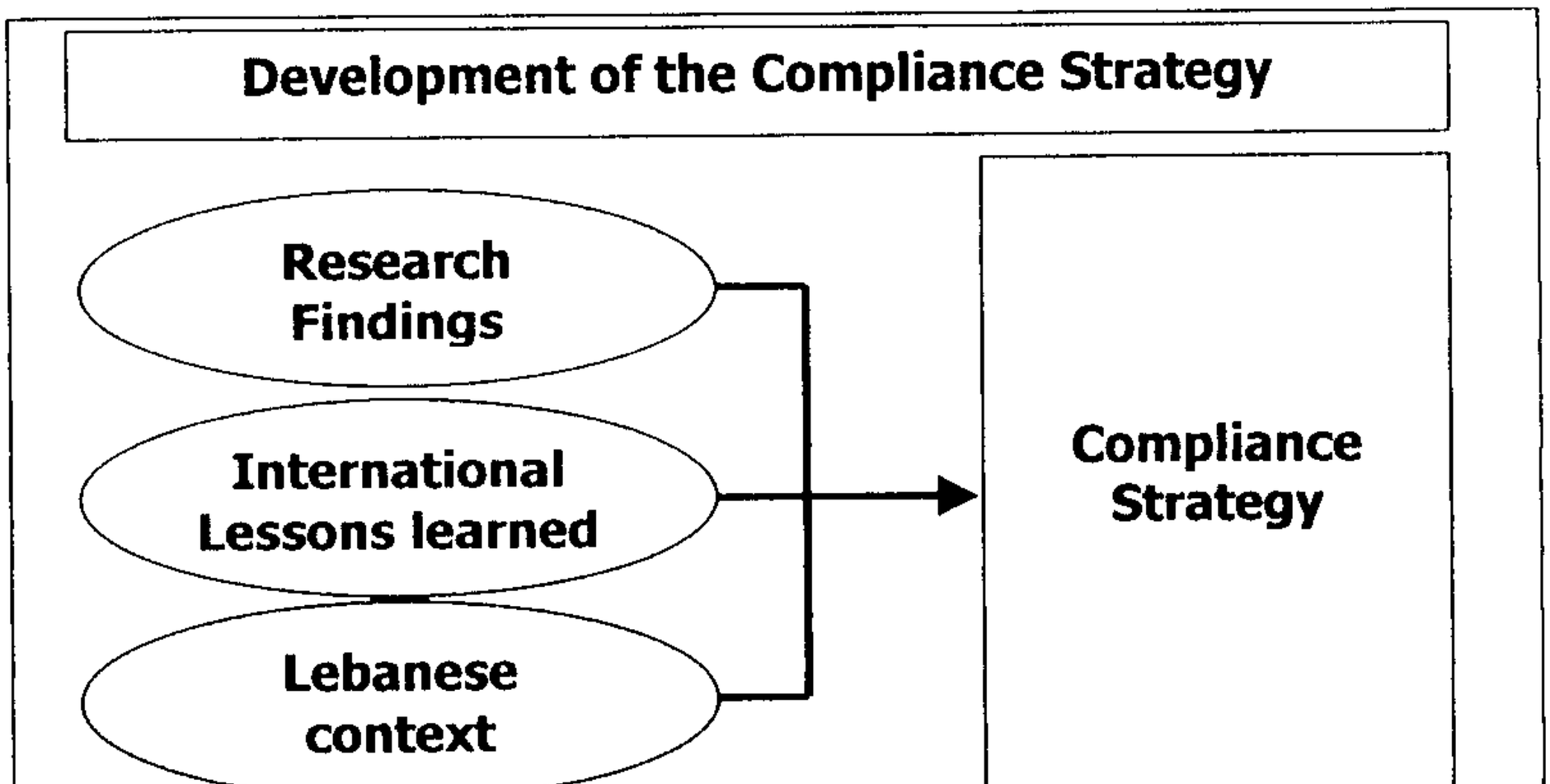
The table below provides a brief summary of the overall Lebanese situation, covering the potential challenges and advantages at three different levels:

- General challenges and advantages;
- Challenges and advantages faced by the MoE;
- Challenges and advantages faced by the Lebanese industrialists.

4- National Strategy

The development of the national strategy will be based on two points:

1. The research conducted and the main international lessons learned from the successful and unsuccessful CAPs;
2. The situation of the Lebanese industrial sector as well as the government's capacity to help and enforce the implementation of the required measures and regulations.



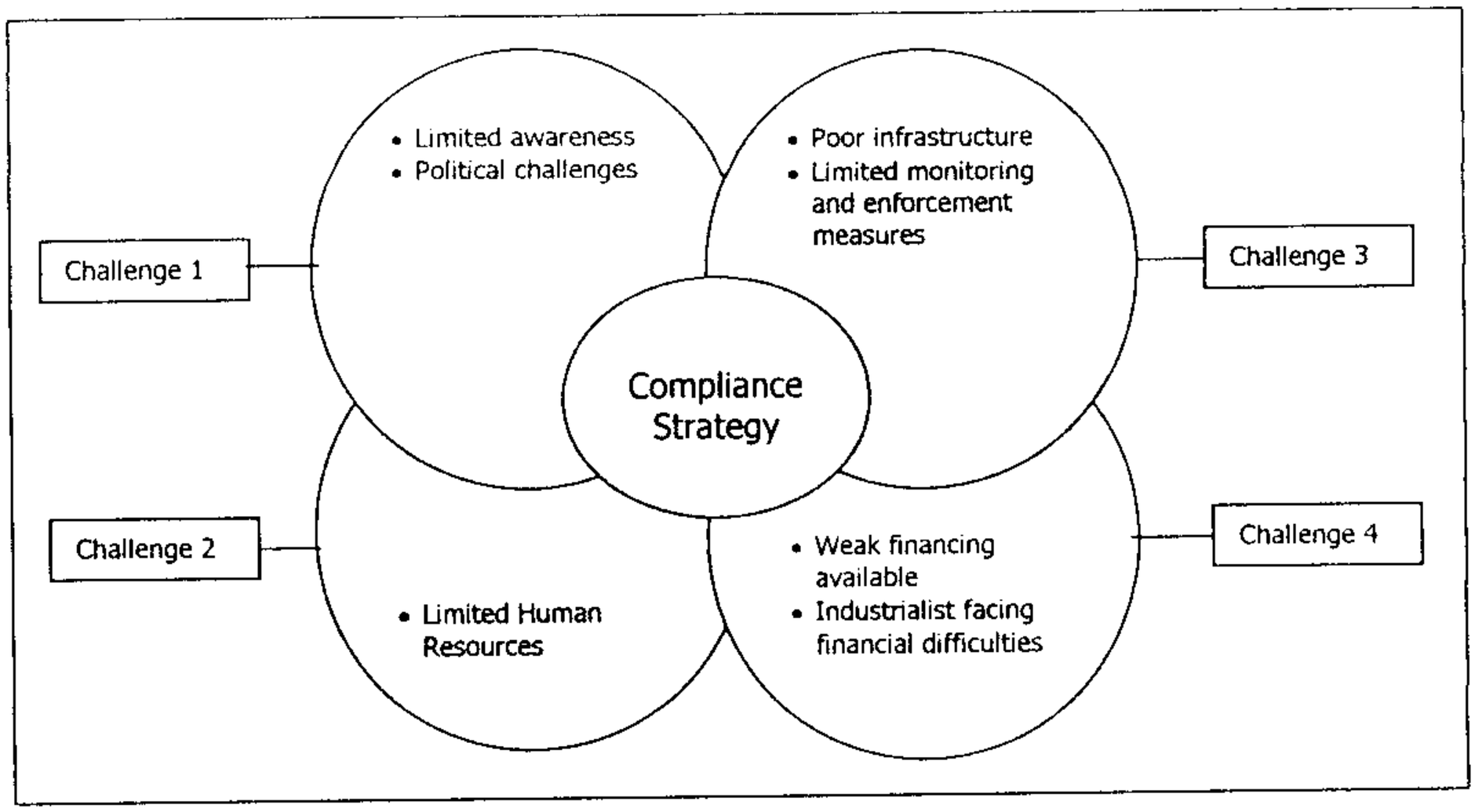
Based on the research findings and on international cases, the section entitled "General Measures to Promote Compliance" has provided a number of measures that could be adapted to the Lebanese framework and then included within a compliance action plan.

However, the efficient implementation of the above measures should be applicable to the Lebanese situational context. The figure below represents a graphical summary of the Lebanese case in which the plan will have to be developed.

General Summary of the Lebanese Situation

General Challenges	General Advantages
• Limited/ un-existing infrastructure for the appropriate waste treatment or collection; • Substantial economic challenges limiting the financial resources available; • Lebanese market too small to encourage environmentally friendly products at competitive prices (Where costs have been incurred, for instance to install new technology, the improved final product may not fetch a higher price in the market if customers do not value the difference); • Poor industrial zoning (some industries are in populated areas); • Poor/average awareness level; • Limited political support concerning environmental issues.	• Construction of 5 wastewater treatment plants; • International financing opportunities could be available; • Several active NGOs; • International pressure to comply with the signed protocols or future agreements (i.e. Barcelona convention, WTO, etc.).
Challenges faced by the Ministry of Environment	**Advantages related to the Ministry of Environment**
• Shortage of personnel; • Shortage of monitoring equipment; • Further legislations needed; • Limited capability for enforcing the available legislations; • Limited sanctions possible (no polluter-payer principle yet);	• The generic standards; • Available experts are highly qualified; • Additional support available through international projects (i.e. SPASI, Ozone, etc.); • Possible creation of an NCPC unit by UNIDO; • EIA soon to be adopted; • Monitoring program being developed; • Number of legislations already in the soft or hard pipeline; • IPP project.
Challenges faced by the Lebanese industrial facilities	**Advantages related to the Lebanese industrial facilities**
• Personnel with low environmental awareness levels; • Sector passing through economic crisis; • Environmental technologies could prove expensive to small and medium sized facilities; • Most facilities are family owned with limited environmental concerns.	• Willingness of some industrialists to be part of a pilot project for compliance; • Association of Lebanese Industrialists (ALIND) willing to co-operate towards reaching the desired objectives.

4.1 Potential Obstacles



Limited awareness:

- The shortage of human and financial resources limits substantially the implementation of a large awareness campaign.

Political challenges:

- The execution of any measure on a large scale might be hindered by a number of political challenges;
- A weak political support could limit the impact or the importance of the environmental regulations especially if they are not enforced conveniently.

The shortage of human resources:

- The successful application of the CAP could only be achieved through an adequate support and enforcement, which can only be made possible if the necessary human resources are present.

Shortage of monitoring equipment and potential means for enforcing the necessary measures and regulations

- Difficult monitoring means;
- Difficulty in ensuring sustainability in compliance with regulations.

Weak enforcement means:

- Weak/no pressure and penalties could be exerted;

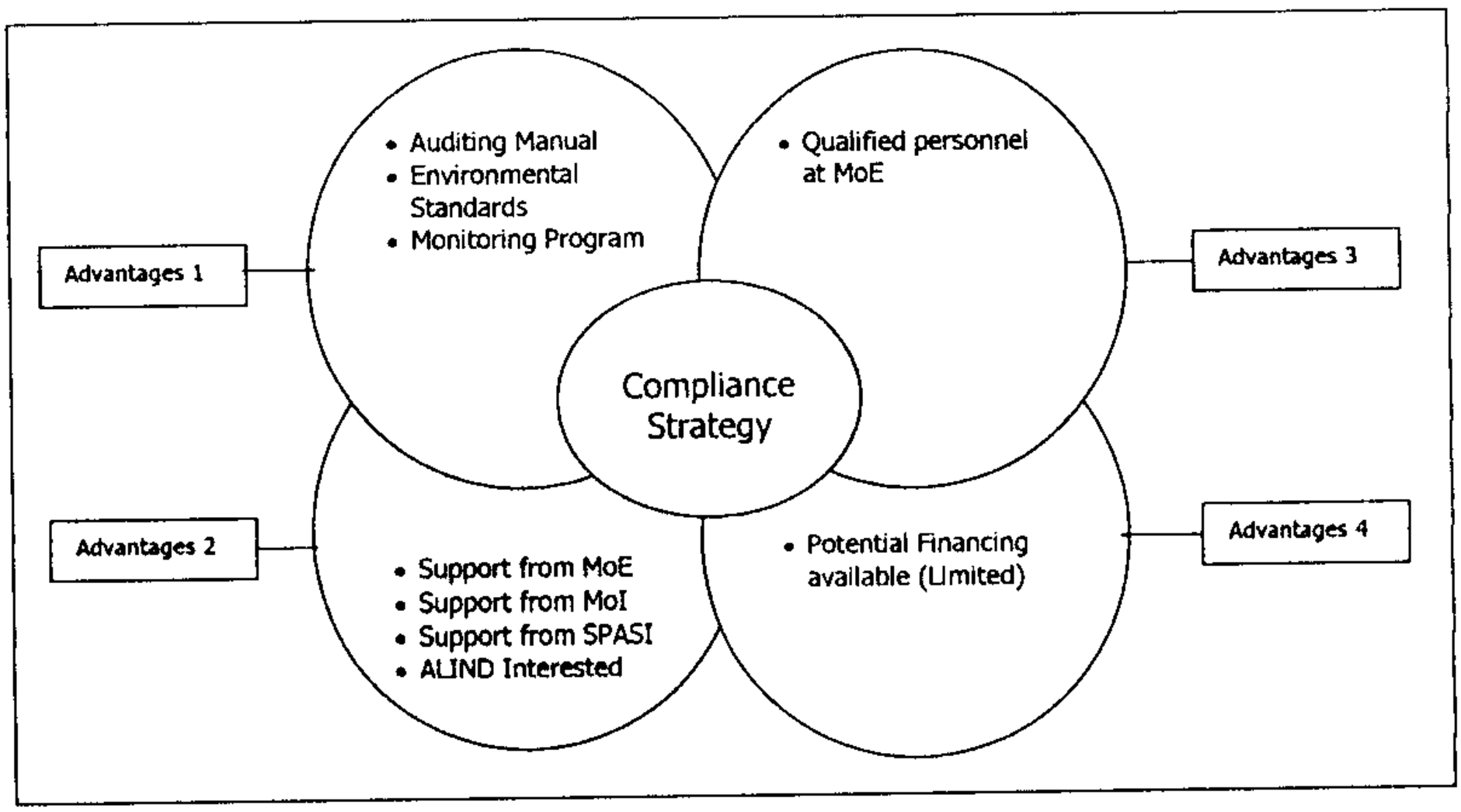
Poor infrastructure:

- Does not allow the implementation of a compliance strategy on a large scale;
- The numerous challenges relative to waste treatment and collection could limit the final success;

- Additional time required to ensure compliance with regulations;

Financial challenges:
- Limit highly the implementation of necessary compliance measures;
- Will affect the potential adoption of cleaner production initiatives by the industrial sector.

4.2 Potential Advantages



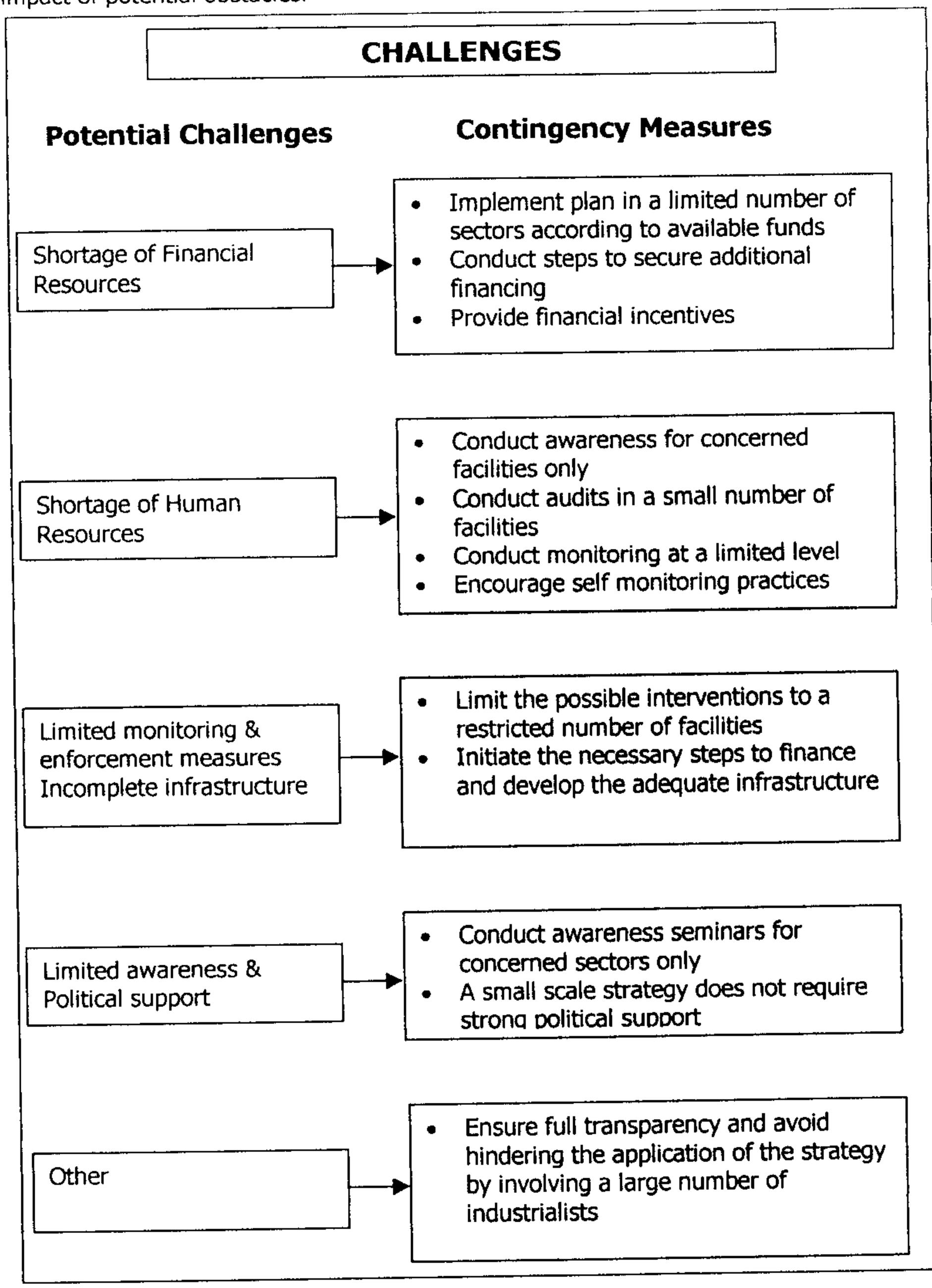
Material developed:
- Implement the audit manual in the concerned facilities;
- Use the standards as a starting target and disseminate them accordingly;
- Include the monitoring software as part of the final strategy.

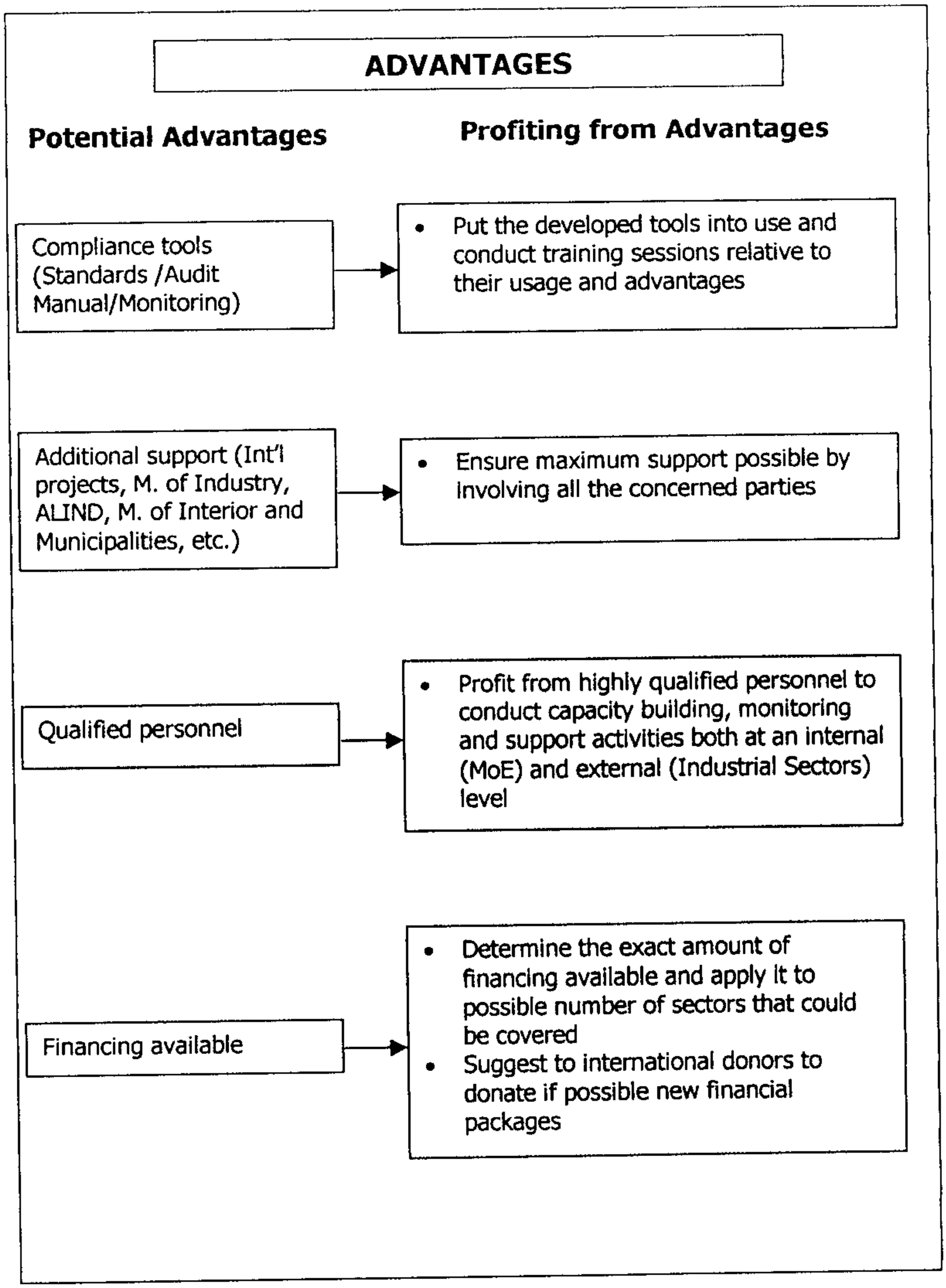
Support available:
- Profit from the existing sources of support to conduct awareness;
- Profit from the existing sources of support to conduct capacity building;
- Ensure participation.

Qualified personnel:
- Profit from experience of qualified personnel and conduct capacity building.

Potential financing:
- Profit from available financing **to implement pilot projects to test the suggested strategy.**

Thus, the implementation of any strategy relative to the Lebanese case should be done carefully by limiting the existing challenges and profiting from the advantages. The figures below represent the possible actions to be implemented in view of limiting the impact of potential obstacles.




ADVANTAGES
Potential Advantages
Profiting from Advantages
Compliance tools (Standards /Audit Manual/Monitoring)
• Put the developed tools into use and conduct training sessions relative to their usage and advantages
Additional support (Int'l projects, M. of Industry, ALIND, M. of Interior and Municipalities, etc.)
• Ensure maximum support possible by involving all the concerned parties
Qualified personnel
• Profit from highly qualified personnel to conduct capacity building, monitoring and support activities both at an internal (MoE) and external (Industrial Sectors) level
Financing available
• Determine the exact amount of financing available and apply it to possible number of sectors that could be covered
• Suggest to international donors to donate if possible new financial packages

Hence, the analysis above provides a preliminary idea about the direction, which should be followed by the compliance strategy. The latter, due to limited resources (financial/human) should cover for a better result a smaller number of industrial facilities.

Furthermore, any strategy has to be conducted within a fixed grace period, upon which completion the final environmental objectives are to be met. Thus, the choice of the method for determining the necessary grace period will depend mainly on the chosen strategy. In general the grace period could be chosen according to three possible scenarios:

- Providing the same grace period for all the Lebanese industrial sectors;
- Providing a grace period according to the location of the industrial zone;
- Providing a grace period according to the specific industrial sector.

The table below gives a better idea about the advantages and disadvantages of each method. The final choice of the best grace period scheme should vary according to the situational context.

Comparative Table of Different Compliance Strategies			
	General Grace Period	**Grace Period According to Industrial Zone**	**Grace Period According to Sector Types**
Advantages	➢ Specified grace period for all industries is known in advance	➢ Most accurate as to the environmental needs per concerned zone ➢ Requires an average implementation period ➢ Requires an average number of human resources	➢ Require minimum human resources ➢ Financing needs are more easily met according to specific sector requirements ➢ Easier co-operation with the concerned sector could be achieved ➢ Requires a long implementation period due to the slow work per sector
Disadvantages	➢ Requires substantial human resources ➢ Requires substantial material resources ➢ Requires substantial financing sources to be available at the same time	➢ Could cause some problems within the same sector as some industries will be less favored than others ➢ Would lead to work repetition and time loss	➢ Requires additional time to be completed ➢ Leads to some sectors being less favored than others

Information in the table above suggests that the best strategy would involve a sector-based grace period. Such a strategy represents numerous advantages and would be much suitable to the present Lebanese context. This leads us to the development of the following compliance strategy taking into consideration some potential disadvantages, especially concerning the long implementation period necessary.

Compliance Strategy Based on Selected Sectors

1st Step	**Identify the sector/Identify compliance measures**
2nd Step	**Identify a representative facility from the chosen sector**
3rd Step	**Conduct an environmental audit**
4th Step	**Determine the environmental situation of the sector**
5th Step	**Identify necessary grace period**
6th Step	**Apply compliance measures**

Compliance measures represent the carrot and stick strategy necessary to ensure the awaited objectives from the chosen sector.

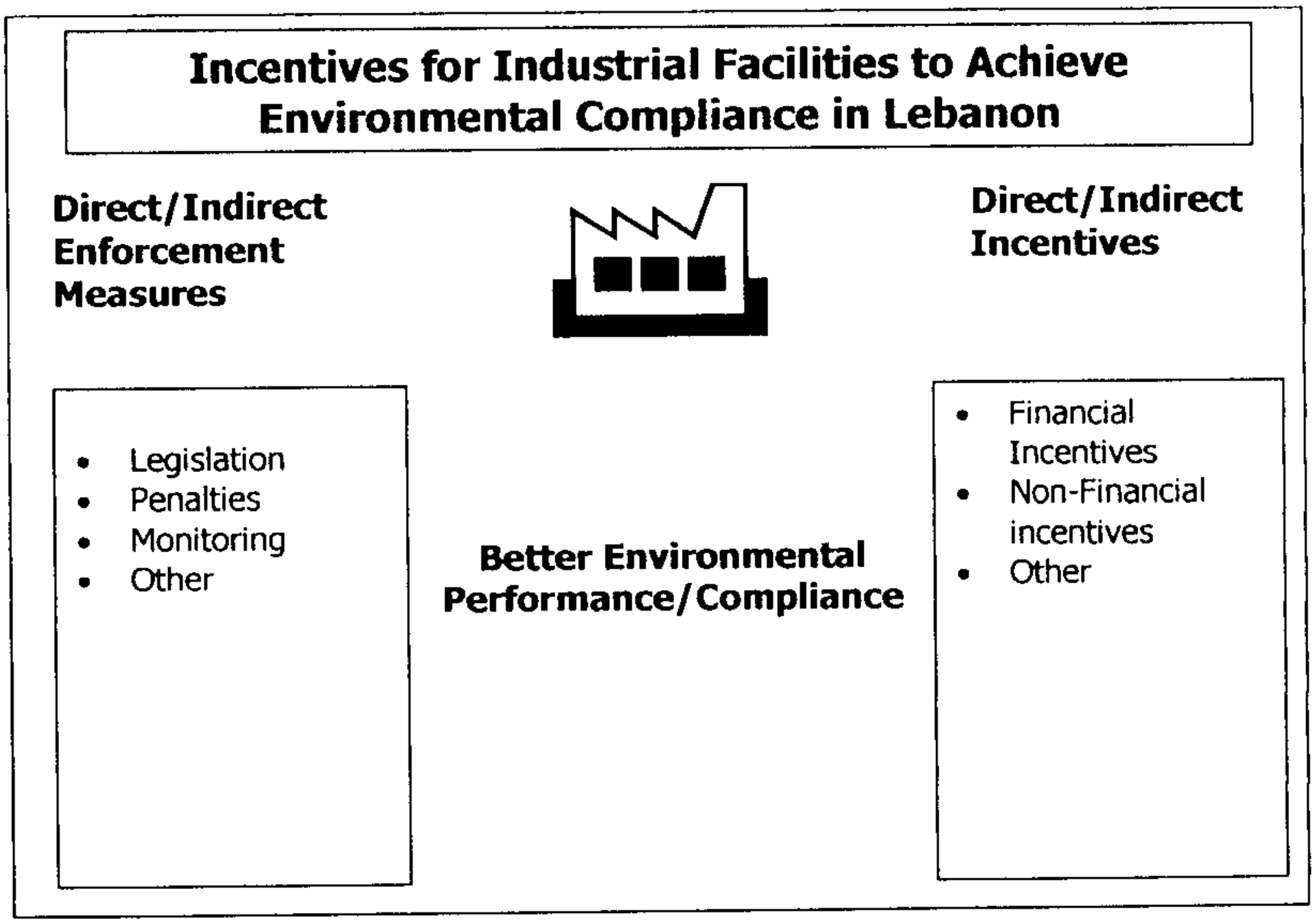
5- Suggested Compliance Action Plan

The compliance action plan will be based on the general strategy developed in the previous section and constituted from the different points below:

1. Identifying the sector / Identifying compliance measures;
2. Selecting representative facilities;
3. Conducting environmental audit(s);
4. Assessing the environmental situation in the sector;
5. Identifying the necessary grace period;
6. Applying the necessary compliance measures identified in step 1.

Those six separate points are to be developed in detail in the present section. The overall compliance action plan should be based on both incentives and enforcement measures to ensure a final successful outcome.

The figure below represents a general example relative to the way incentives and enforcement measures are applied.



5.1 Identifying the Sector/ Identify the Compliance Measures

The exact number and final choice of sectors would have to be determined after consultations with concerned industrialists and governmental agencies.
Choice should be made relative to the following criteria:

- Environmental pollution load generated by sector
- Economic importance of sector

Step 1	Initiate meetings with ALIND concerning CAP
Step 2	Determine potential sector(s) of interest based on pollution load and economic importance
Step 3	Identify potential compliance measures
Step 4	Conduct additional meetings with selected sector(s)

Time Frame: Steps 1-2 should take 10 man-days
Time Frame: Steps 3-4 should take 10 man-days

Point number 6 entitled "compliance measures" will provide all the necessary details concerning the implementation of the different compliance measures.

5.2 Selecting Representative Facilities

Once the sector has been chosen, MoE staff should conduct walkthrough visits in the different facilities for determining the most representative industries.

Step 1	Conduct walkthrough visits in the different facilities
Step 2	Evaluate the results
Step 3	Select the number of potential representative facilities
Step 4	Conduct a merit assignment to select the 2 most representative facilities

Time Frame for steps 1-2: 20 man-days
Time Frame for steps 3-4: 5 man-days

5.3 Conducting Audit(s)

The environmental audit(s) should be conducted in the chosen facilities by a private consultancy firm.

Step 1	Secure a support letter from the MoE/ Issue call for tenders
Step 2	Selection of the appropriate consultancy firm
Step 3	Conduct an environmental audit in selected facilities

Time Frame steps 1-2: 20 man-days
Time Frame step 3 : 30 man-days

5.4 Assessing the Environmental Situation in the Sector

Once the audit is completed its final results could be used to determine specifically the overall environmental situation and needs. The audit outcome should be able to set the necessary technical measures to be adopted in view of reaching the desired compliance.

Step 1	Prepare mitigation measures according to audit results
Step 2	Project findings over the sector and project overall pollution load
Step 3	Evaluate the possibility of implementing mitigation measures according to available resources over the sector
Step 4	Brief the sector's representatives (i.e. syndicates, associations, etc.) about the actions to be implemented and collect their feedback

Time Frame steps 1-4: 15 man-days

5.5 Identifying the Necessary Grace Period

The grace period should be set according to audit results, to the resources available as well as to the necessary technical mitigation measures that are to be adopted (i.e. a relocation might require more time than a simple implementation of some cleaner production measures, etc.)

Step 1	Conduct meetings with all concerned parties to determine the grace period

Time Frame steps 1: 10 man-days

5.6 Compliance Measures

Parallel to the steps above, a number of measures need to be identified and implemented as early as possible, while other measures could be postponed to a later stage in the development of the compliance action plan. Furthermore, some measures might have to be applied in a continuous manner and would have to last over an extended period of time. Thus, the implementation of the different measures should be divided into three general stages:

- Short-term basis: Corresponds to priority actions as well as to actions for which the necessary resources are presently available;
- Medium term basis: Corresponds to actions that could only be developed upon the availability of additional resources or also to actions that do no represent a first priority;
- Long-term basis: Corresponds to actions that are mainly necessary to ensure sustainability, that are not of a high priority or that might require important financial/human resources, know-how, etc.

Time Period for CAP Measures			
	Short Term	Medium Term	Long Term
Awareness			
Capacity Building			
Capital markets			
Cleaner Production/NCPC			
Enforcement measures			
Financial incentives			
Financial resources			
Human resources			
Information			
Infrastructure			
Legislation			
Monitoring & Equipment			
Non-financial incentives			
On-site support			
Participation			
Public's involvement			
Research & Development			
Transparency			

Measures to Be Implemented on a Short Term Basis

Awareness

- Objective: The Ministry of Environment, should work constantly on building the overall awareness level of the industrialists. Such activities should start as early as possible and should represent a constant and continuous effort not just on the short term basis but also on the long term basis.

- Implementation: Contacts should be initiated with ALIND, concerned NGOs (yearly grants given from MoE to concerned NGOs) and interested municipalities (preferably municipalities encompassing large industrial areas) to conduct awareness activities (i.e. seminars, distributing brochures, etc.). This activity should be carried out by the "Awareness and Guidance" department at the MoE in conjunction with concerned NGOs, academia, municipalities, international donors (i.e.: Hanns Seidel) etc.

- Challenges: The implementation of the awareness activities should be done carefully without necessitating too much time or too many resources (human & financial) for the execution of the compliance strategy. It might be necessary first to involve a small number of participants and activities then increase them slowly over time.

Capacity Building

- Objective: Capacity-building activities in relation to compliance should involve mainly both the concerned industrialists as well as governmental employees in charge of implementing the strategy.

- Implementation: The MoE should be capable through international and local funding to provide the necessary capacity building activities involving the concerned industrialists. On the other hand the implementation of such activities should also involve MoE personnel in charge of implementing the compliance action plan. This could be through international training seminars, field visits to learn from international experience and other events involving local consultants, academia and other qualified experts capable of enhancing the skills of MoE experts.

- Challenges: Potential financial obstacles.

Information

- Objective: To be able to support the industrialists in their compliance efforts, an easy and quick access to all types of helpful information should always be available relative to relevant information.

- Implementation: The development of a website by the MoE and the availability of a database relative to the books and other environmental material available at the

MoE library should be considered as one important priority (i.e. list of private consultancies, etc.).

- Challenges: Information should be regularly updated to remain of interest and to have people constantly visiting the site.

Financial resources

- Objective: The MoE should make sure that there are sufficient funds to carry out the desired compliance action plan to a successful end. **Financial resources should not hinder in any case the overall execution of the plan**. The Lebanese case is a very sensitive issue as financial resources allocated for financial issues are available in very limited quantities.

- Implementation: The limited funds available should justify the implementation of the compliance action plan to just 2 industrial sectors. The financial resources should be used in an efficient way securing the final success of the two pilot projects. Based on the polluter-payer principle, a fund should be created and financed by the penalties paid from polluting industries,.

- Challenges: Securing the sufficient amounts of funds necessary to implement the first one or two pilot projects to ensure full success.

Financial incentives

- Objective: The ultimate **success of the strategy will be linked to the potential financial incentives** available to support the industrialists in adopting cleaner production initiatives.

- Implementation: The MoE should conduct jointly with other concerned ministries all possible efforts to provide the industrial facilities with attractive financial incentives such as:
  1. Soft loans: conduct meetings with banking sector;
  2. Subsidies: approach foreign governmental and non-governmental agencies;
  3. Tax exemptions on environmentally friendly equipment;
  4. Money paid for infraction of environmental regulations should be put in a special fund to finance environmental projects;
  5. Yearly financial prizes for the most environmentally friendly industries.

- Challenges: One of the main challenges is to find quickly and sufficiently the necessary financial incentives to support the implementation of the compliance strategy.

Non-financial incentives

- Objective: Support the existing financial incentives with non-financial ones and to help the industrialists as much as possible in implementing cleaner production initiatives.

- Implementation: Developing a green guide with all the environmentally friendly industries with green certificates and other non-financial incentives that would help promote their marketing image or eventually allow them to profit from better insurance policies...

- Challenges: The tools used as non-financial incentives should be used in a very effective way to achieve a better impact.

Enforcement measures

- Objective: Have the necessary regulations to implement a polluter-payer strategy. Regulations should also be very flexible to conduct necessary updates without causing additional obstacles to their implementation by the industrial sector.

- Implementation: Conduct all the efforts to have the polluter-payer bill voted for and to secure additional legal measures necessary for enforcing compliance.

- Challenges: The MoE should be able to prove itself capable of enforcing the measures in a strict way, especially by ensuring the necessary political support.

Human resources

- Objective: Increase the availability of experts to support the execution of the compliance strategy should be seen as a main objective, especially that the present limited human resources of the MoE do not alow the ministry to conduct a large scale strategy.

- Implementation: Additional recruitment efforts should be conducted on a regular basis to ensure that there are enough experts to cover the total needs of the Ministry. The experts should be able to start as early as possible their training and be involved if possible in the early execution of the chosen pilot projects.

- Challenges: Limited financial resources do not allow additional recruitments in the near future.

Monitoring equipment/ Monitoring activities

- Objective: Supply the MoE with all the necessary monitoring equipment and in sufficient numbers to conduct the necessary surveillance and control activities.

- Implementation: Prepare a list of all the existing and the missing monitoring equipment and try to acquire all what is necessary in the shortest time possible. Conduct training sessions and monitoring activities to ensure that available experts are capable of operating the material.

- Challenges: Financial constraints that limit the acquisition of additional equipment as well as the lack of laboratories that limit the completion of some types of analysis could hinder the success of this step.

Public's involvement

- Objective: Involve whenever possible the public through media and other concerned NGOs and academia in the development of the overall compliance action plan. These could become a source of early warning, support and eventually pressure.

- Implementation: This could be done through the dissemination of information concerning the performance of the industrial facilities and by involving the public and other players in important meetings, etc.

- Challenges: The present awareness level of the public is still too low in some regions to be able to appreciate and understand fully the environmental information that is provided.

Transparency

- Objective: The Ministry of Environment should make sure that work is being conducted in a transparent manner. The lack of confidence sometimes present between the governmental bodies and the private sector can hinder the final success of joint projects.

- Implementation: Representatives from the industrial sector and the MoE should work closely together and conduct regular meetings to ensure full participation.

- Challenges: The only minor obstacle could be the absence of concerned industrialists during important decision processes.

Measures to Be Implemented on a Medium Term Basis

Cleaner Production/ NCPCs

- Objective: The concept of cleaner production is almost non-existing in the mentality of most Lebanese industrialists. Thus, cleaner production should be presented in a positive way as much as possible, demonstrating the financial advantages and quality improvements achieved through its application.
  Concerning the NCPCs: Creating a support center that would operate more or less independently from the MoE and which will be dedicated to supporting the different industrial sectors will represent another opportunity in promoting the benefits of cleaner production.

- Implementation: The promotion of cleaner production could be achieved through the creation of a national center for cleaner production as well as the implementation of some pilot projects demonstrating the benefits of such activities. Thus, choosing one or two industrial sectors as a first step for the implementation of the suggested compliance strategy could be a first step towards promoting cleaner production initiatives. The Lebanese government has already initiated some contacts with UNIDO who did adopt the idea and is working on getting the required funds for the necessary implementation. However, necessary contacts with different international governmental agencies (i.e. Canadian international Development Agency, USAID, Swedish International Development Agency, etc.) capable of providing additional financing for such a support center should also be pursued.

- Challenges: Considering that cleaner production is often seen as a costly measure, efforts should always be made to present it from a positive side by focusing on the savings achieved and quality improvements. On the other hand securing the necessary funds for the establishment of the NCPC could represent certain obstacles relative to the choice of the governmental agency, which will be directing the support center.

Infrastructure

- Objective: Developing the complete infrastructure necessary to support the different industrial facilities.

- Implementation: Conduct joint efforts with CDR and other concerned governmental agencies to develop the complete infrastructure necessary to support the present industrial facilities in treating the different types of wastes generated.

- Challenges: Financial obstacles and possible slow down due to political issues.

Legislation

- Objective: Updating the actual generic standards to more sector specific ones.

- Implementation: Initiating steps to secure the necessary funds for the development of the new set of national standards for environmental quality. In parallel to the existing standards a further review of legislation might be necessary to support and enforce compliance with existing regulations.

- Challenges: Such a project might necessitate important financial resources and might require several months to be conveniently implemented.

On-site assistance

- Objective: In the absence of a support unit, the government should be able to provide an on-site technical support to help the facilities in complying with existing environmental regulations. This step could be a kind of extension to the information measure.

- Implementation: Develop with time a website to receive all requests for assistance and assign a team to provide on-site assistance to industrial facilities.

- Challenges: Limited human resources and additional financial obstacles.

Participation

- Objective: Involving both the government and industrialists in executing the compliance strategy could represent a number of advantages especially that both parties would be able to combine their efforts and respective experiences towards reaching the desired objectives.
- An efficient participation could be an opportunity for governmental bodies (i.e. CDR, etc.) as well as industrialists to save time and money by implementing priority projects. Furthermore, participation could represent an additional way of building the necessary trust and long term co-operation between both parties.

- Implementation: Implement small-scale projects with industrialists, making sure that the final outcome of the project would be achievable. Such an activity could be executed through pilot projects implemented in selected industrial sectors.

- Challenges: Participation should start on a small scale and increase gradually (i.e. involving a limited number of industrialists from specific sectors, then gradually increasing the number if possible). The industrialists should not feel any lack of confidence from the MoE's part.

Measures to Be Implemented on a Long Term Basis

Capital markets

- Objective: Using the capital market as an additional source of pressure to push industrial facilities towards implementing existing environmental regulations.

- Implementation: A ranking of the industries according to their environmental performance would have an impact on their rating on the capital market.

- Challenges: Most of the Lebanese industries are family owned, rendering this objective of a limited importance.

Research and Development

- Objective: The establishment of a research and development center should be considered as an ultimate objective, necessary to keep the national industry competitive and up to date relative to the ultimate findings in the concerned fields.

- Implementation: Joint efforts should be conducted involving ALIND, the academia the MoE and other concerned parties to develop through external financing preferably, the necessary research and development centers.

- Challenges: The development of a research and development center should come as an ultimate objective as it will necessitate important investments and the presence of highly qualified experts. In addition research and development is almost a non-existing field in Lebanon, which makes out of this initiative a very delicate matter.

5.7 List of Key Players Involved in the Execution of the Compliance Measures

List of Potential Actors Per CAP Measure		
Potential actors	**Time**	**Measure Type**
MoE, NGOs, MoI, ALIND, Media	S, M, L	Awareness
MoE, MoI, Municipalities	S	Capacity Building
MoE, International Organizations	S, M, L	Financial resources
MoE, MoI, MoE&T, MoF, Banks	S	Financial incentives
MoE, Private Sector	S	Monitoring equipment/monitoring
MoE, NGOs, Academia, Media	S	Public's involvement
MoE	S	Non-financial incentives
MoE	S	Transparency
MoE, M. of Interior & Municipalities	S, M, L	Enforcement measures
MoE, M. of Public Works, CDR	M	Infrastructure
MoE, ALIND	M	Information
MoE, MoI, UNIDO	M, L	Cleaner Production, NCPC
MoE	M, L	Legislations
MoE	M	Human resources
MoE, MoI	M	On-site support
MoE, ALIND	M	Participation
MoE, Banks, Int'l Agreements, etc	L	Capital markets
MoE, MoI, Academia, Private sector	L	Research & Development

S: Short term
M: Medium term
L: Long term

CONCLUSION

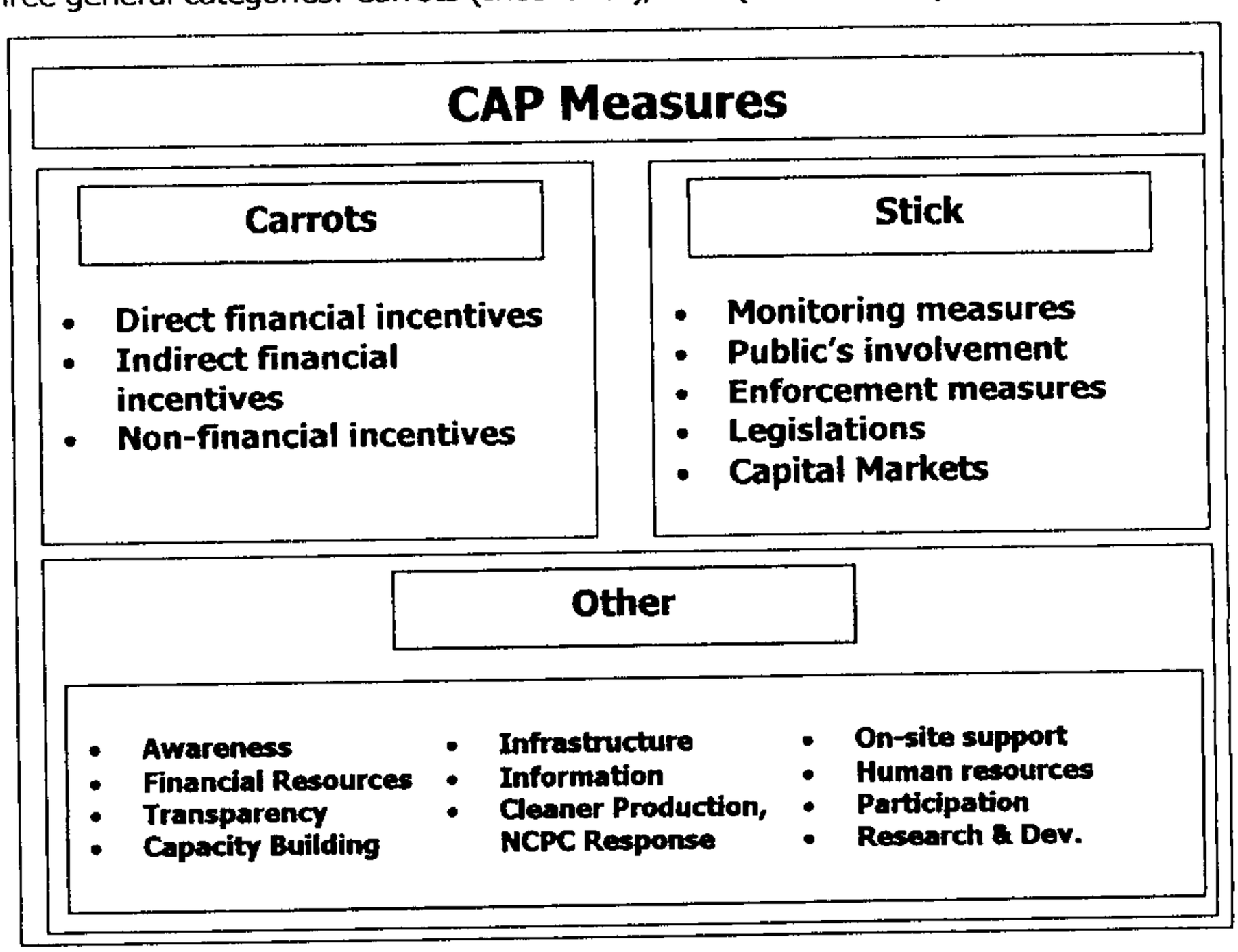
Based on the international experience learned and on the research conducted, the previous section demonstrated clearly that the most suitable compliance strategy for Lebanon was to be based on the following:

Applying a sector-by-sector compliance strategy, based on the implementation of the proposed six steps listed below:

1. Identifying sector / Identify compliance measures;
2. Selecting representative facilities;
3. Conducting audit(s);
4. Assessing the environmental situation in the sector;
5. Identifying the necessary grace period;
6. Applying the necessary compliance measures identified in step 1.

This **strategy will specify the length of the grace period** according to the sectors' environmental situation needs and available resources.

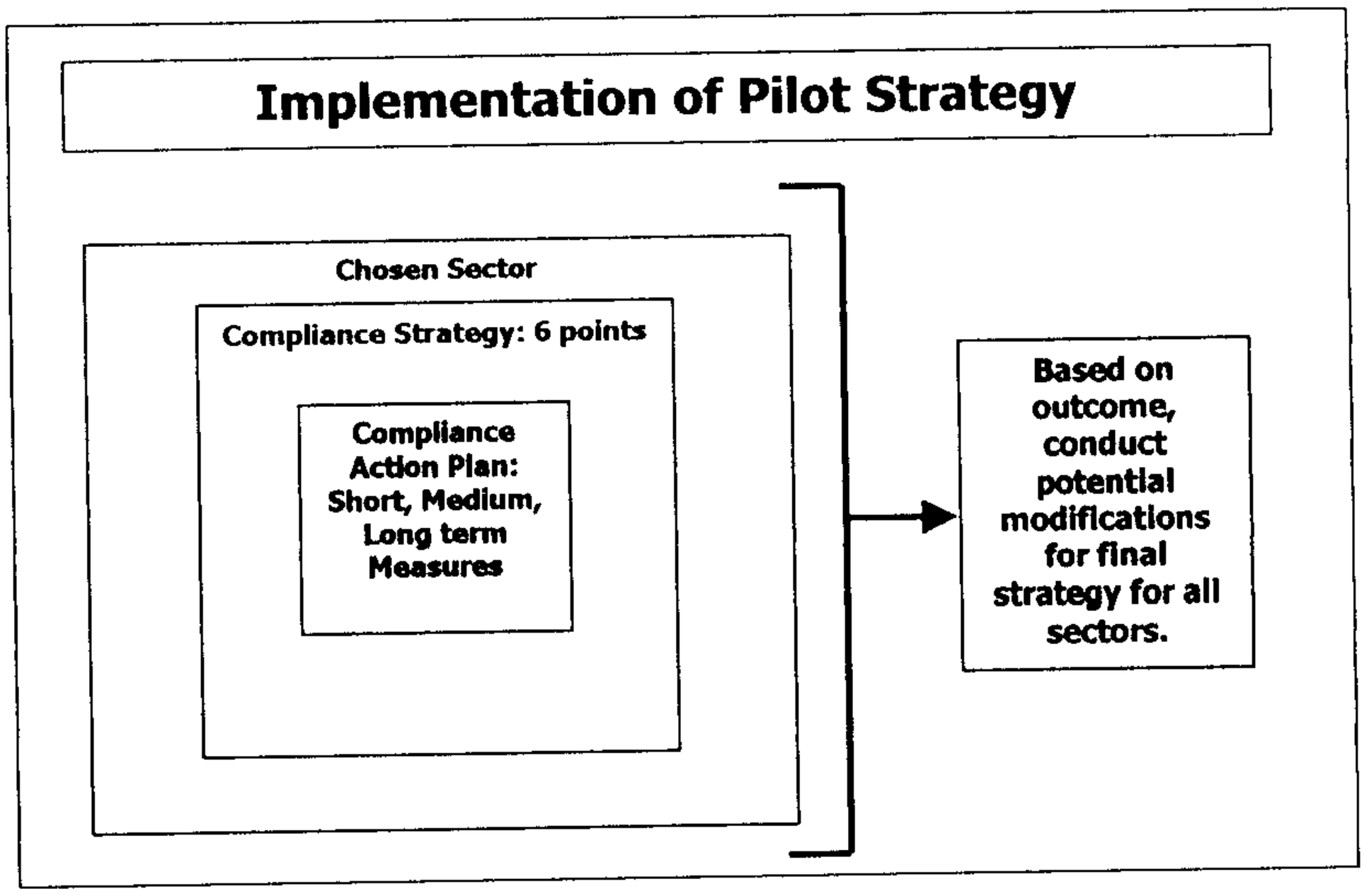
Finally, **to reach the desired objectives within the assigned grace period, a series of measures will be applied** on a short term, medium term and long-term basis. These measures will constitute the suggested compliance action plan. It is according to the carrot and stick strategy that the measures will be divided below into three general categories: Carrots (Incentives)/Stick (Enforcement)/Other



Reaching the desired objectives could only be made feasible through a strict carrot and stick strategy, where regulations and incentives are used simultaneously. Securing the necessary **enforcement and incentives should be considered as** another **early priority** to be tackled. It is only by providing the industrialists with the required incentives that they would see the compliance measures as friendly actions. It is only by having the necessary enforcement measures and regulations that industrialists will be pushed towards compliance. In summary the carrot and stick remains the bottom line representing a push and pull strategy necessary to help industrialists achieving the compliance required.

Accordingly, it would be wise to test the above mentioned strategy in one or two sectors, to determine if there is a need for any additional modifications. In such a case, the necessary modifications could be conducted, following which the new modified strategy will be applied to the remaining sectors.

The figure below represents a summary of the pilot projects' objectives and execution



ANNEX I- THE NATIONAL CLEANER PRODUCTION CENTER PROGRAMME

The objective of the NCPC programme
is to build national capacity in the field of cleaner production (CP). The programme builds capacity to provide four services: in-plant assessments, training, information dissemination and policy advice. All these services are interrelated and strongly support each other:

In-plant Assessments Through in-plant assessments, an NCPC shows that the CP concept can be applied to any industrial sector and that pollutant reduction can be financially attractive. In-plant assessments create examples of successful CP applications that have a direct positive impact on the environment and that can be copied by other enterprises.

Training Through training, an NCPC develops a core of national CP consultants, ensures that plant personnel participating in assessments retain the ability to implement additional CP measures and informs other relevant parties, such as subsector organizations, governments, research institutes, financial institutions, universities and consultants, of the advantages of CP.

Information Dissemination Through information dissemination, an NCPC provides technical information (e.g., available technologies for solving environmental problems in sector-specific processes), shares experience with interested partners through CP case studies and promotes its services. An effective information dissemination programme is essential for ensuring that CP consultants can provide SMIs with information about the most appropriate CP techniques and technologies.

Policy Advice Through policy dialogue, an NCPC aims to modify national legislation and policies to assign priority to preventive environmental management and to support effective environmental regulation. The latter involves not only administrative measures, such as licensing, but also economic measures such as realistic disposal charges and market priced energy and water.

ANNEX II- CITET

CITET is a public body settled by the Tunisian government in 1996 in order to help companies and administration agencies to control the environment technologies needed to fulfil the regulation introduced these last years in order to protect environment and natural resources in Tunisia. CITET is using various tools to this end, among which the organization of training sessions on any topics related to environment, the development of specialized laboratories offering various services to companies, the assistance to contractors in their choice of technologies in accordance with environment regulation, etc. On the other hand, one of the important tasks assigned to CITET is to link the research capabilities available in the University to the solution of environmental problems caused by the industrial development and the raise of human activities.

Tunisian firms were involved in a major restructuring program which aims to ensure that they are able to compete effectively in the future Euro-Mediterranean free-trade zone and in the world trade as a whole. They must therefore bring environmental considerations into their planning and management strategies in order to be able to respond to market pressures and new consumer requirements.

CITET aims to be a partner for these firms, helping them to make preserving the environment as a positive aspect of business development rather than a factor leading to increased costs.

CITET offers them expert advice services in order to help them with environmental issues and find out suitable organizational, technical and/or technological solutions.

Such solutions will include:

- Tackling the harmful effects of their activities on the environment (waste management, waste water and emissions treatment),
- Improving resource management (water, raw-materials and energy savings),
- Improving profitability.

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BRAINSTORMING SESSION CONCERNING THE SUGGESTED COMPLIANCE ACTION PLAN AND STRATEGY

Introduction

Falling within SPASI's objectives was the development of a Compliance Action Plan (CAP) and Strategy. The latter was to help existing industrial facilities in achieving environmental compliance. Thus, after conducting a series of interviews with the concerned parties as well as the necessary research, SPASI was able to develop a draft version of a proposed CAP and strategy. Based on international experience as well as the actual Lebanese situation, SPASI suggested a sector-by-sector approach backed by a carrot and stick incentive strategy as the most suitable way for achieving compliance. Finally, a list of various CAP measures was also suggested as the backbone for the proposed CAP implementation.

As a second step following the development of the CAP and strategy, a number of copies of the final draft version were distributed to the different MoE and international projects experts for review and comments.

Objective of the Brainstorming Session

A brainstorming session (see Annex B for pictures) regrouped various experts from the MoE and international projects (see Annex A for attendance sheet) to discuss the different aspects of the suggested plan and strategy. This was also an opportunity to bring additional feedback and suggestions to the draft version of the CAP. The objective of such activity was to adopt a consensus on the final plan and measures before any implementation on the ground.

Technical Issues Discussed

The brief presentation conducted by SPASI' s Project Manager concerning the proposed CAP and Strategy, was followed by a series of interventions concerning the following challenges and suggestions:

Challenges

- Conducting monitoring activities in industrial zones might be easier than working on a sector by sector strategy;
- Achieving the necessary environmental compliance might be too slow if a sector by sector approach was to be implemented;
- A sector by sector approach might encounter some obstacles if some facilities have an easier access to support infrastructures while others don't;
- Defining a unified grace period for the same sector could be problematic as some facilities might require less or additional time to achieve compliance. Such fact should be taken into consideration and eventually different grace periods should be specified;
- Using financial measures as potential incentives, might be faced by additional obstacles such as the WTO rules and regulations forbidding the implementation of some of the suggested measures (i.e. financial subsidies);
- The high possibility of facing emergency cases will hinder the implementation of the plan;
- Encountering problems relative to the role and selection of the unit in charge of monitoring;
- Waiting for the actual results of the pilot projects before being able to tackle other issues might be too long;
- Problem in delivering green certificates to facilities implementing the ISO 14000 certification.

Suggestions

- Defining the exact role and policy of the MoE relative to CAP issues, before determining the best method for applying a sound CAP and strategy;
- Considering more thoroughly the advantages related to a strategy based on an industrial zone approach rather than a sector by sector approach might be also an attractive scenario;
- Marketing CAP as an indirect incentive to help industrialists in reaching their international environmental commitments;
- The possibility of applying a strategy which could be sector and size specific;
- Focusing on awareness as a first priority and explaining to industrialists the exact needs for achieving compliance, should be considered as highly important;
- Ensuring a strong governmental support would allow the MoE to apply more efficiently the required measures;
- Introducing additional components to CAP (i.e. per region, per pollution level, etc.) without just limiting it to a sector by sector approach might be useful;
- Conducting monitoring at different levels: inspection, self-monitoring and systematic monitoring.

Consensus

CAP and Strategy:

The brainstorming session showed that a well-planned strategy would ultimately increase the overall performance of the MoE. This was to be achieved through one of the 3 different Strategies below:

1. Defining a grace period according to a sector by sector approach (i.e. as suggested in the present study)
2. Defining a grace period based on different industrial zones;
3. Defining a general grace period (i.e. affecting all the industrial sectors)

Following the brainstorming session a sector-by-sector strategy was selected based on the following reasons:

- Taking into consideration the limited human resources of the MoE a sector-by-sector proved to be the best alternative;
- Due to the important challenges faced by the country as well as the industrial sector the sector-by-sector approach was also selected as the best option;
- Implementing a strategy according to each industrial zone could be hindered by political issues;
- The implementation of the sector-by-sector approach will be conducted in certain cases at a sub sector level.

CAP Measures:

The brainstorming session provided an opportunity to cover in details the different measures found in the CAP report, and to suggest additional actions or additional measures to be implemented.

Awareness

- This step should be considered as a main priority and continuously implemented by the MoE's "Awareness Unit".
- The involvement of different key players (i.e. other industrial sectors, municipalities, etc.) in addition to the selected industrial sector could represent a way for quickening the whole compliance process.

Non-financial incentives:

- Appointing a lawyer to determine the exact prerogatives of the MoE concerning a green certification;
- MoE green certificates shall remain independent from ISO 14000 certifications as these are two separate issues;
- Designing a green directory as an indirect incentive measure.
- Placing the directory on the internet;
- Introducing a coloring scheme similar to the Indonesian plan to rate the industries and using such scheme as an incentive or an indirect source of enforcement.

Financial Incentives

- Pursuing meeting efforts with line Ministries to define the possibility of acquiring financial incentives; (Problems related to WTO regulations have also to be taken into consideration).

Monitoring Measures

- The monitoring obstacle could be limited by conducting monitoring at different levels: Inspection, self-monitoring and systematic monitoring.

Infrastructure Measures

- Assisting the hazardous waste unit at MoE in developing a list of needed infrastructures;
- Discussing with Minister of environment the issue of exclusivity relative to environmental infrastructures (i.e. treatment, disposal, etc.).

Capital Markets

- Involving Capital Markets will not be considered for the time being as a primary priority to be included in the overall CAP.

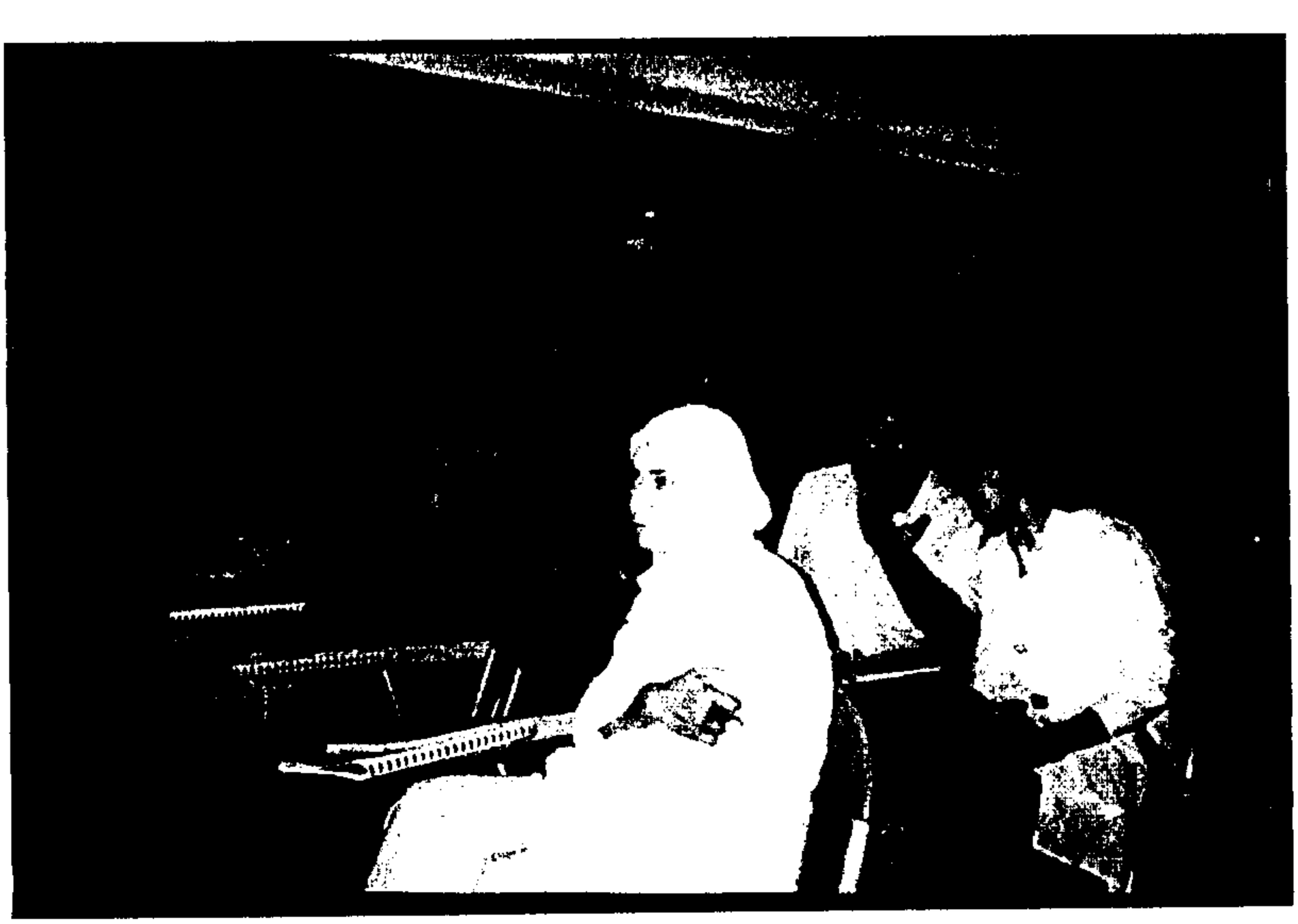
Finally, the implementation of all the remaining measures will be done according to the timetable and the details found in the CAP and Strategy report.

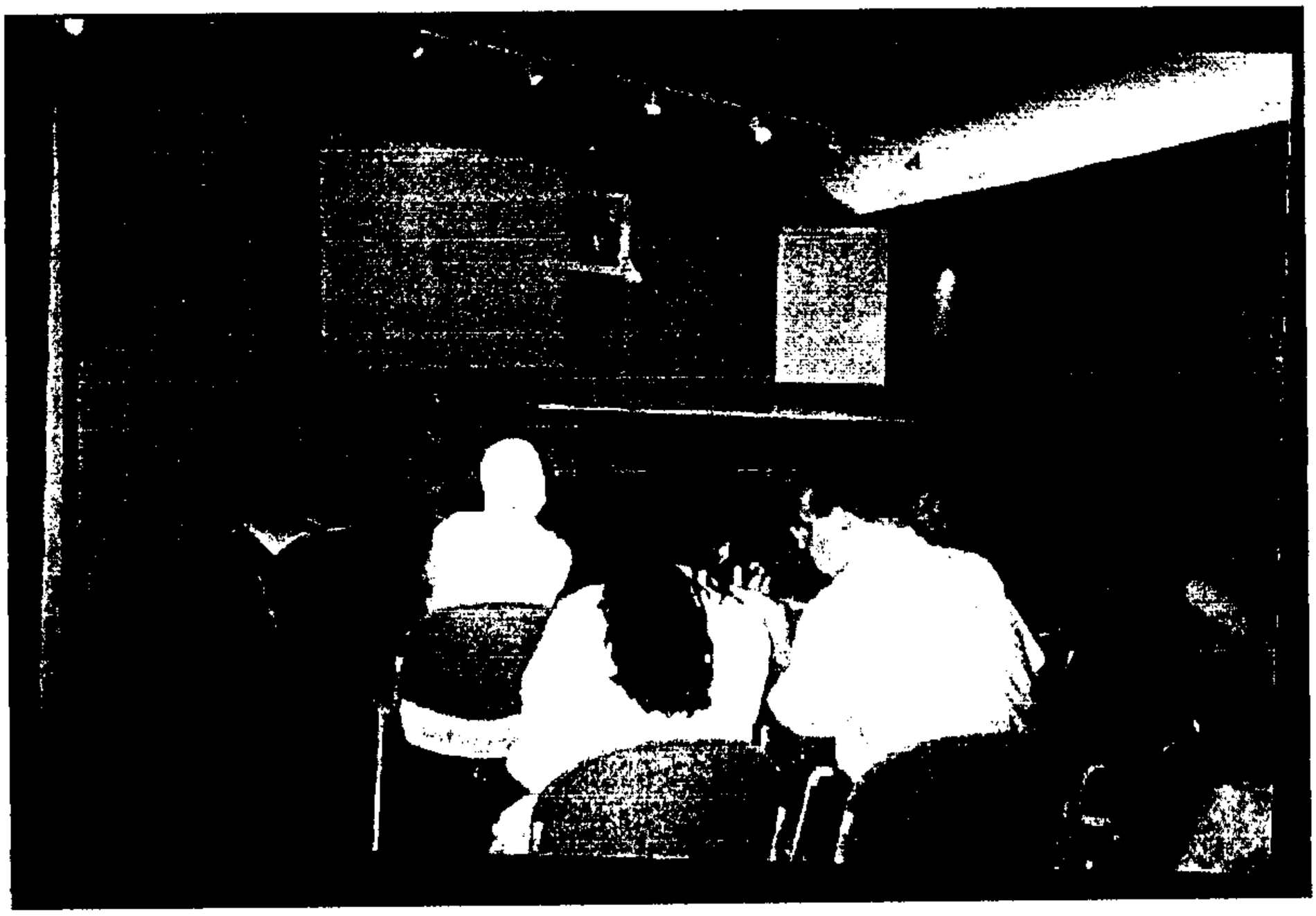
ANNEX A: ATTENDANCE SHEET

ATTENDANCE SHEET CAP- Brainstorming **Date** 28/6/01

Name	Organization
Alia Kaskas	MoE
Bassam Sabbagh	MoE
Berj Hatjian	MoE
Chucri Sayegh	SPASI
Edgard Chehab	SPASI
Farouk Merehbi	Hazardous Waste Unit
George AKI	LEDO
Hanna Bou-Habib	MoE
Lara Kallas	LEDO
Lyna Yammout	MoE
Manal Moussalem	UPP
Nadim Mroueh	MoE
Naji Kodeih	MoE
Ramez Kayal	UPP
Rami Abou Salman	LEDO
Sami Saad	MoE
Sana Sairawan	MoE
Sarah Kouzi	SPASI
Walid Nasr	UNDP

ANNEX B: PICTURES





Republic of Lebanon

Office of the Minister of State for Administrative Reform

Center for Public Sector Projects and Studies

(C.P.S.P.S.)