

EIA's AS A PUBLIC MEANS TO ENVIRONMENTAL REGULATION OF INDUSTRIES: SOME EXPERIENCES

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ABSTRACT

The paper discusses strengths and weaknesses of EIA's as a project oriented regulatory tool. Some of the strengths are their value as a means of creating public participation in environmental regulation and their utility in building up experiences in a systematic way. Some of the weak points mentioned are that EIA's may lead to unintended biases of competition amongst enterprises, as EIA's are only required for new projects and technologies. Another critical issue discussed will be the risk of allowing an accumulation of pollution, as EIA's are done at the level of each individual project.

Key words: Environmental Impact Assessment. Environmental problems. Monitoring. Public participation. Environmental regulation.

1. INTRODUCTION

EIA (Environmental Impact Assessment) is a management system originating from US 1969, and with the aim to secure that before approval of major polluting activities, an investigation of activity as well as location shall be executed. The study shall be submitted to an assessment before the activity can be established at the location. During the years the EIA system has spread to almost all counties in the world and also many donor organisations apply to the system. EIA is directed against specific new activities and in that way it has major influence on greening of industries especially when the system has been functioning during a number of years. Besides new activities, major enlargements of existing establishments are also submitted to the EIA procedure and it takes a number of years before a significant part of the industrial production has adopted the environmental demands.

Even the EIA's have the same origin there are substantial differences among the countries around the world. A model EIA management of a new industry has to pass a number of steps (See Figure 1).

The steps followed should clarify what studies are needed in order to reduce the harmful effects on the environment and society, and to develop the sustainability of the project. An EIA of a project is directed against a decision on an integrated assessment of the available knowledge within the field of science, technology and environmental legislation. The results achieved by scientific methods will typically have to be interpreted. Is the impact of the project significant? A significant impact is not an exact term, and in each case assessment of the magnitude of emissions, the toxicity of emissions and the concern to the public, has to decide if the impacts are of importance.

The term "EIA methodology", may give the impression that there is only one set of methods by which environmental impact assessments may be satisfactorily undertaken. However, there are

often alternative assessment methods for any particular task and choosing the best combination of techniques is an essential ingredient of good EIA practice. Many of the predictive methods used in EIA are not unique to the process but are borrowed from disciplines like toxicology, ecology, hydrology, social science, etc. What is unique to EIA is the way in which the methods are combined into a coherent assessment strategy.

The assessment should be conducted so that environmental considerations are incorporated while the project is still at its planning stage, and alternatives to the project or the ways of executing it should be identified. Figure 2 shows the correspondence between the project development and the EIA procedure. Initial and detailed screening represent the problem of identifying industries for an EIA. Normally an EIA on all industries are considered to be too costly. Therefore lists and criteria are developed to select a suitable number of industries in order to prevent EIA to be prohibitive. Industrial projects that are causing major environmental impact will be submitted to an EIA process and as part of that an EIS (Environmental Impact Statement) report has to be made. Normally EIS reports will be prepared by the proponent and forwarded to a competent ministry. In most countries proponents will have to provide the necessary information on projects and environmental authorities will make approvals.

A number of different EIA procedures of countries and organisations are stated in Figure 2.

2. MATERIALS AND METHODS

Background for this presentation is studies and comparative studies of EIA systems and organisations and EIA cases in industrialised countries like Denmark, US, Canada (Schroll 1992) and single countries in the European Union (Andersson 92). Experiences from consultancy tasks in Egypt (OSP 1995) together with on going EIA related activities in Thailand, Malaysia, Southern Africa, and Laos will also be included.

As mentioned national EIA procedures are quite different but on the other hand environmental problems from industries have similarities and it is possible to generalise a method that can provide some degree of comparability among the countries. An environmental problem and its dynamic can be modelled as appear in Figure 3.

A pollution load can be related to an industrial activity (source). Emissions from industries will directly or indirectly impact the ecosystems. An environmental problem arises when the impact is undesirable to other social groups. Many elements are involved in causing the environmental problems such as scientific documentation of risks, monitoring, and pressure from NGOs and media. A general public awareness might initiate an environmental regulation over time. From experience we know that under certain societal circumstances, when a conflict has attained a certain magnitude, the governmental system will generate a corresponding environmental regulation. This model can be used to overview environmental problems in a country, and it says that all elements in Figure 3 have to be taken into consideration if a national environmental problem should be described. If there is timing as proposed, the following sequence will be expected; first an industrial emission then an impact on ecosystems that might be detected and considered unacceptable by actors in society and that might lead to an environmental regulation. In principle many of the regulated aspects of industrial pollution in a country can be foreseen if the starting point is taken from the sources and the ecosystems.

In many countries the EIA system constitute the important part of the environmental regulation of industries. This paper deals with analysis of the environmental problem and EIA context in

different countries. But since a complete presentation will be a comprehensive task the focus has been to discuss a number of strength and weaknesses that appears from this field of governmental attempts to reduce environmental impact from industries by the use of EIAs. These strength and weaknesses appear from the following headlines.

3. RESULTS AND DISCUSSION

When new plants are EIA approved they will often have to compete with other national industries that do not have to observe the same demands.

In Denmark industrial projects submitted to an EIA were well defined from the first Environmental Act in 1974. The main part of the Danish industry, also small manufacturing plants, were listed and it was mandatory that these types of plant were not to be constructed or enlarged without preceding approval. The number of activities included in this EIA system was assessed to be 50,000 in the beginning of 1974. Such a huge number of industries were not expected to get an EIA in few years so it was considered how to protect industries from unbearable high environmental demands. An important argument was that new plants more easily could cope with environmental requirements than old ones. It was emphasised that the economic consequences by an approval can be major when dealing with an existing plant in contradiction to a new plant that already by projecting can incorporate the authority's demand concerning mitigating measures. (Ministry of Environment 1973).

The efficiency of the environmental approval system is difficult to account for because there are so many activities on the lists and because many cases are managed at a local level. A study of water polluting industries focused on plants initiated after 1974 showed that 5 out of 21 selected new plants from the list did not have an approval in 1985. The authorities might not enforce the law but there is also another possibility. The missing approval could be explained by a situation where a new manufacturing plant takes place in an old building established before 1974. If a new firm takes over an old firm for manufacturing in an old building only if the pollution is higher than the former the new plant are forced to have an EIA approval after the Environmental Act's part 5. (Schroll 1985)

The Environmental Act has according to its aim been practised differently by authorities. In some cases authorities have demanded an approval for a change in manufacturing even the plant has arranged the manufacturing technology in such a way that the discharge to the surroundings was not enhanced. In other cases practice have been that changes in technology that resulted in the same emission or less did not demand for a new approval (Ministry of Environment 1990).

15 years after the introduction of EIA system in Denmark it is assessed that approximately 50 percent of the listed establishments did not have either a total or partly EIA approval. EIA become a political problem and four strategies to enforce the system were followed.

First the number of listed types of industries were reduced by 50%, partly by exempting smaller industries. Remaining on the list were about 12.000 activities where the regional councils have jurisdiction of about 4.000 and the local councils are responsible for about 8.000 (Moe 1992).

The exemption created a new problem because many industries got new conditions compared to previously. Plants exempted from the mandatory list have to do a notification to the local councils when these plants establish or enlarge in a way where pollution increases they have to report to the authorities. (Ministry of Environment 1992)

The second way to reduce the number of mandatory industries was statutory orders on how to prepare EIA on auto shops and fur farms.

Such statutory orders of branches are legal mandatory acts published by the Environmental Minister and based on the Environmental Act. A statutory order of a branch gives nation wide norms for establishment, manufacturing and changes of all involved plants. The single plant has to observe the demands given by the statutory order concerning localisation, manufacturing and waste management. The plants got the right to establish, manufacture, and enlarge without preceding approval if the statutory order was observed. (Holm 1992)

The third way was to force the existing listed big industries like refineries and power plants to have an EIA even they have not been enlarged since 1974.

Existing plants without a total approval should apply for one according to the Environmental Act 1991 and the environmental Minister can define time limits. The Environmental Agency planned a sequence of approvals for different branches together with decentralised authorities and industrial organisations so all listed plant would be approved after a 10 years period. (Ministry of Environment and Energy 1997)

The fourth strategy was to change the industry's protection from new environmental demands. It was obvious to take advantage of the technological development in order to reduce the polluting discharges. Technological development is going on in all plants and locking the environmental demands for longer time remove the incitement to use technological innovation in environmental impact reduction.

With the revised Environmental Act from 1987 a changes in the EIA approval could appear after 8 years. From approval time and 8 years ahead changes could be given if;

- new information appears on harmful effects of pollution,
- pollution causes environmental damage that could not be foreseen at the approval,
- pollution exceeds what was assessed in the approval.

After 8 years permission the monitoring authority can change the condition in the approval when it is environmentally based or if there is developed better waste treatment or less polluting technology. For specific branches with a fast technological development the Environmental Minister can reduce the time limit not below 4 years. (Ministry of Environment and Energy 1997a)

Time limits of the approvals create a possibility for the authorities to use technological development in a cleaner technology approach.

The introduction of EIA for a majority of industries in Denmark has taken several decades and during that time there have been little public complaint of the EIA's distortion of competition. Based on that it is tempting to conclude that the environmental demands play a minor role in the industrial manufacturing.

This can be supported by often-cited survey that shows EIA costs in OECD countries have generally been in the range of 0,1 to 1 percent of the total project costs. These figures indicate that the costs of EIA are low in relation to the potential for long-term benefits. (World Bank 1991a)

Experience also shows that planning delays and conflicts in the implementation stage - both of which can be expensive - can often be avoided by a thorough and timely EIA. It may be, therefore, that EIA can actually save time and money.

EIA is a flexible system where new experiences about monitoring and control can be built in.

Experiences of pollution from existing industries are transferred to the EIA system so new projects will be mitigated in order to avoid well-known pollution. For that purpose the authorities develop guidelines that can be general or generic ones. Especially generic ones become very comprehensive and detailed.

It is an often expressed opinion among national experts from especially developing countries that the guidelines are too extensive and costly, and that not all of the proposed issues are applicable in a developing country. The guidelines express the experiences with a certain type of industries, and they serve as a collection of key words of what can go wrong. Local experts consider them to be examined from one end to the other.

If guidelines ask for a base line description of the environment such a baseline study imply regular use of scientists such as biologists and geologists. For such a specialist it is tempting to include all existing data and often an overwhelming amount of "base-line" conditions are compiled and part of this is irrelevant data, for example on geology and climate (MSR 1993).

To avoid such situations an EIA includes a scoping that means a identification of significant environmental impacts. An EIA does not mean that everything from the EIA guideline is going to be studied but all important steps should be considered.

The EIA should include a detailed plan to monitor the implementation of mitigating measures and the impacts of the project during construction and operation. Self-control and good "house-keeping" shall be framed as well as information of consumption of raw materials, auxiliary substances and maintenance. Results of sampling prescribed by the EIA shall be included in the monitoring plan.

Many developing countries do have high environmental standards because they often copy standards from industrialised countries or standards from international organisations. Emission standards in Egypt apply to the most restrict regulations in Europe.

Unfortunately many countries do not monitor, air pollution, coastal pollution and industrial pollution or control if the standards are observed. Monitoring programmes are important as a mean to control pollution but such information is also important in raising public awareness.

In Denmark environmental monitoring and control are divided between centralised and decentralised authorities and the monitoring measurements are accessible to the public. The green organisations and individuals have used admission to complain, and it has been a possibility since the first Environmental Act from 1974. The number of complaints has been considered as a burden for the environmental administration, and it was a political intention by the changes of the Environmental Act in 1991 to reduce the administrative resources for managing complaints.

The complaining system was simplified so after one decision it is possible to complain to a higher level in order to change the decision - a so-called two level system. Certain cases for example permission to discharge wastewater will be final decided by the local or regional councils. Admission to complain exists in other cases and the main principle is that the right to

complain is given by the Environmental Minister or the Environmental Agency. In major cases or cases of principal importance there is a possibility to complain to a third level, an Environmental Appeals Committee.

In order to reduce the number of complaints the environmental act contains the following cases where complaints are accepted;

- The addressee and anyone who has an individual and essential interest in the case can object a decision.
 - The local council can object a decision made by the regional councils and reverse.
 - Medical officers can object decisions based on part 3, 4 and 5 in the Environmental Act.
 - The Environmental Minister can resolve that specific authorities in other countries can object decisions based on The Environmental Act.
 - Danish Society of Nature Conservation can appeal decisions taken by the regional councils under parts 4 and 5.
 - The Danish Angling Society and the Danish Fisheries Association can appeal decisions made by the regional councils under parts 4 and 5 as far the case deals with pollution of streams, lakes and the sea.
 - Greenpeace and Danish Sea Fisheries Association can appeal decisions made by the regional councils under parts 4 and 5 as far it deals with pollution of the sea.
 - The Danish Inland Fisheries Association can appeal decisions taken by the regional councils under parts 4 and 5 as far as it deals with pollution of streams and lakes.
 - The Economic Council of the Danish Labour Movement can appeal decisions made by the local councils and the regional councils when significant occupational interests are affected.
 - The Danish Consumer Council can appeal decisions made by the local councils and the regional councils to the extent they are essential and principally.
 - Local associations that have environmental protection as their main objective can appeal decisions on cases where the associations have got public access.
- (Ministry of Environment and Energy 1997a)

As can be seen a number of NGOs has a specific role in the complain system and some of them do get financial support by the Danish government. An important point to make is that beyond the authorities and obvious the industry also the NGOs do possess environmental and technical knowledge about the industrial manufacturing and pollution.

The EIA system gives the environmental authorities an instrument for the approval and on the same time they renew knowledge on technology and changes in industry. A trend in environmental management does encourage the industry to make self-control and reduce the role of the authority. Such a development will reduce the authority's knowledge of the technological development in the first hand and in longer perspective the industrial monitoring measurements will be an affair between the industry and authorities. It will be more difficult for the green NGOs and the public to get detailed information of industrial emissions and to communicate potential harmful effects in nature.

When industries are EIA approved one by one in an area the pollution will accumulate.

A major problem related to the EIA process is industries that can be EIA approved at a location without taking sufficient notice of the accumulation of pollution. The EIA is about approving a

project not to reject it and it is a part of an EIA to find mitigating measures. The authorities can hardly avoid mitigating measures and reject a project. If industrial projects have been approved in an area in an extent where for examples air pollution has reach a critical level the authorities will also have difficulties in strengthening air pollution standards to an extent beyond already given standards. In such cases of accumulation of pollution area planning is an important issue.

Egypt faces problems with industrial accumulation because of lack of comprehensive zoning laws. Industrial units such as cement and steel factories were located in area Helwan South of Cairo. Over the years new housing developed in the area, and air pollution impacts seriously the health of workers and local residents (Nasralla 1992).

Presently the Egyptian cement production is in a shortage, and there will be a great economic benefit if more capacity is established. A huge cement factory is proposed about 40 km Southeast of Cairo in an arid windswept extremely dry desert. In the area there are no permanent residents and no farming. An EIS describes the project, and also plans for a new city El-Amal 6 km North West to the proposed cement factory. The EIS report guarantees the new factory will create no problems for El-Amal new city. That might a minor problem because of the distance and because the wind seldom is blowing in direction of the planned city. What could create problems is the lack of a discussion of how to avoid housing in the area within a radius of 6 km from the planned factory. Groundwater supply for the plant and infrastructure of a new city will give opportunities for housing in the neighbourhood and health problems might appear as in Helvan (ASEC 1995). Sector planning is very weak in Egypt. Land-use plans for Egypt exist but different ministries make their own plans and plans are not co-ordinated.

The tourist ministry has an area plan for the growing tourism industry in coastal areas of Sinai and the Red Sea. Tourism is only existing because of unique coral reefs. The reefs are very sensitive ecosystems and pollution has destroyed them in many areas. Mitigating measures have been taken to protect the reefs. The drinking water is desalinated salty groundwater, and the wastewater is reinjected in the ground to avoid that salt and rised temperature harm the coral reef ecosystem. The wastewater is biologically treated, and the water is used for the irrigation of small forests. Existing hotels occupy every square metre of the beach in Sharm el Sheik. A proponent wants to make an artificial lake with seawater in the desert some distance from the coastline. The reason for this investment is that an artificial lake will enlarge the area of beaches, and the investment is expected to be lucrative. The EIS describes the technical aspects of an intake of 1000 and a discharge of 400 cubic metre seawater per hour. The wastewater discharges might impact the vulnerable coral ecosystem and take away the economic existence of all neighbour hotels. The hotel owners have to be satisfied with the EIS report declaring that only minor impacts will appear (Warith 1995).

The artificial lake was not build and the reason was not the sector plan but the project was given up because foreign EIA experts advised the mitigating measure to be no wastewater outlet to the sea. The demand for no wastewater discharge would be very expensive and the proponents gave up the project.

A special water quality planning system related to EIA of industries has been developed in Denmark. The planning system covers water pollution and recipients like rivers, lakes and the sea. In principle it is assumed that a water body has a certain capacity for absorbing pollutants. Some impacts are within the limits of what can be acceptable to involved groups like fishermen, tourist organisation, nature lovers, etc.. The regional council calculates the capacity of emission of a specific substance for example in a river basin, and then it is the local council who distribute the load among industries that discharge to the water system. (Schroll 1995)

In this way a limit of discharge is determined on a biological basis and since rivers differs in water volume and other aspects, standards for the same discharged substance are not expected to be the same.

For example Sunds Textile dying factory was allowed to discharge 2.0 ppm chrome, while Herning Galvano factory shall observe a concentration of 0.1 ppm chrome and Skjern Paper mill can discharge up to 0.2 ppm chrome (Schroll 1985). In all three cases the recipients are small streams and a recipient of the same type. The differences can be explained by the different objectives and background levels of chromium in the different streams and the Environmental Act opens for these specific differences. Such a regulation also gives a different situation of competition for industries with the same production if they are discharging to different recipients.

Co-ordination between environmental plans and projects is important. Ideally, EIAs should be linked together into a national environmental planning process. An indicator of this need is the introduction of a concept called Strategic Environmental Assessment SEA, where policies, plans and programs are environmental assessed (Lee 1995).

Demand of public participation and public access.

The public participation process and public involvement is generally accepted as an integral part of the EIA process. Taking into account the views of the people affected by a project is believed to improve both the qualities of the project and support for its eventual implementation.

Preceding public access and a non-technical summary for the public has got the following wording in the EC Directive. The member states shall secure;

- that the application of approval and the collected information will be published.
- that the concerned part of the public get the opportunity to comment the project before it is initiated.
- the procedures of information and hearings are established by the member states that depending on projects and location can decide which parts of the public who is concerned, where the information can be collected, the sort of information, and the public participation. The timing shall secure that the decisions are taken within reasonable time limits.

After an EIA decision the authorities have to publish the following to the concerned part of the public

- the content of the decision and the conditions that might be attached to the decision
- the reasons and considerations that form the background for the decision.

(Council Directive 1997)

The Danish EIA system for an industry includes a preceding publicity, and the citizens shall be involved at an early stage of the planning process. Before a proposal of EIA is worked out the regional council calls for ideas and proposals relevant to the EIA. The citizens get the possibility to comment on the EIA before the authorities have decided upon a certain plan solution. A call for public participation contains a short description of the main questions in the coming EIA, and the announcement shall be public and the time limits for the return of ideas shall be at least 8 weeks. In the period of publicity citizens as well as environmental NGOs can complain against the EIA. After the regional council has approved an EIA proposal it shall be published and comments to the EIA have to be given within 8 weeks.

After the period of public remarks, the regional council shall go through these and comment them. Further more the regional council shall consider if complaints make reasons for changing the environmental assessments conclusions. After the time limit the regional council can finally approve the EIA. An EIA can not be approved if the Environmental Minister in time has posed a veto based on specific governmental interests. There is an open access to appeal in relation to the EIA proposal. The Nature Protection Board of Appeal can treat legal questions but there is no possibility to appeal the content of the VVM decision. (Ministry of Environment and Energy 1997b)

There are very different traditions in the European countries with public access. In Belgium the EIS report is only public in the hearing phase and otherwise the EIS is confidential for the public (Beretning fra Kommissionen 1993).

Malaysia has a similar system where the EIS are public in the library of Department of Environment in Kuala Lumpur. The public can read the EIS reports but it is not possible to make copies or to lend the reports. (Schroll 2000)

The Egyptian Executive Regulations do not have any provisions for public participation and public participation is not considered convenient in an Egyptian EIA concept at least for the time being. The public is not involved by the authorities, and there are no formalised procedure for asking even the neighbours or relevant private organisations. NGOs are allowed but all NGO's must be registered with, and under supervision by the Ministry of Social Affairs. (OSP 1995).

Canada has public hearings called "Panels" as an important part of the federal EIA procedure. The panel gets a mandate from the minister of environment, who also points out members of the panel, often-retired civil servants and university staff. The panel arranges public hearings and produces guidelines to the proponent for the preparation of an EIS. The panel can require new investigations if it is dissatisfied with the provided information. The panel is advisory and the minister has the final decision. (Schroll 1992)

Public participation and access to information is most open in developed countries with a longer environmental history. Some countries do have severe restrictions on public involvement and possibilities to get the necessary information. When economic interests are not obvious in pollution problems only the public attitude and engagement in the pollution can represent a sufficient counterweight against degradation of the environment. Several donor organisations have realised the public shortage in developing countries and direct part of their funding for programs of environmental training, education and awareness raising among the public.

In many developing countries EIA legislation is a top down procedure not a public demand.

International donors have played a major role introducing the EIA system in developing countries. As part of economic support the donors use the EIA system on projects and they imply the developing countries political and administrative systems to implement the EIA system on industries and other activities. When donors encourage capacity building in Department of Environments they may make as a condition that EIA is legal introduced.

The introduction of EIA in Egypt reflects the influence of international environmental regulation even the Egyptian EIA system has got its own characteristics. The law was under review in the People's Assembly for more than 4 years. The EIA part of the law was a source of heated debate by the industrialists in the Peoples Assembly, and members have tried to obstruct the EIA procedure by arguments such as "we are already doing it" and "EIA will stop the development".

The Egyptian EIA legislation submits industries to an EIA according to 4 criteria:

- Industries included under certain legislation.
- Industries to be erected on certain sensitive locations.
- Industries implicating in depletion of natural resources.
- Industries using petrol and its derivatives as fuel and not complying with the air polluting standards. (OSP 1995)

These criteria create considerable problems. Existing legislation of industries defined the size and the translation showed that all industries with more than 5 workers were submitted to the EIA system. The criteria of sensitive location have the meaning that industries located in coastal areas should have an EIS. But also a city can be a sensitive area. If air pollution in a city is high, a new emitting industry can raise pollution to an unacceptable level.

All industries in Egypt have to observe the EIA and the pressure on the administrative system will be enormous. The criteria create overlapping competencies for different areas and sectors, and it is complicated to find the competent authority for a specific industry. If a manufacturing plant with more than 5 workers is located in a coastal zone (sensitive), it is not simple to decide if the competent ministry will be Ministry of Tourism and Coastal Management or Ministry of Industry and Mineral Resources. In order to create transparency lists of industries submitted to an EIA with a tentative indication of competent administrative authorities have been prepared. A complete survey of EIA competent ministries does not exist in Egypt.

The EIA system has no foundation among the Egyptians, and there is no public focus on significant environmental problems. A number of EIAs will probably be executed but with allocated resources in the different ministries its is likely that the system will act as an expenditure where the industry has to pay for a certificate.

In industrialised countries like Denmark the environmental concern started through "grass-roots" movements in the seventies and these activities caused the political system to execute an environmental regulation. In contrary to the Egyptian EIA system the Danish appeared after a public pressure on the politicians.

A comprehensive bureaucracy will often be developed.

EIA is a management system and bureaucracy develops easily.

In Egypt the environmental administration is fractionated and an organisational overview is given for one ministry (See Figure 5). The proponent will have to fill out a letter of intent (Initial Screening) for a proposal of an industry covered by EIA in the Executive Regulations. Based on the proposal civil servants in the ministry will have to decide into which group the project fits. There are three groups of projects ranked after the expected degree of environmental impacts. Black proposals if the pollution is diverse and significant, grey if the pollution is known to be mitigated and white when the project is unlikely to have significant environmental impacts. (OSP 1995)

The proponent who wishes to construct a black establishment will get a complete EIA guideline from the competent ministry, and the proponent will thus be able to know the practice of preparing an EIS. The competent ministry has generic guidelines for its black and grey projects. The competent ministry will screen the grey projects. If the information is inadequate, the proponent will have to fill out a new form requiring more information about predicted impacts on air, water and soil, infrastructure, socio-economic issues etc.. On the background of the answers and maybe several answers the ministry executes a kind of EIS.

Egyptian Environmental Affairs Agency (EEAA) reviews all EISs and decisions concerning projects. In principle the EEAA staff checks the EIS reports, and control if formal issues are observed and assess if significant impact are identified and mitigated. The Environmental Law states that EEAA is given 60 days to evaluate an EIS before the opinions are to be sent to the competent ministry/agency. EEAA is a small unit with a co-ordinating function. According to the director of EEAA, the strategy of the agency is to include sector ministries in the decision making process hoping that once the ministries participate in making environmental policy they will enforce and implement the agency's regulations (Gomaa 1994).

The last step in the EIA procedure is the possibility for the proponent to make a complaint of a decision. In the case of appeal to the Committee of Appeal the first meeting should be called for within 15 days. In the Board of Appeal participate the proponent, a judge, the competent ministry and 2 experts. (Arab Republic of Egypt 1994)

EEAA is in a weak position and it will be very difficult to achieve an overview of the EIA management in the sector ministries.

Bureaucracy can also appear in industrialised countries.

In 1985 European Community (EC) completed an EIA-Directive, which in 1989 was implemented in Denmark. The Directive was changed in 1997 (Council Directive 97). The Directive is a minimum directive, which means that the Danish regulations can extend the demand of the Directive. The EC Directive of the assessment of a single major project's impact on the environment (in Danish VVM "vurdering af stoeer enkelte projekters virkning pa miljoetet") was attached to the regional planning procedure (Ministry of Environment and Energy 1997b).

The EC's EIA procedure was implemented in an almost 20 year old Danish EIA system where as much as possible should be utilised. The implementation is complicated and many VVM industries do also need to have an EIA according to the Danish Environmental Act.

For industrial projects that should have a VVM and an Environmental Act EIA there are many possibilities of contradictory objectives and double work for the administration.

Some has argued that VVM deals with the localisation of the project while the Environmental Act EIA deals with the technical parts of the project.

But it is not possible to prepare a VVM without considering data of the projects emissions and environmental impacts. The technology has to be scrutinised before it can be assessed if effluents observe guiding standards? It is bureaucracy to do VVM and the Environmental Act EIA separately, even the environmental authorities intend to give the two assessments and decisions simultaneously to the proponent.

4. CONCLUSION

A model of environmental problems has been involving the production technology, emissions, local ecosystems, the public opinion and national legislation. All the included countries have a sort of EIA system and a number of strengths and weaknesses are presented and discussed.

EIA deals with new industries and it is relevant to ask what happens when only new industries will have the approval. Does this reduce the plant competitiveness compared to similar not approved plants? A Danish case evolved over almost three decades indicates that the EIA has not placed heavy economical burdens on the industries.

Monitoring emissions to ecosystems are an important part of an EIA. Monitoring makes it possible to control if standards are observed and it is also a way to engage the public and qualify a complaining system. The EIA system asks for such a monitoring system as a part of projects.

EIAs given one by one to industries can only partly protect the ecosystems. Monitoring systems make only sense if there are sector plans that take the capacity of the whole ecosystem into account.

Public participation and public access to information is an integrated part of the EIA process but this is administrated very differently in the countries. In most cases policy states that public engagement in environmental issues is essential but in reality many countries restrict the public from access to the EIA information. The complaining system is an important part of the public participation, and it has been formalised in the Danish environmental act to an extent where specific NGOs have specific areas for doing complaints.

A less attractive part of the EIA system is the situations where countries are more or less forced to introduce this environmental regulation. In these cases the public involvement is depending on donor funding and bureaucracy develops easily.

Governmental bureaucracy is a problem and it is attractive to encourage industries to manage their own pollution problems. The industry can do self-control and reduce effluents and energy consumption. If industries do their own environmental management there is less need of environmental authorities who will get a reduced staff or will never get enough staff to cope with industries. The industries will consider their management and control, as a private affair and probably part of industrial knowledge will be kept confidential to the public. This greening of industries trend might then result in a less informed and engaged public and that will reduce the pressure for an improved environmental regulation.

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FIGURE 1: STEPS OF AN EIA

EIA - STAGES AND REQUIRED INFORMATION.	
1	DESCRIPTION OF THE PROPOSED DEVELOPMENT PROJECT. RESOURCES TO BE USED AND WASTE TO BE CREATED.
2	SCOPING, WHERE ANTICIPATED ENVIRONMENTAL EFFECTS ARE STATED AND ASSESSED
3	DESCRIPTION OF EXISTING AND PROJECTED ENVIRONMENTAL CONDITIONS. A BASE-LINE OF THE PHYSICAL - , BIOLOGICAL – AND SOCIO-ECONOMIC ENVIRONMENT.
4	PREDICTION OF PROBABLE IMPACTS ON HUMANS AND ECOSYSTEMS. SIGNIFICANT IMPACTS ON DIFFERENT MEDIAS SHALL BE ASSESSED, INCLUDING ARCHITECTUAL AND ARCHAEOLOGICAL HERITAGE AND LANSCAPE.
5	PREDICTION OF SOCIO-ECONOMIC IMPACTS.
6	IDENTIFICATION OF ALTERNATIVES OF LOCATIONS AND TECHNOLOGIES. "WHERE APPROPRIATE" THE PROPONENT HAS TO OUTLINE ALTERNATIVE STUDIES.
7	INCORPORATION OF MITIGATING MEASURES. DESCRIPTIONS OF AVOIDING AND REDUCING ADVERSE IMPACTS ARE REQUESTED.

8	SECURE THAT THE PROJECT IS IN ACCORDANCE WITH OTHER PLANS.
9	PREPARATION OF A SUMMARY OF THE EIA FOR PUBLIC PARTICIPATION.
10	DEVELOPMENT OF A MONITORING PLAN AND IDENTIFY THE INSTITUTIONAL NEED TO IMPLEMENT THE EIA RECOMMENDATIONS.

FIGURE 2. SUMMARY OF PROJECT DEVELOPMENT AND CORRESPONDING EIA (ENVIRONMENTAL IMPACT ASSESSMENT) PROCEDURES IN SELECTED COUNTRIES AND ORGANISATIONS.

PROJECT	IDENTIFICATION		PREAPPRAISAL	FEASIBILITY		APPRAISAL
EIA	INITIAL SCREENING		DETAILED SCREENING.	EIA		APPROVAL
	LIST	CRITERIA		MADE BY	PUBLIC HEARING	
EUROPEAN COMMUNITY (COUNCIL 97/11)	YES	YES		PROPO-NENT	YES	COMPETENT AUTHORITY
DENMARK (M&E 1995)	YES	YES		REGIONAL COUNCIL	YES	REGIONAL COUNCIL
CANADA (SCHROLL 1992).	NO	YES	PANEL MAKES GUIDELINES FOR THE EIS	PROPO-NENT & PANEL	YES	THE ENVIRONMENTAL MINISTER
CALIFORNIA (SCHROLL 1992)	YES	YES	A NEGATIV DECLARATION	PROPO-NENT.	NO	THE LEAD AGENCY
EGYPT (OSP 1995)	YES	YES	YES	PROPO-NENT	YES	RESPONSIBLE MINISTRY.
MALAYSIA (LEGAL B. 1998)	YES	NO	YES	PROPO-NENT		DOE + LOCAL DOE
WORLD BANK (WB 1991)	NO	YES		BORROW-ER	NO	WB STAFF
ASIAN BANK (ADB 1990)	NO	YES	INITIAL E. EXAMINATION	BORROW-ER	NO	ADB STAFF

FIGURE 4. ORGANISATION OF THE EIA PROCEDURE IN EGYPT. THE FLOW OF INFORMATION FROM PROPONENT TO THE PERMENENT APPEALS COMMITTEE AND BACK TO THE PROPONENT. OHEGYPTORGANO

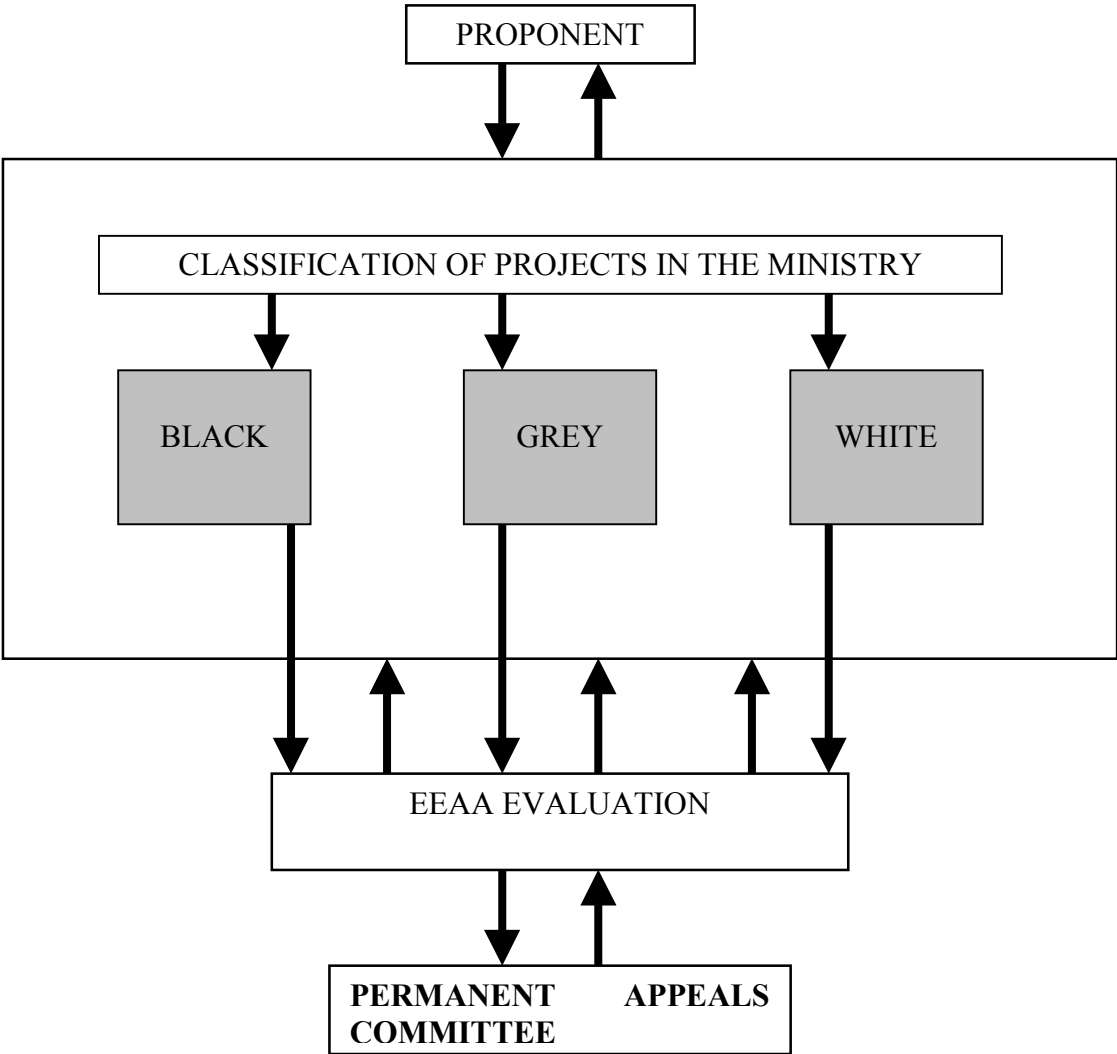
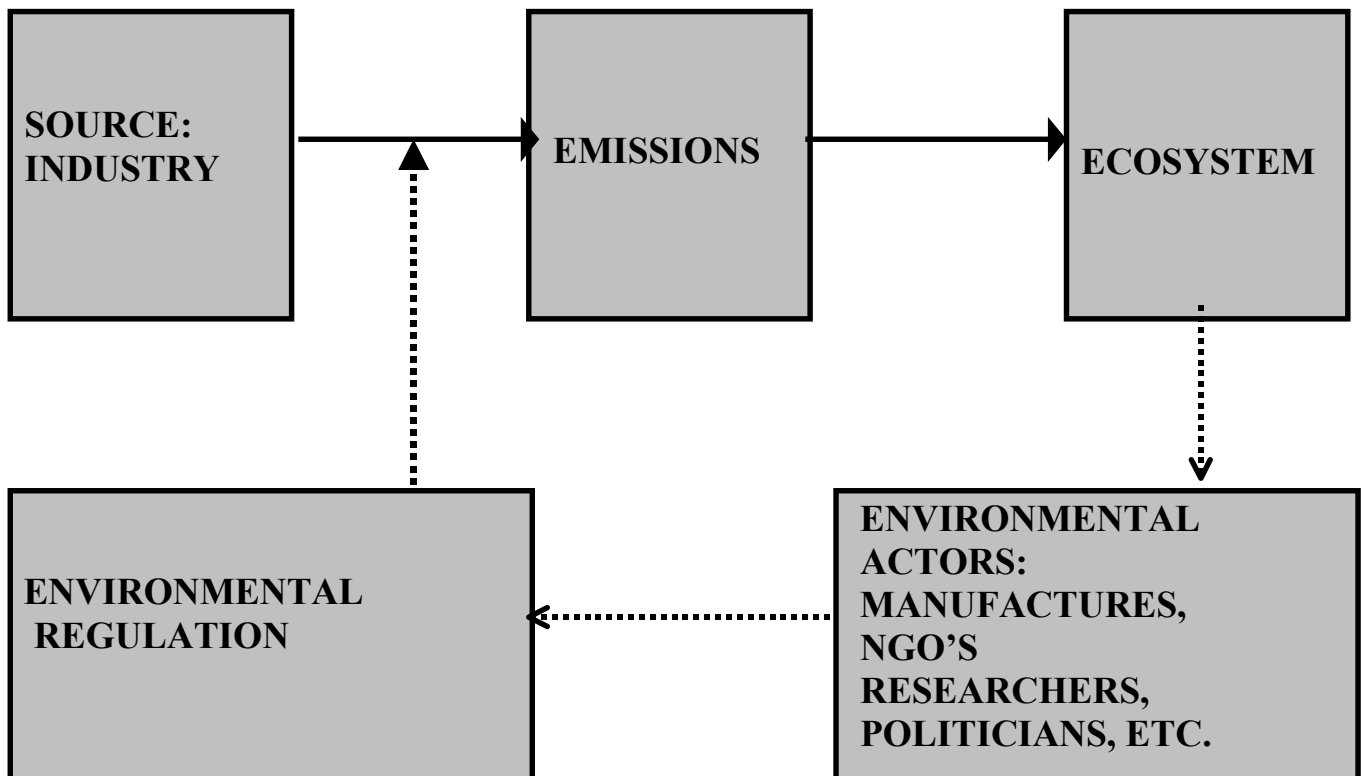


FIGURE 3. BOXES ILLUSTRATE IMPORTANT ELEMENTS AND DYNAMICS OF

ENVIRONMENTAL PROBLEMS. THE FULL LINE MEANS FLOW OF MATTER AND INFORMATION. THE DOTTED LINE MEANS FLOW OF INFORMATION.



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OHSOURS