

Exploring the Potential and Constraints to Implementing the International Best Practice Principles of EIA Follow-up: The Case of Pakistan

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Abstract: Every Environmental Impact Assessment (EIA) carried out for development projects in Pakistan includes a long list of mitigation measures and an environmental management plan (EMP). The environmental approvals also contain numerous conditions including implementation of EMP during construction and operation phases of development projects. Without appropriate follow-up and compliance monitoring the entire exercise may go waste. That is why follow-up is considered essential to ensure positive outcome of EIA by protecting the environment and learning lessons for its improvement. In this regard, the International Association for Impact Assessment has suggested best practice guiding and operating principles. This paper attempts to explore the potential and constraints to implementing these principles in Pakistan. Various data sources including interviews with the officials of environmental protection agencies, project proponents, EIA consultants and representatives of some of the affected communities as well as review of EMPs have been used to provide empirical evidence for this purpose. This paper identifies some potential but overall it argues that a lot more is needed to be done to bridge the gap between the international best practice principles and the current state of EIA follow-up in Pakistan. Some imperative steps have also been suggested in this context to improve follow-up and hence strengthen the overall process for EIA. It is expected that other developing EIA regimes may also benefit from the suggestions. [Journal of American Science. 2010;6(12):108-121]. (ISSN: 1545-1003).

Keywords: EIA follow-up; Best practice principles; Pakistan.

1. Introduction

Follow-up is internationally considered essential to determine the outcome of EIA through evaluating environmental performance of projects (Marshall et al., 2005; Morrison-Saunders et al., 2007). It is also termed as monitoring and auditing. Several authors have highlighted the significance of monitoring and auditing as important tools to evaluate the effectiveness of EIA during post-decision stages (see for example, Arts and Noteboom, 1999; Glasson et al., 1999; Arts et al., 2001; Morrison-Saunders et al., 2001; Wood, 2003). Theoretically, EIA follow-up is said to constitute a set of four activities: monitoring, evaluation, management and communication. These involve monitoring baseline conditions and environmental impacts during operation of project, evaluating impact significance and conformance with standards, preparing and implementing environmental management plan (EMP) including mitigation measures and communicating follow-up outcome to the key stakeholders (see Arts et al., 2001, p.176 for further detail). Matching the impacts predicted in the EIA report of a project with those actually arising during operation of that project is also stated as one of the benefits of follow-up to improve EIA practice. Thus, follow-up can be called a panacea for the EIA system as a whole.

Recent literature also suggests international best practice principles of EIA follow-up, as listed in Box-1 (Morrison-Saunders et al., 2007; Marshall et al., 2005). These principles are organized on the basis of their core values as guiding principles indicating ‘**why**’ follow-up is needed and identifying role of various stakeholders as ‘**who**’ are responsible to undertake follow-up. The operating principles suggest the kind of follow-up activities as ‘**what**’ to undertake; and the way ‘**how**’ the follow-up should be conducted (Marshall et al., 2005, p.178). So far, the research on EIA follow-up is ‘largely piecemeal’ and focussed on its ‘need and benefits’, role and stakes, approaches and techniques, follow-up of socio-economic impacts as well as follow-up design etc (Glasson et al, 1994; Morrison-Saunders et al., 2001; Macharia, 2005; Burdge, 2003; Morrison-Saunders and Arts, 2005; Jha-Thakur et al., 2009). This paper draws attention towards the need to look into the potential and constraints to implementing EIA follow-up best practice principles in the context of overall EIA system and practice in a country. To this end it presents the case of Pakistan where EIA has become one time activity and follow-up practice is scrawny, similar to what the literature suggests in case of both the developed and developing EIA regimes (Wood, 2003; Bond et al, 2003; Glasson et al., 2005; Noble and Storey; 2005; Ahammed and Nixon, 2006; Jha-Thakur et al., 2009).

Box 1. EIA Follow-up International best practice principles

Guiding Principles

Why?

1. Follow-up is essential to determine EIA (or SEA) outcomes.
2. Transparency and openness in EIA follow-up is important.
3. EIA should include a commitment to follow-up.

What?

4. Follow-up should be appropriate for the EIA culture and societal context.
5. EIA follow-up should consider cumulative effects and sustainability.
6. EIA follow-up should be timely, adaptive and action oriented.

Operating Principles

Who?

7. The proponent of change must accept accountability for implementing EIA follow-up.
8. Regulators should ensure that EIA is followed up.
9. The community should be involved in EIA follow-up.
10. All parties should seek to co-operate openly and without prejudice in EIA follow-up.
11. EIA follow-up should promote continuous learning from experience to improve future practice.

How?

12. EIA follow-up should have a clear division of roles, tasks and responsibilities.
13. EIA follow-up should be objective-led and goal oriented.
14. EIA follow-up should be fit-for-purpose.
15. EIA follow-up should include the setting of clear performance criteria.
16. EIA follow-up should be sustained over the entire life of the activity.
17. Adequate resources should be provided for EIA follow-up.

Source: Morrison-Saunders et al. (2007, pp.1-4)

The next section indicates data sources used for gathering empirical evidence and qualitative analysis. The nature of legislative provision and guidelines for EIA follow-up in Pakistan is then described. The penultimate section presents analysis of the current state of EIA follow-up practice in the country with respect to the international best practice principles. Lastly, conclusions have been drawn

identifying potential and constraints as well as necessary steps to improve the follow-up practice.

2. Data Sources

The Pakistan Environmental Protection Act (PEPA) 1997 and Initial Environmental Examination (IEE)/EIA Regulations 2000 of the Pakistan Environmental Protection Agency have been reviewed to explore the provisions for EIA follow-up in the country (GoP, 1997; GoP, 2000). The input data for qualitative analysis have been drawn from interviews with EIA officials of Federal and Provincial Environmental Protection Agencies (EPAs) in the country, EIA consultants, academics and proponents.

To gather empirical evidences of EIA follow-up, baseline environmental and socio-economic conditions, predicted impacts, proposed mitigation measures as well as environmental management plans (EMPs) of 18 projects were analysed. These projects relate to various development sectors viz. industrial, transport infrastructure, oil exploration and hydroelectric power generation dams. Only those projects were selected which had been granted EIA/EMP approval by the regulators/federal and provincial environmental protection agencies of Pakistan (the EMP of an industrial estate is presented in Appendix III as an example).

Concerned management employees of 4 (out of the 18) development projects located in the biggest province Punjab including two from industrial sector and two from transport infrastructure sector were also interviewed. The industrial projects include an industrial estate spread over an area of 1600 acres designed for nearly 700 medium and large industries, directly affecting about 10000 people. The other is spread over an area of 400 acres meant for a cement plant with a production capacity of 6000 tons per day, directly affecting about 21000 people. The transport infrastructure projects consist of a 120 meter wide and 100 km long motorway covering 3000 acres of predominantly agricultural land, directly affecting nearly 250 families including demolition of about 650 structures. Another project comprises 7.5 meters widening of 14 km long road after cutting about 2000 trees (see Nadeem and Fischer 2010 for further detail).

The purpose of undertaking detailed investigation of these four projects was to determine how far the mitigation measures suggested in EMPs and conditions of EIA approval for these projects were being implemented. In this regard, roles of key stakeholders i.e. regulators, proponent and affected communities have also been critically examined. From the aforementioned analysis, potential and

constraints to effective EIA follow-up in Pakistan are identified and improvement measures suggested.

3. Nature of legislative provisions and guidelines for EIA follow-up in Pakistan

The Pakistan Environmental Protection Agency (Review of IEE and EIA) Regulations (GoP, 2000) provide the basis for EIA follow-up in the country. The follow-up programme is not chalked out separately but in the form of EMP as well as EIA approval conditions. These two have been used in this paper as alternative to EIA follow-up.

Four out of twenty four sections of the said Regulations deal with various aspects of follow-up. Section 13 (2) clause (b) requires that prior to starting the operation; proponent of every project should obtain from the competent authority (Federal or Provincial EPA) a written confirmation of compliance with the conditions of EIA approval. The request should substantiate that the conditions related to project design; its construction and necessary mitigation measures have been implemented. Section 14(1) states that an EMP should also be included in every EIA report also indicating impact monitoring and auditing arrangements.

The competent authority is empowered under Section 18 to send its authorized staff for verifying the site characteristics and the extent to which conditions of EIA approval have been followed. For this purpose, the staff may also examine built up structures at project site and its plant machinery. Over and above, it is mandatory to submit every year a monitoring report regarding the project's environmental performance and impact management and adoption of mitigation measures. Under Section 20, the competent authority is empowered to cancel EIA/environmental approval, if it is found that the approval conditions have not been followed.

The major steps involved for EIA follow-up as suggested by the Pakistan Environmental Protection Agency are presented in Appendix I. Other than the legal requirements of obtaining written confirmation of compliance with the EIA approval conditions and submitting monitoring report, the proponent is required to develop a proper environmental management system and make follow-up as a continuous process. The implementation phase does not only include monitoring of predicted and un-expected impacts but also design review of EMP and environmental assessment audit involving post project analysis. These steps for EIA follow-up can prove to be helpful for project proponents, if properly followed up.

4. Analysis of EIA Follow-up Practice in Pakistan

This section presents the analysis and discussion on the of EIA follow-up practice in Pakistan with respect to the international best practice principles.

4.1 Use of follow-up to determine EIA outcome

Theoretically, follow-up is considered essential for positive outcome of EIA or to minimize adverse impacts of development projects and to improve quality of assessment (Morrison-Saunders et al., 2001; Wood, 2003; Glasson et al., 2005; Marshall et al, 2005; Noble and Storey, 2005; Morrison-Saunders et al., 2007). Interviews with officials of competent authorities, project proponents and EIA consultants in Pakistan also suggested fairly similar stance. Within the local context, it was strongly linked with the adequacy of technical and financial resources. Such limitations are hampering the consistency of follow-up on part of both the regulators and proponents. Thus after granting EIA approval, the regulators keep busy with processing other EIAs until someone files a complaint against the negative impacts of the project compelling them (the regulators) to take some action. On the other hand, the 'convenience' and 'suitability' are the factors considered by the project proponents to implement whatever deemed necessary out of the EMP which they got prepared very well through consultants by paying a 'handsome' remuneration. Given the above situation, the consequences of EIA decision making largely remain unknown.

4.2 Degree of transparency and openness

One of the pre-requisites for transparency and openness of any EIA system is easy access to information (Boyle, 1998; Beierle and Cayford, 2002; Rajvanshi, 2003). During the EIA follow-up, these are important at both pre and post-decision stages. In Pakistan, EIA report including data on baseline environmental conditions remain confidential, initially with the EIA consultants and then with concerned EPA. Stakeholders are not provided with access to such information except during public review of EIA report for 30 days. Even this regulatory requirement is not fulfilled properly. There are many examples of projects the EIA reports of which are either placed at locations far away from the affected public or made available for a period less than what was legally required (Nadeem, 2010). After the approval of EIA report and beginning of operation of projects, particularly for industrial development, even stakeholders' representatives are not allowed to access the EMP or know about the monitoring outcome.

4.3 Degree of commitment by the key stakeholders

Out of the triangle of stakeholders in EIA follow-up, comprising of project proponent, regulator and the community or affected/interested public (see Figure 1), the foremost key player i.e. the proponent has serious lack of commitment. According to EPA officials, the very reason is that proponents often regard EIA as a legal and technical barrier to development. But being a requirement, the proponents get the follow-up programme/EMP prepared and commit to implement the same along with conditions of EIA approval. However, they are not yet convinced that implementing EMP/mitigation measures can save cost, as the experience elsewhere suggests (Glasson et al., 1999; Morrison-Saunders et al., 2001; Aschemann, 2004). Rather, majority of proponents felt that implementing EMP would incur heavy cost and in turn it will increase the cost of production.

Contrary to this, the proponents of selected projects of industrial development claimed in their interviews that they were implementing conditions of approval/mitigation measures as and when the need aroused. But the project site visits and interviews with the nearby living communities unveiled totally different scenario (Nadeem, 2010). For instance, due to emission of raw cement, it was difficult to breathe even 2 kilometres away from a cement factory project which was installed after getting EIA clearance from the Punjab EPA. Similarly, in case of a paper and board mill, the community living close to the factory, though unaware of its EIA approval, protested directly to the proponent against the sawdust emitting out of its chimneys. In response, the proponent installed water sprinklers. Other than this type of apparent environmental pollution, the members of the community were unaware of other problems like decrease in ground water table as a result of continuous extraction and its contamination due to untreated effluent discharge from the paper mill.

Still there are some encouraging examples of public sector proponents who implemented many commitments made in the EMP of a project. For example, installation of effluent treatment plant worth Rs. 40 million (US\$ 0.48 million) (1 US\$ = 84 Rupees) and construction of landfill site have been made by the proponent organization of an industrial estate project. Not only that, provision of sewerage system and maintenance of roads in and around the villages near the estate at an estimated cost of Rs.20 million is also in progress. However, such examples are very rare. In most of the other development projects constructed after getting EIA approval, the communities are neither involved in EIA follow-up nor these actively pursue the concerned EPAs against

environmental and socio-economic impacts, as found by Hussain and Ahmad (2009) in the case of paper mill and lather tannery projects.

4.4 Nature of accountability for implementing follow-up

It is suggested that “the proponent of change must accept accountability for implementing EIA follow-up” (Marshal et al., 2005, p.179). Under the Pak-EPA’s IEE/EIA Regulations (GoP, 2000), the project proponent is held responsible for implementing EMP to mitigate adverse impacts as mentioned earlier (see Section 3). However, except in one or two cases, the project proponents with approved EIA are not held responsible as per spirit of the said regulations. So far very few cases against such proponents have been sent to Environmental Tribunals. Generally speaking, it is assumed that the proponents shall implement mitigation measures and submit yearly monitoring report, the authenticity of which is never checked as confirmed by the officials of concerned EIA during the interview. On the other hand, interviews with the affected communities revealed that most of the mitigation measures were not being implemented.

4.5 Role of regulators to ensuring follow-up

It is the responsibility of the regulator to ensure implementation of EIA approval conditions/mitigation measures as committed by the project proponent. In most of the cases, EPAs field staff (regulators) do not routinely check the compliance with EIA approval conditions presumably due to lack of capacity and staff. It is left on the discretion of the proponent to implement whatever he considers appropriate. However, the EPAs do take quick action if some members of aggrieved community lodge a complaint against the proponent/project causing environmental pollution. In other words, whatever follow-up is pursued sometimes by EPA is generally as a response to complaints against severe impacts of development projects commissioned after EIA clearance (Nadeem and Hameed, 2008). For instance, while responding to several complaints by the representatives of the directly affected communities of a cement factory concerned EPA’s field staff carried out environmental monitoring. The report revealed that

“the unit along with other two units of cement factories located in close proximity were violating environmental laws by mismanaging natural resources, contaminating water ponds, disposing of untreated wastewater towards farm land, blocking conventional routes and disturbing socio-economic conditions of local

people. Large volumes of suspended particulate matter and toxic gases being emitted by the factory without any treatment or air filtration were also observed. The report further stated that about 4,060 acres of privately owned land and green hills used by locals as grazing fields for their livestock have been allotted to this factory for limestone quarry” (Nadeem, 2010, p.194).

The above report was prepared by the concerned District Officer Environment as a response to the complaints by the affected communities. But the communities’ representatives revealed that after this report, EPA just issued a warning to the said factory administration simply asking for implementing mitigation measures. Although some mitigation measures have been adopted, but this situation arises off and on as the factory administration does not consistently ensure implementation of mitigation measure/EMP to avoid expenditures.

4.6 Extent of community involvement

Community involvement is considered vital for the continuity and acceptability of the follow-up in Pakistan (GoP, 1997a). But, the affected and interested public is informed about the EMP during public hearing and their comments are just responded to by the proponents. This means that the EMPs once prepared are not revised. Interviews with affected communities of two of the four development projects revealed that they were kept in dark about the conditions of EIA approval (Nadeem and Fischer, 2010). In fact, the EIA follow-up process provides the affected communities with an opportunity to know about the EMPs and conditions of EIA approval since these more often suggest to forming environmental monitoring committees which must include representatives of affected communities (Hussain and Ahmad, 2009; Nadeem, 2010). But no example was found in which the communities or even Environmental Non-Government Organizations (ENGOs) had played any role in EIA follow-up. Thus EIA follow-up in Pakistan can be called a uni-faceted mechanism revolving around the whims and mood of project proponents.

4.7 Nature of co-operation among the parties involved

The international principles envisage that “[a]ll parties should seek to co-operate openly and without prejudice in EIA follow-up” (Morrison-Saunders et al., 2007, p.3). This suggestion seems more idealistic than pragmatic. Practically, the proponent, the regulator and the community are three different corners of a triangle more often having

competing interests; especially those of the proponent and of the affected community (see Figure 1). The proponent always tries to minimize the time and resources involved in mitigating adverse environmental and socio-economic impacts. On the other hand, the affected community may not even accept the project at proponent’s desired location as such situation aroused in the cases of a cement factory and an industrial estate (See for example Nadeem and Fischer, 2010).

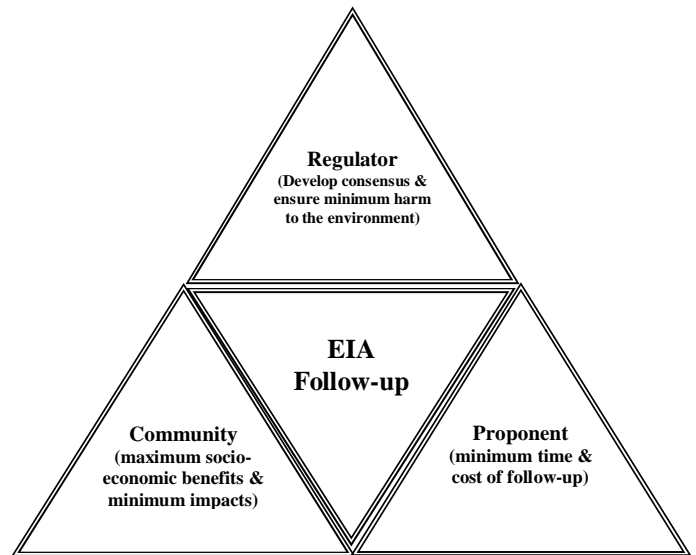


Figure 1. Competing interests of key stakeholders in EIA follow-up
Adapted from Morrison-Saunders et al. (2001,p.293)

The role of regulator in an EIA regime without consistent practice of accountability may not be impartial. However, it may act as a facilitator and builder of consensus over the procedures and methods of implementing follow-up programme which may be acceptable to the other two parties of a particular project and cause minimum harm to the environment. But the nature of cooperation among the parties involved in EIA follow-up in Pakistan is far from this notion.

4.8 Compatibility with EIA and social context

EIA follow-up in Pakistan is independent of the project planning process. It is essentially a proponent driven exercise without involvement of the other two stakeholders viz the competent authority/regulator and the affected community. Once the project is planned, commissioned and EIA approved, follow-up is done independently to the extent whatever is considered essential by the proponent. The EMP is considered an important part of EIA

report. It is reviewed by the EPAs in Pakistan before granting EIA approval. In most of the cases EMPs have also been criticised by the affected and interested stakeholders during public hearings. There are instances where an EPA got the entire EIA report including the EMP revised (Nadeem, 2010). Despite these efforts, implementation of EMP or follow-up outcome is rarely reported to the competent authority, though it is required to be submitted annually. Out of the 18 cases of approved EIA by various EPAs in the country scrutinized by the first author, only 3 were found having annual monitoring reports. Those reports were submitted by the proponents of such projects whose cases were in the courts and affected communities had lodged complaints against adverse impacts of such projects. No one from the concerned EPA ever bothered to verify the authenticity of such monitoring reports.

Community organization is strong in rural areas of the country as compared to that in urban areas. There is a culture of frequent interaction among the community members through congregations in mosques and punchayats. It is not difficult to involve people or representatives of the affected communities in the EIA follow-up and monitoring activities. But the community organizations as well as the socio-economic and cultural circumstances do not have explicit links with follow-up. Except follow-up in a few cases like that of an industrial estate, it is a technical exercise limited to controlling air and noise pollution through installing electrostatic precipitators and mufflers at chimneys of industrial plants. On the other hand, majority of the people with low literacy rate are not aware about the indirect consequences of environmental impacts on human health and overall quality of life. ENGOs can help raising awareness among the masses about environmental and socio-economic impacts of development projects and form pressure groups to ensure positive outcome of EIA (World Bank, 2001; Lehrack, 2006; Morrison-Saunders, 1998). Unfortunately the country lacks such NGOs to do this job.

4.9 Consideration of cumulative impacts and sustainability

Consideration of cumulative impacts and overall sustainability of the environment is more relevant to strategic level of planning (including policy, plan and programme) and follow-up. Perhaps due to this reason, cumulative impacts and sustainability considerations are weak in EIA in Pakistan. Major emphasis of follow-up where pursued in reality remains on monitoring and implementation of mitigation measures to control air and noise pollution, or at the most, contamination of

ground water due to liquid emissions during project operation. However, there are cases of industrial development projects in the EIA of which cumulative impacts were indicated in the form of qualitative statements without suggesting mitigation measures. Analysis of public hearing proceedings of 2 industrial and 2 road sector projects suggests that stakeholders have been emphasising the need to consider cumulative impacts but the proponents declared it beyond the scope of EIA and the competent authority accepted this stance of proponents (Nadeem and Fischer, 2010).

4.10 Timing and adaptability

Pak-EPA's guidelines suggest that follow-up should begin early in the project development process (GoP, 1997a). The practice indicates that EMP is ignored during construction of projects and the public has to suffer from severe environmental impacts during this phase. One of the very reasons is that EIA process is generally initiated after procurement of project site and beginning construction works (Nadeem and Hameed, 2008). Whilst the monitoring data for baseline environmental conditions is, of course, recorded during preparation of EIA, it is done occasionally during operation of projects. Proponents are not generally concerned with the variations in the air and noise emissions or other impacts rather they adopt mitigation measures should there be serious reaction or complaint from the communities adversely affected by the project. Adaptability of follow-up also pertains to the flexibility of its design. New situations or unforeseen impacts may arise during the construction as well as operation of projects. It is very rare that a mechanism or alternative measures are suggested in the EMPs of development projects in Pakistan to handle such situations except to deal with fire hazard.

4.11 Extent of learning from experience to improve follow-up

Learning from experience has increasingly been suggested to improve EIA follow-up practice. This can be done by matching the impacts arising during construction and operation of the project with those predicted in its EIA report (Glasson et al., 1999; Morrison-Saunders et al., 2003). In developed EIA regimes this is practiced to some extent but in developing countries this very important aspect of follow-up is neglected. Resultantly, stereotype EMPs are produced in almost all EIA reports of projects, particularly belonging to same development sector. The situation is no different in this regard were EIA approval conditions for most of the projects are mostly similar in nature in Pakistan (Nadeem and Fischer, 2010). The monitoring reports submitted to

EPAs are made part of EIA case file without analysing the nature of impacts arising during operation of project or matching them with those impacts predicted in its EIA. However, proponents do modify their EMPs during operation of projects as and when the need arises without informing the concerned regulating agency.

4.12 Division of follow-up tasks and responsibilities by proponents

The follow-up tasks are identified and responsibilities to execute the tasks are worked out by EIA consultants and made part of every EMP of development project which gets environmental clearance in Pakistan. Even the cost of implementing various mitigation measures is estimated by the consultants. Moreover, the project proponents are rarely involved in this very important matter which can directly influence the success of follow-up implementation. It appears that the division of tasks, responsibilities and calculation of cost of implementing follow-up provisions are suggestive in nature to fulfil the requirement of getting EIA approval. Once is approved, the proponents implement whatever is financially viable from their point of view and hence most of the suggestive exercise remains futile. This happens because the expert staff and required financial resource are often lacking or the proponents are reluctant to invest million of rupees on EIA follow-up. This is evident from thorough investigation of two projects including one of leather tannery and one of paper and board mill located in the Punjab (Hussain and Ahmad, 2009). There was a significant gap between the tasks and responsibilities assigned in their respective EMPs as compared to the presence of trained staff and mitigation measures which were actually being implemented.

4.13 Clarity of goal and objectives of follow-up

The overall goal of EIA follow-up in Pakistan is to ensure the implementation of mitigation measures for protecting the natural resources and the people. The Pak-EPA's guidelines for preparation and review of environmental reports (GoP, 1997a) clearly suggest five objectives of follow-up as presented in Box 2. It can be argued that the competent authorities have done a good paper work. But some of the objectives as suggested in the international principles for EIA follow-up are not explicitly indicated in the said guidelines. For instance, maintaining flexibility and promoting adaptive management; improving community awareness and acceptance of projects (Morrison-Saunders et al., 2007). The current state of EIA follow-up in the country, as portrayed in rest of the

sections of this paper, also suggests a significant gap between these objectives and the actual practice.

Box 2. Objectives of EIA Follow-up in Pakistan

- monitoring the impacts actually arising during construction and operation of projects
- maintaining anticipated impacts within the levels predicted
- mitigating unanticipated impacts before becoming unmanageable
- ensuring that environmental management contributes to protecting the environment and achieving sustainability
- improving knowledge of project impacts prediction, management and EIA review process

Source: GoP (1997a, p.35)

4.14 Fit for purpose nature of follow-up

EIA follow-up in Pakistan is, to some extent, 'fit for purpose' in terms of project type, specific design, location, affected communities as well as availability of financial resources. For instance, the EMP of an industrial estate located close to villages suggested installation of combined effluent treatment plant while that of a leather tannery located away from residential areas relied only upon primary treatment of effluents being a single industry with limited financial resource. Similarly, electrostatic precipitator was suggested and installed to control the emissions of a cement factory but water sprinklers and fans for a paper and board mill (Hussain and Ahmad, 2009). The on-going scoping, as suggested in the follow-up principles, is done and reported to project management to limit the follow-up to the 'art of the possible'. On the other hand, about 60% of the EIA approval conditions suggested by the regulator for one type of projects are general and similar in nature except a few conditions specific to the project.

4.15 Clarity of performance criteria

Review of EMPs included in EIA reports of 18 development projects and interviews with the technical staff of proponents of 2 industrial and 2 road projects suggests that a general performance criterion of follow-up is to maintain the pollution levels within acceptable limits prescribed in the National Environmental Quality Standards (NEQS) of Pakistan. The NEQS further define parameters for noise level, liquid effluents and gaseous emissions (GoP, 1993, GoP, 2000a; GoP, 2009). Parameters for ambient air quality are not included in the said NEQS but have recently been drafted and public

consultation is currently going on. In this regard, the USEPA standards are referred to.

Methodologies to meet the said standards are usually defined as generic mitigation measures. For instance, a cement factory EMP suggests that noise would be brought within NEQS level by maintenance and repair of noise producing equipment and installation of low NOx preclaciner vessel to minimize emission of NOx from kiln. The EMP of an industrial estate suggests to creating air pollution barrier by planting trees and using high rise chimneys for minimizing the adverse impacts of air emissions from industries. However, the same EMP also suggests installation of combined effluent treatment plant to avoid contamination of ground water.

4.16 Sustainability of follow-up over lifespan of projects

The follow-up programme including EMP is normally formulated during the preparation of EIA report in Pakistan. It includes impact mitigation and management measures for construction and operation phases of development projects. The EMPs neither discuss de-commissioning phase nor suggest environmental management measures to be taken in case the project is closed or shifted somewhere else in future. The EIA approving authorities or the regulators do not emphasize the need to include such measures.

However, strategies/specific measures are identified to manage short-term as well as long-term environmental changes. For instance, EMP of an industrial estate suggested that the combined effluent treatment plant will be surrounded by 15 meter wide buffer zone to protect the environment from short and long term impacts and that the wastewater will be disposed off after treatment to recharge the aquifer. The EMP of a landfill site project suggested that groundwater monitoring well have been installed up and down stream of the site and will be monitored regularly. Similarly, the EMPs of road remodeling and motorway construction projects suggested planting 4 new trees in place of every tree to be cut and plantation of trees in 15 meter wide strips on both sides of motorway to control environmental and noise pollution. The outcome of even these types of measures depends on how rigorously these are implemented by the proponents and pursued by the EPAs.

4.17 Adequacy of technical and financial resources

Inadequacy of technical staff and financial resources for follow-up is one of the major impediments being faced both by the project proponents and the environmental protection agencies (EPAs) in Pakistan. The EMPs included in

the EIA reports appear to allocate adequate resources. But in reality most of the mitigation measures are not implemented. Interviews with the proponents suggest that EIA follow-up was not their priority as it required extra staff and finances. During operation of the projects, the stakeholder's representatives are given all okay report and that efforts are going on to protect the environment. Some encouraging examples also exist. For instance, proponent of an industrial estate project employed qualified environmentalist and spent millions of rupees on EIA follow-up. The very reason appears to be the realization about social and economic benefits of protecting the environment.

However, interviews with concerned officials of the EPAs/regulators in Pakistan revealed that technical field staff to monitor the EIA follow-up activities and equipment to verify the pollution levels was far less as compared to that actually required for this purpose. Tantamount to that, EPA did not have sufficient financial resources even to get the EIA reports reviewed by experts. But recently the federal and provincial governments have allocated funds in their annual development plans for various capacity building projects. These include, training of officials of EPAs and line departments both at federal and provincial levels; establishment of environmental laboratories in six cities of the Punjab and more than one hundred new posts of field and office staff. But these are 2 to 3 years programmes. An overall summary of the potential and constraints with respect to the international best practice principles of EIA follow-up is presented in Appendix II.

5. Conclusions

EIA without follow-up can be termed as a futile exercise. The international principles provide a thorough understanding of necessary ingredients and qualities of the best EIA follow-up practice. These can also be used for evaluating the practice of EIA follow-up in other developing and developed countries as well as to determine the international applicability of these principles. Examining the EIA system of Pakistan with respect to these principles formed a basis to determine the potential and constraints to successful follow-up.

Legal provisions for EIA follow-up in Pakistan categorically put the responsibility of implementing mitigation measures including EMP and conditions of approval on the project proponents. The regulators are bound to undertake compliance monitoring. In these respects, the guidelines clearly spell out follow-up mechanism and roles of key stakeholders including the affected and interested communities. It is encouraging that every EIA report submitted to EPAs in the country includes EMP at the outset. The EMP is presented along with potential

impacts and mitigation measures of development projects during public hearing to the interested and affected communities or to their representatives whosoever attend the hearing. The conditions of EIA approval also include implementation of EMP and the proponent is required to submit an undertaking in this regard. The EMP provides a framework for EIA follow-up with clear division of tasks and responsibilities and even the cost of implementing each management measure.

But overall, EIA follow-up is lagging far behind the best practice principles. The dilemma is that EMPs solely prepared by EIA consultants generally lack consideration of public input and the proponent's willingness to implement. The EPAs/regulators in Pakistan are lacking in technical and financial resources. Their role in ensuring EIA follow-up is reactive and spontaneous rather than proactive and consistent. There is no effective accountability of regulators and proponents. Even the commitments for mitigating specific impacts are not fulfilled what to talk of cumulative impacts and sustainability which are considered beyond the scope of EIA by the proponents. Several other developing countries are also facing almost similar constraints.

To make EIA a useful exercise for protecting the environment as well as socio-economic rights of people, it is utmost important to launch a campaign for convincing project proponents that how EIA follow-up through implementing EMP could ultimately save their cost of operation and maintenance in the long run. Besides, financial incentives like tax exemption on importing environmental management equipment and award on better environmental performance can also help motivate proponents. In fact, the Ministry of Environment has already started this practice of recognizing the efforts of environmentally friendly projects through an award scheme.

In addition, capacity building of EPAs/regulators is urgently needed by provision of adequate technical staff and financial resources for this purpose. The need for this has been highlighted in nearly every study amid at strengthening EPAs in the country and gradual efforts have been started. If the government intends to save its natural resources and the people, it has to give top priority to EIA follow-up and make handsome investment particularly in capacity building to reap long term benefits. Lastly, it is expected that similar measures may also prove to be effective in other developing EIA regimes for successfully implementing the intentional best practice principles of EIA follow-up.

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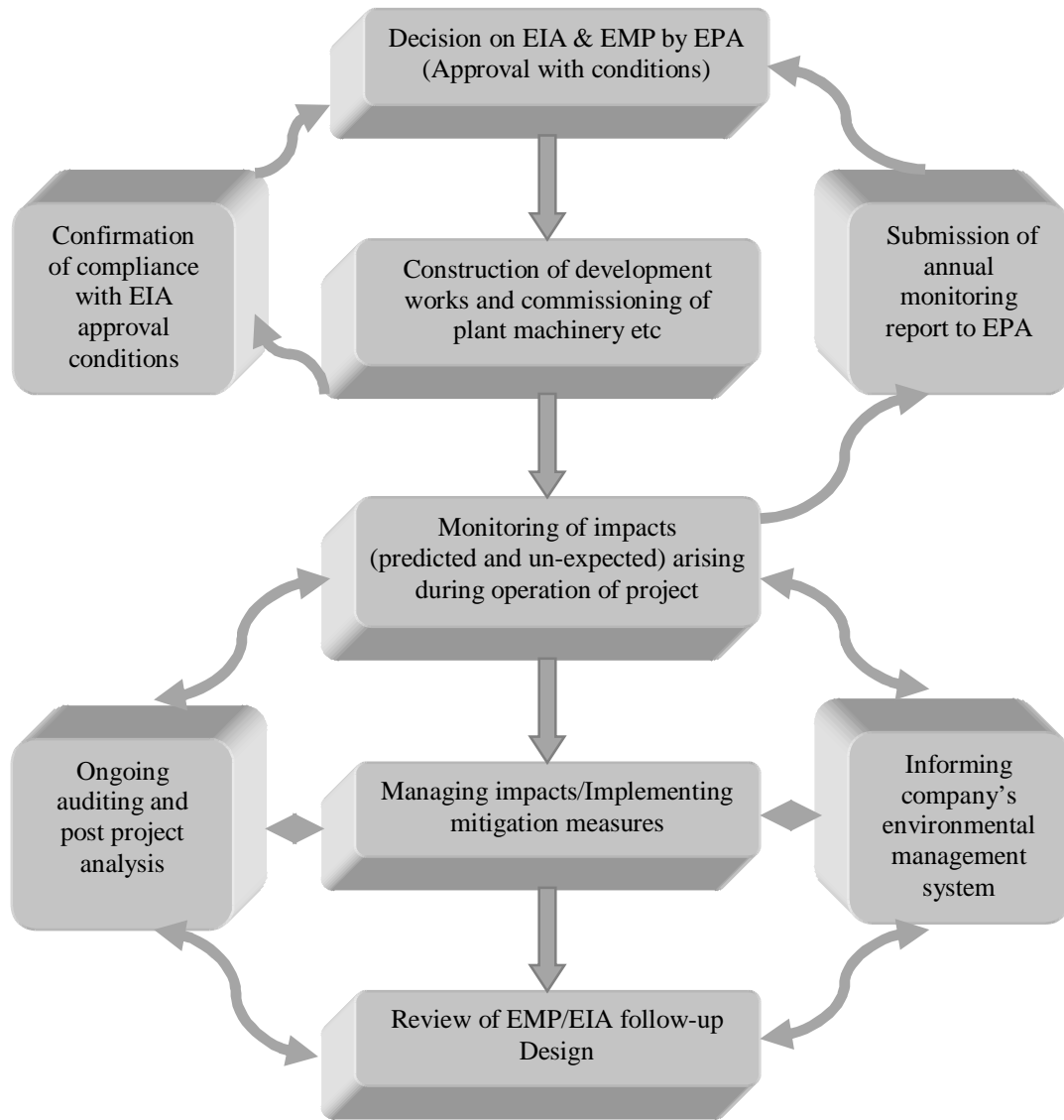
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References

1. Ahammed AKMR, Nixon BM. Environmental impact monitoring in the EIA process of South Australia. *Environ Impact Assess Rev* 2006;26:426-47.
2. Arts EJMM, Nooteboom S. Environmental impact assessment monitoring and auditing. In: Petts J, editor. *Handbook of environmental impact assessment*, vol. 1. Oxford: Blackwell; 1999. p.229-51.
3. Arts J, Caldwell P, Morrison-Saunders A. Environmental impact assessment follow-up: good practice and future directions-findings from a workshop at the IAIA 2000 conference. *Impact Assess Proj Appraisal* 2001;19:175-85.
4. Aschemann R. Public participation and consultation: the experience of Europe. World Bank; 2004. Available at: <http://info.worldbank.org/etools/library/latestvestion.asp?35155>.
5. Bierele TC, Cayford J. *Democracy in practice: public participation in environmental decisions*. Washington DC: Resources for the Future; 2002.
6. Bond A, Langstaff L, Ruelle C, Zwetkoff C. Post-evaluation procedures: monitoring and follow-up. Task 3.5 report on SUIT project in the EU programme environment and sustainable UNIWA and SUIT, 2003 Available at: http://www.lemma.ulg.ac.be/research/suit/Reports/public/SUIT3.5_Report.pdf.
7. Boyle J. Cultural influences on implementing environmental impact assessment: insights from Thailand, Indonesia and Malaysia. *Environ Impact Assess Rev* 1998;18:95-116.
8. Burdge R. Editorial on special issue on the practice of social impact assessment. *Impact Assess Proj Appraisal* 2003;21:166-67.
9. Glasson J, Therivel R, Chadwick A. *Introduction to environmental impact assessment: principles and procedures, process, practice and prospects*. London: UCL Press; 1994.

10. Glasson J, Therivel R, Chadwick A. Introduction to environmental impact assessment. Second ed. London: UCL Press; 1999.
11. Glasson J, Therivel R, Chadwick A. Introduction to environmental impact assessment. 3rd ed. London: Routledge; 2005.
12. Government of Pakistan (GoP). National environmental quality standards. Islamabad: Gazette of Pakistan; 1993.
13. Government of Pakistan (GoP). Pakistan environmental protection act, 1997. Islamabad: Gazette of Pakistan; 1997.
14. Government of Pakistan (GoP). Guidelines for preparation and review of environmental reports. Islamabad: Pakistan Environmental Protection Agency; 1997a.
15. Government of Pakistan (GoP). Pakistan environmental protection agency (review of IEE and EIA) regulations, 2000. Islamabad: Pakistan Environmental Protection Agency; 2000.
16. Government of Pakistan (GoP). National environmental quality standards for municipal and liquid industrial effluents and gaseous emissions. Islamabad: Gazette of Pakistan; 2000a.
17. Government of Pakistan (GoP). National environmental quality standards for motor vehicle exhaust and noise. Karachi: Gazette of Pakistan; 2009.
18. Hussain Z, Ahmad W. EIA follow-up of industrial projects in Lahore: the case studies of a leather tannery and paper mill. BSc Thesis, University of Engineering and Technology, Lahore, 2009.
19. Lehrack D. Environmental NGOs in China-partners in environmental governance. Wissenschaftszentrum Berlin für Sozialforschung (WZB);2006. Available at: <http://skylla.wzb.eu/pdf/2006/p06-009.pdf>.
20. Macharia SN. A framework for best practice environmental impact assessment follow-up: a case study of the Ekati Diamond Mine, Canada. MA Thesis, University of Saskatchewan, Saskatoon, 2005. Available at: http://library2.usask.ca/theses/available/etd-05192005-093452/unrestricted/sarah_macharia.pdf.
21. Marshall R, Arts J, Morrison-Saunders A. International principles for best practice EIA follow-up. Impact Assess Proj Appraisal 2005;23:175–81.
22. Morrison-Saunders A, Arts J. Learning from experience: emerging trends in environmental impact assessment follow-up. Editorial. Impact Assess Proj Appraisal 2005;23:170–174.
23. Morrison-Saunders A, Arts J, Baker J, Caldwell P. Roles and stakes in environmental impact assessment follow-up. Impact Assess Proj Appraisal 2001;19:289–96.
24. Morrison-Saunders A, Baker J, Arts J. Lessons from practice: towards successful follow-up. Impact Assess Proj Appraisal 2003;21:43–56.
25. Morrison-Saunders A, Marshall R, Arts J. EIA follow-up international best practice principles. Special publication series No. 6. Fargo: IAIA;2007.
26. Morrison-Saunders A. The effect of public pressure during environmental impact assessment on environmental management outcomes. Paper presented at IAIA'98 Sustainability and the Role of Impact Assessment in the Global Economy Conference, Christchurch, New Zealand; 1998.
27. Nadeem O, Fischer TB. An evaluation framework for effective public participation in EIA in Pakistan. Environ Impact Assess Rev 2010;doi:10.1016/j.eiar.2010.01.003.
28. Nadeem O, Hameed R. Evaluation of environmental impact assessment system in Pakistan. Environ Impact Assess Rev 2008;28:562-71.
29. Nadeem O. Public participation in environmental impact assessment of development projects in Punjab, Pakistan. PhD Thesis, University of Engineering and Technology, Lahore, 2010.
30. Noble B, Storey K. Towards increasing the utility of follow-up in Canadian EIA. Environ Impact Assess Rev 2005;25:163–80.
31. Rajvanshi A. Promoting public participation for integrating sustainability issues in environmental decision-making: the Indian experience. J Environ Assess Policy Manag 2003;5:295–319.
32. Jha-Thakur U, Fischer TB, Rajvanshi A. Reviewing design stage of environmental impact assessment follow-up: looking at the open cast coal mines in India. Impact Assess Proj Appraisal 2009;27:33–44.
33. Wood CM. Environmental impact assessment: a comparative review. Second ed. Harlow: Prentice Hall; 2003.
34. World Bank. China: air, land and water. Washington DC: The World Bank; 2001.



Appendix I. EIA follow-up guidelines in Pakistan
Based on GoP (1997a, p.36)

Appendix II. Summary of potential and constraints in Pakistan with respect to principles of EIA follow-up

EIA Follow-up Principles	Potential and Constraints in Pakistan
1. Use of follow-up to determine EIA outcome	<ul style="list-style-type: none"> • Notionally considered essential by the proponents and regulators for positive outcome of EIA • Practically constrained due to lack of technical and financial resources
2. Degree of transparency and openness	<ul style="list-style-type: none"> • Low degree of transparency and openness • After one month availability of EIA report during public review and hearing, EMP cannot be seen or known by stakeholders • Monitoring report is a confidential document • Stakeholders are not provided with any information on follow-up issues or monitoring outcome
3. Degree of commitment by the key stakeholders	<ul style="list-style-type: none"> • Low degree of commitment among the key players • After getting EIA approval, proponents do not implement most of the mitigation measures in order to save short term cost • Due to protest by the affected communities some proponents were forced to implement mitigation measures
4. Nature of accountability for implementing follow-up	<ul style="list-style-type: none"> • No formal accountability of project proponents except in response of complaints, if any • No formal accountability of EPA officials
5. Role of regulators to ensuring follow-up	<ul style="list-style-type: none"> • Field staff of the regulators does not routinely check compliance of EIA approval conditions • Monitoring is done, if serious environmental impacts are reported. Only warning is issued in such cases
6. Extent of community involvement	<ul style="list-style-type: none"> • Community consultations take place after preparation of EMP • No involvement of community in follow-up • No information to community about follow-up outcome
7. Nature of co-operation among the parties involved	<ul style="list-style-type: none"> • No cooperation among proponents and affected community due to opposing interests • Regulators attempt to build consensus but cooperation with proponent is not transparent
8. Compatibility with EIA and social context	<ul style="list-style-type: none"> • EIA is independent of project planning process • Political interference acts as a constraint to EIA follow-up • Community organization is strong in rural areas but weak in urban areas • Environmental awareness among general public is increasing but still poor in people with low literacy rate • Environmental NGOs are very few
9. Consideration of cumulative impacts and sustainability	<ul style="list-style-type: none"> • No consideration of cumulative impacts of developments at strategic/plan level • Where cumulative impacts are indicated those are just based on qualitative statements • Overall consideration of sustainability of affected environment is weak

EIA Follow-up Principles	Potential and Constraints in Pakistan
10. Timing and adaptability	<ul style="list-style-type: none"> • Initiated very late in the EIA process • No proper follow-up during construction and closure of projects • Monitoring data is recorded occasionally • Follow-up design is not flexible and lacks alternative measures for unforeseen impacts
11. Extent of learning from experience to improve follow-up	<ul style="list-style-type: none"> • Monitoring reports are not analysed by regulators to learn from follow-up outcome • No formal practice to match the impacts predicted in EIA report with those actually arising during operation of that project
12. Division of follow-up tasks and responsibilities by proponents	<ul style="list-style-type: none"> • Clearly indicated in most of the EMPs included in EIA reports • Proponents not involved in division of tasks and estimating cost of mitigation measures but EIA consultants do • Practically, expert staff is lacking
13. Clarity of goal and objectives of follow-up	<ul style="list-style-type: none"> • Goal and objectives are clearly defined but lacking in adaptive management • Follow-up of goals and objectives is weak
14. Fit for purpose nature of follow-up	<ul style="list-style-type: none"> • Generally stereotype EMPs are presented in EIA reports • Review of follow-up design on the basis of feedback is weak
15. Clarity of performance criteria	<ul style="list-style-type: none"> • Detailed performance criteria are not set • General criteria are set to meet the NEQS and USEPA standards
16. Sustainability of follow-up over lifespan of projects	<ul style="list-style-type: none"> • Follow-up programme/EMPs are formulated during EIA preparation • Cover construction and operation phases • Decommissioning phase not covered • Include generalized strategies for managing short and long-term environmental changes
17. Adequacy of technical and financial resources	<ul style="list-style-type: none"> • Employment of inadequate technical resources by most of the project proponents • A few encouraging examples also exist • Regulators are lacking technical staff and equipment • Regulators are provided with inadequate financial resources

Appendix II. Continued from previous page

Appendix III. Environmental management plan for monitoring of impacts during construction and operation of an industrial estate project in Pakistan

Concern/Impact Component	Considerations/parameters	Applied Standards	Location	Monitoring Frequency	Duration	Responsibility
Groundwater	pH, turbidity, colour, TDS, hardness, sulphate, fluoride, iron, faecal coliforms etc.	NEQS	Construction site, effluent treatment plant and landfill site.	Quarterly	-	Environment Manager/ Resident Engineer
Wastewater	Effluent flow, pH, BOD, COD, TSS, Chromium, Copper and Zinc etc.	NEQS	Offices, Effluent treatment plant and landfill site.	Monthly	-	Manger Treatment Plant
Air Emissions	CO, NO _x , SO _x , PM10	USEPA air quality standards	3 points near the main entrance, treatment plant site and landfill site in downwind direction.	Quarterly	8 hours	Environment Manager/ Resident Engineer
Noise Levels	Noise levels on dB(A) scale	NEQS	7.5 meter from the vehicles at 6 points near construction site, generator room, treatment plant site.	Quarterly	15 minutes at each point	Environment Manager/ Resident Engineer
Solid Waste	Source, type, generation, used oil, discarded mechanical parts etc.	-	Construction site, administrative buildings, industrial sites.	Daily	-	Chief Sanitary Supervisor/ Incharge Landfill Site

Source: EIA Report/EMP of an industrial estate project in Pakistan.

Note: This also represents most of the EMPs of development projects in the country. However, some EMPs also include environmental management measures for flora, fauna, soil conditions, health and safety of workers and resettlement action plan (if needed) indicating targets and mitigation measures.

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