



Balancing Development and Environment: A Doctrinal Analysis of Bangladesh's EIA Legal Regime

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Abstract

Since 1970's Environmental Law has been struggling in reconciling two divergent forces i.e., economic development and environmental protection. Environmental Impact Assessment (EIA) has emerged as a means to achieve sustainable development which requires environmental issues to be taken into consideration in every development project or industrial unit. This article undertakes a doctrinal analysis of the legal regime regulating EIA in Bangladesh. Begging with a conceptual examination of EIA as an anticipatory, participatory and sustainable environmental management tool it makes a comprehensive examination of different stages of EIA procedure in Bangladesh. In addition, it compares these stages with other well established EIA systems including European Union, United Kingdom, India. After exploring relevant legislations, rules, guidelines, reports, book chapters, research articles and other secondary sources it claims that the EIA system of Bangladesh suffers from the substantive, procedural, transactive and normative defects. The findings add to the ongoing discussion about environmental governance. They also offer recommendations for legal and regulatory changes to improve the EIA system in Bangladesh and support the goals of sustainable development.

Key words: Environmental Impact Assessment (EIA), Sustainable Development, Screening, Scoping, Impact Analysis, Mitigation etc.

1 Introduction

Earth is our ultimate shared resource with which we have innumerable interaction in our day-to-day affairs. In the process of this interaction, we cause significant damage to its ecological equilibrium which is called anthropogenic damage. Incredibly durable and resilient in the face of natural change, our planet is also shockingly vulnerable and defenseless to this human-induced change (Nanda & Pring, 2013). The constant growth of world population, invention of technologies, industrialization, unsustainable resource use, development projects etc. have made this process of change more violent. In this regard the pioneering ecologist Aldo Leopold (1948) observed that man's invention of tools has enabled him to make changes of unprecedented violence, rapidity, and scope, and the more violent the human changes, the greater the likelihood the affected individuals, species, or ecosystems will never recover. Thus, anthropogenic (human-caused) environmental change is now widespread and serious on all three levels – global, regional, and local. Serious scientific, political and legal attention was not given to world's environmental problems before 1970's since then International Environmental Law is facing a constant challenge in ensuring a balance between two essentials but fundamentally opposite concepts i.e., economic development and environmental protection. The approach followed to maintain this balance is 'sustainable development'. It does not see environmental issues in a separate sector but as an inherent aspect of development (Faruque, 2021).

Different legal tools of environmental management are used to comply with the principle of 'sustainable development'. Some of these are anticipatory and at the same time others are curative in nature. Two

primary, common regulatory systems aim to prevent environmental harm by anticipatory action. The first is a system that attempts to establish individualized pollution controls and mitigation measures through environmental impact assessment based on the character of the activity and environment surrounding the facility. The second system relies on a permit or licensing regime that requires adherence to pre-established norms (quotas, bans on the use of certain substances) (Nanda & Pring, 2013). The curative tools include punishing the violators of substantive law, declaring specified areas as ecologically vulnerable etc.

The principle of 'Environmental Impact Assessment' is widely used in all over the world. Though its emergence is not as old as other customary principles of environmental law, its widespread adoption and utilization indicate that it is an example of emerging customary principle of environmental law. It was firstly introduced in the United States in 1969 under the National Environmental Policy Act. Then other states such as Australia, Canada, New Zealand etc., incorporated it. Thereafter International Environmental Law instruments adopted the principle. Now it is a well deep-rooted principle of Environmental Law and adopted, in both, International Environmental Law instruments as well as in domestic environmental regulations. Cristopher Wood (1995) observes that EIA—

"Born in the United States, it was initially ignored then (in turn) caused great disturbance and antagonism, began to change people's lives for the better, settled down and learned from experience, became respectable and, eventually, was extensively imitated all over the world."

In Bangladesh as well under the Environmental Conservation Act 1995 and Environmental Conservation Rules 2023, 'Environmental Impact Assessment' is required to be conducted for industrial unit or projects having the possibility of significant adverse impacts on the environment. This article makes a comprehensive examination of the legal policies and rules regulating EIA in Bangladesh. It argues EIA can be used as a proficient tool to obtain sustainable development. Moreover, it shows that as a systematic process of environmental decision-making EIA is guided by fundamental principles and thus it is a principled process. So, it firstly discusses the meaning of the concept and then articulates its nature, purposes and principles in turn.

Understanding EIA

EIA can be perceived from various viewpoints. Its tune may appear differently to different individuals because, on basis of their different perspectives regarding the subject, to some persons it is a ballad tune having soulful-emotional appeal and at the same time to others it is a waltz-danceable tune. Glasson et al. (1999) clarifies—

"The arguments for EIA vary in time, in space and according to the perspective of those involved. From a minimalist defensive perspective, developers, and possibly also some parts of government, might see EIA as a necessary evil, an administrative exercise, something to be gone through that might result in some minor, often cosmetic, changes to a development that would probably have happened anyway. For the "deep ecologists" or "deep Greens", EIA cannot provide total certainty about the environmental consequences of development proposals; they feel that any projects carried out under uncertain or risky circumstances should be abandoned."

It can be construed narrowly covering only the harmful effects of projects but in wider sense, it covers not only the impacts deriving from projects but also from proposed plan, policies, programs etc. Nonetheless, the core idea underlying the concept is that EIA is an assessment of the impacts of a planned activity on the environment (United Nations Economic Commission for Europe, 1991).

Though there is no universally acceptable definition covering all aspects of EIA is available, a consideration of the definitions provided by experts, environmental entities and institutions gives a comprehensive

understanding of the concept. The description given by Munn (1979) is not only an example of classic understanding of the term rather an oft-quoted one. He articulates—

“EIA can be described as a process for identifying the likely consequences for the bio-geophysical environment and for man’s health and welfare of implementing particular activities and for conveying this information, at a stage when it can materially affect their decision, to those responsible for sanctioning the proposals.”

The Department of Environment (DoE) of UK (1989) defined the concept narrowly in its operational definition. It states— “EIA is a technique and a process by which information about the environmental effects of a project is collected, both by the developer and from other sources, and taken into account by the planning authority in forming their judgments on whether the development should go ahead.” The US Environmental Protection Agency (EPA) adds an interdisciplinary dimension of EIA system. In addition, it demarcated the scope of EIA broadly and defines—it as “a systematic, reproducible, and interdisciplinary evaluation of potential effects of proposed action and its practical alternatives on the physical, biological, cultural, and socioeconomic attributes of a particular geographic area.”

In Bangladesh, EIA is defined restrictively and the scope of assessment is limited in evaluating the environmental impacts of industrial units and projects. Thus, it is a pure, rather than, a strategic approach. So, EIA in Bangladesh denotes—a systematic process of identifying, anticipating and evaluating the potential environmental impacts of any proposed project or undertaking (The Environmental Conservation Rules 2023, Rule 2(1)(6)). Though the terminologies used in this definition are almost similar to the definition given by International Association of Impact Assessment (IAIA), IAIA’s definition is much wider in scope because it used an open-ended approach covering not only impacts upon environment but also on ‘social’ and ‘other related effects.’ Moreover, as per IAIA’s definition EIA covers impacts arising from ‘development proposals’ which can be interpreted broadly to include both projects as well as policies. EIA is, thus, defined by IAIA (1999) as the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made. To conclude, the wide and comprehensive description of EIA given by Lawrence (2003) is worthy of mentioning. He writes—EIA is a—(1) systematic process of determining and managing (identifying, describing, measuring, predicting, interpreting, integrating, communicating, involving, and controlling) (2) the potential (or real) impacts (direct and indirect, individual and cumulative, likelihood of occurrence) (3) of proposed (or existing) human actions (projects, plans, programs, legislation, activities) and their alternatives (4) on the Environment (physical, chemical, biological, ecological, human health, cultural, social, economic, built, and interrelations).

Nature of EIA

EIA is a systematic process of identifying, evaluating and considering mitigation possibility of potential harmful environmental impacts arising from proposed projects or other activities. It embraces the characteristics of both art and science. However, it is more prone to be an artistic process as it lacks scientific rigor. As claimed by Lawrence (2003) that Precise, verifiable predictions are often not made. Data confidence limits do not tend to be established. The significance of residual impacts is frequently not specified. The consideration of cumulative and trans-boundary effects tends to be weak. Nonetheless, it requires a systematic process to be followed to conduct an effective EIA.

EIA is an anticipatory, participatory, integrative environmental management tool. As per Nanda & Pring (2013), An EIA is anticipatory in that the analysis should be completed, in theory, before irrevocable decisions and commitments are made, so that environmentally unacceptable actions can be avoided, abandoned or reconfigured. It is participatory, in that the government is expected to make it public and to seek the

involvement and input of the public, developers, investors, regulators, planners, citizens, local communities, NGOs, IGOs, and other affected government entities. Finally, EIA is integrative, in that it requires the systematic input and coordination of many different disciplines, perspectives, and types of expertise from ecologists, planners, and mitigation specialists to lawyers, engineers, and economists. So, EIA is a multidisciplinary process which requires knowledge, expertise and personnel from diverse disciplines.

EIA is a preventive approach which enabled the concerned authorities to be more artistic in environmental decision making. Petts (1999) argues in this regard that, EIA has reformed governmental decision making, by giving information to the public, enhancing inter agency coordination and raising the influence of environmental protection agencies. In making such environmental decision, however, EIA should be considered as a 'means' rather than an 'end'. In practice, however, 'endorsement of the impact statement often seems to be the final activity, in the vast majority of cases, only very limited sections of the statement deal with environmental management (Biswas, 1992). In fact, EIA is merely a (but not the only) device of achieving a broader political end i.e., sustainable development which is elaborated below in more detail. In achieving that end it is only an action forcing device.

To summarize the abovementioned discussion, it may be concluded that— EIA is a systematic, open and collective process, a process that draws upon an interdisciplinary and inter-professional knowledge base and that informs public and private decision making (Lawrence, 2003). However, one should be mindful that the nature of and urge for EIA is a dynamic-relative concept which change almost constantly. Its contour cannot be demarcated within a watertight formula. Rather, like clay, it takes the shape given by its skillful potter. Glasson et al. argues in the same line as he states—

One can see that EIA is moving away from being a defensive tool of the kind that dominated the 1970s to a potentially exciting environmental and social betterment technique... If one sees EIA not so much as a technique, rather as a process that is constantly changing in the face of shifting environmental politics and managerial capabilities, one can visualize it as a sensitive barometer of environmental values in a complex environmental society. Long may EIA thrive. (O'Riordan. 1990).

EIA: An Instrument for Sustainable Development

We human beings have a compact interconnection with environment. This relationship can be characterized by the mutual influence that exists between human beings and environment. We both affect and are affected by each other. Man's resource utilization, industrial activities, development projects have a direct harmful consequence towards environment. Nonetheless, today it is beyond argument that conserving environment without compromising economic development is inevitable for our environmentally sound existence. The 21st century approach to achieve that ideal is technically termed as 'sustainable development'. EIA is a meaningful tool to ensure development with least possible environmental damage. This means-end relationship of EIA and sustainable development can be materialized by answering the following queries—

How human activities including industrial units, development projects affect the ecological balance?

Now, the unavoidable hurdle—every development activity result in ecological damage but without increased production and resource utilization the ever-growing needs of increased population cannot be satisfied. So, which one is to be preferred? Or, if both are equally important then which is the correct course to make a balance between them?

How EIA can be used to achieve sustainable development?

With respect to the *first* question, it can be said that ‘all human activities have an impact on the environment. Indeed, each individual has an “ecological footprint” that represents the sum of that person’s resource use and contributions to pollution (Shelton & Kiss, 2005). This is also true in respect of economic development activities as well. All economic development activities impose twofold burden on the environment. First, they use different environmental resources as raw materials and thus environment serves as a source. The more economic development activities are carried on there is more pressure on environment for raw materials. Secondly, as a byproduct each economic development activity produces waste which is to be absorbed by the environment as a sink. This process can be visualized as hereunder—

Figure I: Twofold relationship between Environment and Economic Development

In response to the *second* question regarding which one of ‘economic development’ or ‘environmental protection’ should be given preference, the answer is neither one. In fact, both are essential facets which make life on earth possible. Economic development is important to satisfy the diverse needs of growing population. Even as Biswas (1992) argues- instead of compromising economic development it is needed to be done in much faster rate than population growth rate. He writes—

“More and more lodging, food, water and other commodities have to be provided to *each* person in the ever-increasing population. This means that the total commodities and services to be provided will have to be increased at a rate much faster than the population growth rate. Thus, the development process cannot even be slowed down; it should be accelerated to satisfy various human needs.”

On the other hand, environmental protection is also cannot be compromised because ‘environment represents the extraordinary rare combination of factors that makes life possible on the planet (Nanda & Pring, 2013). So, the life supporting capacity of environment must have to be protected from the aggressive contamination and resource utilization. Now, what is then the correct course to follow? The answer seems to make balance, a balance which serves both purposes i.e., allowing development activities without hampering the environment. This balance is technically termed as ‘sustainable development’. Skolimowski (1995) articulates—

“Sustainable development struck a middle ground between more radical approaches which denounced all development, and the idea of development conceived as business as usual. The idea of sustainable development, although broad, loose and tinged with ambiguity around its edges, turned out to be palatable to everybody. This may have been its greatest virtue. It is radical and yet not offensive.”

In basic sense the term ‘sustainable development’ means ‘development which meets the needs of the present generation without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development, 1987). This inter-generational equity concept requires to handing down to future generations not only ‘man made capital such as roads, schools and human capital such as knowledge, skills but also natural/environmental capital such as clean air, fresh water, biodiversity, ozone layer, rain forest etc. (Glasson et al.,1999). Thus, a brief but adequate conception of ‘sustainable development’ is “using resources no faster than they can regenerate themselves and releasing pollutants to no greater extent than natural resources can assimilate them (Markel, 1998).

The *third* question claims that EIA can be used as a valuable tool to ensure sustainable development. EIA acts like a filtering instrument that provides the opportunity of assessing the possible direct, indirect, cumulative impacts of development activities. Thus, when EIA procedures are implemented properly then environmentally sound projects or industrial units can be established or carried on. Therefore, EIA strategies

correspond to the fundamental idea of sustainable development that economic development must not hamper environmental purity. So, sustainable development is end and the EIA is the means to achieve that.

EIA in Bangladesh: Legal Framework and Main Steps

Legal Framework

In Bangladesh, EIA is regulated by a *sui generis* legal regime which is composed not only of the environmental legislation, but also the rules and guidelines made under that legislation. In order to get a comprehensive overview of the legal framework the following fundamental questions needed to be dealt with—

Which legal instruments regulate the EIA process in Bangladesh?

Whether or not EIA in Bangladesh is an integral part of licensing requirement?

Which are the relevant authorities, institutions and personnel involved in the EIA process in Bangladesh?

The following subsections make an enquiry to find out the answers to these fundamental questions and thereby articulate the legal framework regulating EIA in Bangladesh.

Legal Instruments Regulating EIA in Bangladesh

EIA process was formally included in legislation of Bangladesh through incorporation in the National Environmental Policy 1992, which has been finally endorsed through Environmental Conservation Act 1995 and Environmental Conservation Rules 1997 (Shakil and Ananya, 2015). However, currently EIA process in Bangladesh is regulated by the provisions of the Environmental Conservation Act (ECA) 1995, the Environmental Conservation Rules (ECR) 2023 and the relevant environmental guidelines issued by the Government under section 13 of the ECA 1995.

The ECA (1995) provides that ‘no industrial unit or project shall be established or undertaken without obtaining, in the manner prescribed by rules, an Environmental Clearance Certificate from the Director General’ (the ECA 1995 S. 12(1)). That ‘Rules’ shall contain provisions regarding, *inter alia*, ‘Environmental Impact Assessment, environmental management planning, consideration of public opinion, formation and working procedures of Clearance Certificate Committee etc. (the ECA 1995 S. 12(4)). And such rules shall be made by the Government by notification in the official gazette (the ECA 1995 S.20(1)). The Government by exercising this rule making power has made such rules (ECR) in 2023 and repealed the previous one of 1997. The ECR provides detailed provisions regarding site clearance certificate, environmental clearance certificate, environmental impact assessment requirements, public participation, the resolution of dispute etc. The ECR requires that the EIA to be conducted in accordance with the approved guidelines’ (The Environmental Conservation Rules (ECR) 2023, Rule 15(1)). Again, the government is empowered to make such guidelines by the virtue of section 13 of the ECA 1995. Exercising this power, the Government has adopted the ‘EIA Guidelines for Industries’ in 2021. In addition, when there are no such guidelines available in respect of any particular sector then the EIA guidelines of any international or development agency can be utilized provided, they are not inconsistent with any plan, policy or decision of the government (the ECR 2023, rule 15(1)).

EIA: An Integral Part of the Certification System

Shelton & Kiss (2005) identified two primary legal mechanisms for ensuring proper environmental management. The first is a system that attempts to establish individualized pollution controls and mitigation measures through environmental impact assessment based on the character of the activity and environment surrounding the facility. The second system relies on a permit or licensing regime that requires adherence to pre-established norms (Shelton and Kiss, 2005). But the ECR 2023 merged these legal mechanisms and made

the EIA system not only an integral part of but also a *sine quo non* for obtaining the 'site & environment clearance certificate' in respect of certain industrial unit or projects having significant environmental impacts. The ECR 2023 classified industrial units or projects, for the purpose of granting the site clearance or environmental clearance certificate, into 4 different categories namely the Green, Yellow, Orange and Red categories (the ECR 2023, rule 5).

On a plain reading of rules 9, 10 & 11 of the ECR 2023 it appears there is no requirement that EIA to be conducted in respect of the green and yellow categories industrial units or projects. These industrial units or projects do not satisfy the required threshold of having significant adverse impact on environment. Unlike Green and Yellow categories, EIA is a mandatory requirement for obtaining site clearance certificate in respect of Red Category industrial units or projects as per rule 14. However, as a general rule EIA is not mandatory for obtaining a certificate in respect of an Orange Category industrial unit or project. But whenever the 'Environmental Certificate Committee' is of the opinion that an Orange Category industrial unit or project has significant adverse impact on environment or human health then it may recommend that EIA to be conducted in respect of that unit or project and then, subject to the approval of the DG, EIA must be conducted in respect of that project (the ECR 2023, rule 13 (6)). The whole process can be shown as follows—

Figure II: EIA as a part of Certification Process

Relevant Institutions, Authorities and Personnel

The Department of Environment (DoE), under the Ministry of Environment, Forests and Climate Change, is the regulatory body responsible for enforcing the ECA 1995 and ECR 2023 (1997) (Momtaz, 2002). The DoE is involved throughout the process of EIA. In fact, The DoE has the sole responsibility of approval of EIA reports and enforce the EIA related rules and regulations (Kabir & Momtaz, 2013). For example, the Director General representing the DoE gives approval to the 'terms of reference' of EIA of the proposed industrial unit and EIA reports. Moreover, the initial applications for site and environmental clearance certificates are made in the District, Divisional and Metropolitan offices of the DoE. These offices play a great role by preparing initial *in situ* inspection reports which are taken into consideration by the ECC Committee.

The ECR 2023 provided for the establishment of a new body namely the 'Environmental Clearance Certificate (ECC) Committee' which is responsible for considering the EIA reports and suggesting the approval of the DG. The DG is empowered to establish a central ECC Committee consisting of at least 5 persons from the officials of the DoE with one of the Directors of the DoE to be the Convener of the Committee' (the ECR 2023, rule 24 (1)(a)). The ECC Committee is entrusted with specific task which include, *inter alia*, 'assessing and evaluating the EIA terms of reference and EIA reports of the Red category and, in applicable cases, of the Orange category industrial units, suggesting approval of the DG to the EIA reports and EIA terms of references, determining the conditions for obtaining environmental and site clearance certificates, assessing and approving the environmental management plans of proposed activities etc. (the ECR 2023, rule 25 (1)). EIA is a systematic process which requires specified knowledge and expertise. That's why, the ECR 2023 required EIA to be conducted by the registered persons having the required qualifications and they are called 'environmental advisors' (the ECR 2023, rules 15, 37). But any person who is an internationally recognized expert on the subject does not need to be registered in order to conduct EIA. Rule 37 and 38 made detailed provisions regarding the registration process of the environmental advisors. It is important to mention here that not only natural persons but also legal persons i.e., govt. or non-govt. institutions, firms, companies, research institutions can be registered as environmental advisors.

Main Steps of EIA in Bangladesh

As clarified above that in Bangladesh EIA is conducted as a part of the site clearance certificate process, now it is expedient to focus on the specific stages of an EIA. Nanda and Pring have identified ten consecutive common steps of EIA. They are- screening, organization, scoping, impact assessment, alternative assessment, mitigation planning, action plan, public participation, decision and follow through (Nanda and Pring, 2013 P.186). IAIA's 'EIA Best Practice' also suggests ten-step process for an ideal EIA system which includes screening, scoping, examination of alternatives, impact analysis, mitigation, evaluation of significance, preparation of the EIA report, review of the report, decision making and follow up (IAIA, 1999). However, the EIA Guidelines for Industries (2021) issued by the Government under section 13 of the ECA 1995 provides six main steps of EIA for industrial units or projects in Bangladesh. The six steps are—screening, scoping, baseline data generation, impact assessment, mitigation of impact, environmental management plan. These steps can be shown by the following flowchart—

Figure III: Main Steps of EIA in Bangladesh

Project Screening—Whether an EIA Needed?

The first step of a formal EIA is screening which is carried out at an earliest stage to determine whether EIA is required in respect of a proposed industrial unit or project. In other words, in screening stage the possibility of a proposed plan to cause significant adverse impacts on the environment is assessed. 'This can be done by measuring the proposal against set physical criteria (size, location, etc.), by project type (mines yes, schools no, etc.), by impact levels (based on past experience), and so on' (Nanda & Pring, 2013). However, in practice there two ideal systems of screening are identified by experts. Morrison-Saunders (2023) writes—Two approaches may be adapted to screening, based on whether the environment or the type of development is the central focus. Noble (2015) elaborates these two approaches as follows—

"In an environment-centered approach, the screening decision is made on a case-by-case basis involving judgment as to whether the development proposal will potentially result in a specified environmental threshold being crossed or simply knowledge about particularly sensitive areas or other known dangers or risks where the development is proposed to take place. On the other hand, in a development-centered approach, screening lists are used to identify which types of development must undergo EIA. These are also referred to as 'inclusion lists.'"

However, to simplify these approaches it can be said that the two approaches are either projects subject to EIA are listed in the act or an annex thereto, or legislation only stipulates a general clause, leaving the decision on whether or not an EIA is necessary to the competent authority on a case-by-case basis (Colombo, 1992). For example, in the UK a wide discretion is given to the concerned planning authority as screening is conducted on a case-by-case basis (The Town and Country Planning (EIA) Regulations, 2017). To the contrary, if the screening process is based only on the 'inclusion list' criteria then some serious problems may arise. For instance, any new forms of development (that is, those not on the list) may have significant adverse environmental consequences but would not trigger formal EIA or screening lists have (may) led to the practice of project splitting (Morrison-Saunders, 2023).

To avoid these problems, another approach can be identified which actually combines the both approaches specified above and termed as 'hybrid approach'. EU system follows this approach and the EU Directive (2011/92/EU) provided two Annexes, of which Annex-I require EIA to be conducted in respect of projects listed in that Annex on 'inclusion list' basis. On the other hand, Annex II provides a 'case by case' criterion for screening of the projects listed therein.

So far, the legislations of Bangladesh are concerned they follow the same approach of the EU namely the hybrid method of screening. So, the EIA system of Bangladesh utilizes both 'inclusion list' and 'case by case' approaches. The ECR 2023 provided in Schedule-I of that Rules a list of 'Red Category' industries in respect of them EIA must be conducted. To this extent screening in Bangladesh is development centric. But, at the same time, it is also environment centric in two ways—

The list of 'Red Category' industrial units in Schedule I is not exhaustive. An industrial unit or project not included in the 'Red Category' industrial unit list, may have similar adverse impact requiring EIA. To deal with such possible circumstances, 'schedule XIV provides general standards for the inclusion of any industrial unit or project to the Red Category.'

In the case of an 'Orange Category' industrial unit or project listed in the Schedule-I of ECR 2023 the ultimate decision regarding whether it has the possible impacts requiring EIA rests upon the Central Environmental Clearance Certificate Committee.

In both of the abovementioned cases, the concerned authority has a wide discretion in deciding whether a proposed industrial unit or project satisfies the required threshold of 'significant environmental damage'. Moreover, the decisions are made on a 'case-by-case' basis considering the particular circumstances of each case.

Scoping

After deciding, at the screening stage, that EIA is necessary in respect of a proposed project or industrial unit, the next move is 'scoping'. It can be a voluntary or mandatory legal requirement. For instance, in the UK scoping is an optional requirement⁹⁶ but in Bangladesh it is essential for the preparation of the 'terms of reference'. On the other hand, in India generally scoping is mandatory for both Category A and Category B industrial projects of the schedule to the Notification of 2006. However, an exception to this general rule is made in respects of industries included in Category B, Item 8 of the Schedule (EIA Notification 2006 Para. 7). The scoping stage demarcates the boundary of the EIA of any particular industrial unit or project. It limits the focus of the EIA team upon the significant impacts only. The reason seems—it is clear that all components of the environment are interlinked in some way. EIA would not be feasible if all possible impacts were to be considered. Therefore, a focus only upon significant, or the most significant potential environmental impacts is desirable. Scoping is thus about determining boundaries for an EIA, where the overall trajectory ought to result in a progressive sharpening of focus upon what matters most (Morrison-Saunders, 2023). In this way, scoping process saves time and expenditure necessary for an EIA. Otherwise, overextending the study boundaries is likely to incur additional cost that may not add to the value of an EIA report. The assessment may also be too difficult to manage and incomprehensible. Scoping, thus, has the following essential tasks—

- a) Identifying the boundary of an EIA study;
- b) Identifying the information necessary to make decisions;
- c) Determining the key issues, significant risks and impacts to be considered (The EIA Guidelines for Industries, 2021).

While demarcating the boundaries of an EIA four issues must be taken into consideration. They are—administrative or jurisdictional issues i.e., legislation, policies applicable in the project area, physical (direct, routine or accidental) events, socio-economic issues and technical issues (Morrison-Saunders, 2023). However, in Bangladesh, the EIA Guidelines for Industries (2021) provide a basic description of issues to be considered during scoping—they are—

- a) What are the impacts on the project area due to the establishment of the project;
- b) The receptors of the impacts;
- c) The prevailing condition of the surrounding environment.

In addition, during scoping, which milieu of environment i.e., air, water, soil, flora & fauna etc. are relevant and likely to be affected due to the project, must be taken into consideration. Moreover, scoping shall embrace the impacts arising not only from activities during construction phase but also activities during operation and decommissioning and abandonment phases. The EIA Guidelines suggest few simple steps of scoping. The first step requires consideration of relevant information of the project. The second step relates to the preparation of a scope profile. It specifies the activities of the industrial project from construction to abandonment, resources related to the operation of the project. The next step is grouping the relevant impact and priority setting. The final step is to consult with relevant statutory or non-statutory institutions and general public. Another important stage, though not specifically mentioned in the Guidelines, is the preparation of 'terms of reference' in accordance with Schedule X of the ECR 2023. So, the life cycle of scoping can be shown by the following chart—

Figure IV: Stages of Scoping in Bangladesh

Baseline Data Generation

Baseline data generation, which is the third step of an EIA in Bangladesh, is inextricably linked with the previous step i.e., scoping. During scoping stage, the relevant environmental milieu and important receptors of a proposed project are identified. In this step, however, a comprehensive picture of the existing environmental conditions of the 'impact zone' is drawn. In the words of Peter Wathern (1988) the term usually refers to the collection of background information on the environmental and socioeconomic setting for a proposed development project and it is normally one of the first activities undertaken in an EIA. The same authority adds that it is taken to refer to a description of some aspects of the physical, biological and social environments which could be affected by the development project under consideration.... baseline studies provide the before-project records.... However, it would be misleading to conclude that base line data generation considers only the existing state of relevant environment of the project. The establishment of an environmental baseline (rather) includes both the present and likely future state of the environment, assuming that a proposed project is not undertaken, taking into account changes resulting from natural events and from other human activities (Glasson et al., 1999).

So far, the EIA system of Bangladesh concerned, the baseline data generation should be preceded by two important tasks. They are—identifying the zone of impact and identifying sensitive receptors (The EIA Guidelines for Industries, 2021 P.50). The former relates to the determination of the scope, in terms of territory and time, to which the possible impacts of the project under consideration may extend. The latter, on the other hand, identifies the relevant environmental components which are most likely to be affected by the operation of the project.

The Guidelines (2021) provide a comprehensive milieu of the environment in respect of which data should be collected. However, there are three broad categories within which every component of the environment falls. They are—

- a) Physical components: Includes landforms, drainage, land use patterns, hydrology, meteorological data, air quality, water quality, noise, physical infrastructure, other polluting sources, etc.

b) Biological components: Includes biodiversity of the site, aquatic and terrestrial habitats, species and population, ecosystem products and services, etc.

c) Social and economic components: Includes data on demographics, livelihood, economic activities and occupational patterns, dependence on natural resources, social profile, land acquisition and displacement of population etc.

However, the nature of the project and extent of its impacts are the determining factors in selecting the components with respect of which data should be collected. Depending on these factors a considerable difference appears in the baseline data generations of different projects with dissimilar characteristics. For instance, the baseline data for the 'Dhaka Mass Rapid Transit Development Project' are wider in scope than the data of 'Sirajgonj Economic Zone'. The former reported the existing conditions of Geology, Hydrology and Drainage, Meteorology, Water quality, Air quality, Ecological components, Social and Economic factors etc. On the other hand, the latter collects data concerning components of the Physical, Biological and Social environment.

Impact Analysis

Impact analysis step lies in the focal point of an EIA. In this step, the impacts are predicted and their significance is evaluated. As per the EIA Guidelines 2021 this step involves three main phases including identification of impacts, prediction of the characteristics of the main impacts in terms of their nature, magnitude, extent and duration and finally, evaluation of the significance of the residual impacts that cannot be mitigated. Nonetheless, in this step the major tasks are, in many EIA systems, prediction, evaluation (assessment) and mitigation of impacts. However, the EIA system of Bangladesh considers mitigation as a separate step.

Impact Prediction is an imperfect scientific forecast of the possible changes due to a proposed project implementation to the relevant environmental components. Bailey et al. (1992) defines it 'any statement that predicts any change, or no change, to any part of the biophysical or social environment as a result of project implementation'. As a byproduct of baseline data generation process an overall picture of existing conditions of relevant environmental components is achieved. At prediction level, however, the scope and magnitude of possible changes to these components are perceived. So, a predicted impact is the difference between the baseline status of an environmental resource (the receptor) and the expected new status following development (Glasson et al., 2012). The Guidelines (2021) suggest different tools for impact prediction which include, *inter alia*, expert opinion, consultation, checklists, networks and system analysis etc.

Once impacts are predicted the next task of an EIA team is to determine the significance of predicted impacts. Significance is determined with the object of deciding whether mitigation is required, or mitigation activities are sufficient to render the impacts acceptable. In this context, European Commission states— concept of significance considers whether or not a project's impact could be determined to be unacceptable in its environmental and social contexts (European Commission, 2017). Every impact, however, does not contain similar environmental risks. As illustrated by Sippe (1999), there are three categories of impacts. They are—

"On one end of the spectrum will be impacts considered to be acceptable and for which no special attention beyond normal custom or practice is deemed necessary. At the other end of the spectrum are impacts that are clearly unacceptable as predicted and for which there is no ready mitigation response available to address them. These are colloquially known as 'fatal flaws' because without major redesign or relocation of the development proposal to avoid the predicted impact, the development would not (normally) be permitted to proceed. In the middle zone of the spectrum are impacts that would be considered to be significant but

manageable. They may be unacceptable or simply undesirable in the form initially predicted, but with the application of mitigation measures they can be rendered acceptable.”

The EIA Guidelines of 2021 specifies there are several kinds of impacts such as ‘no impact’, ‘significant or insignificant impact’, ‘unknown impact’, ‘mitigated impact’. In determining significance of impacts the Guidelines suggests that the value of the community be taken in consideration. In order to do that the assessor should put himself “in the shoes” of the people in the community suffering the impact. An understanding of community values will develop also through public participation in the assessment process.

One fundamental question regarding the determination of significance of impacts warrants consideration. The question relates—how the significance of predicted impacts is determined? In response, it is hard to define any universal approach with mathematical precision for assessing significance. Rather, as European Commission recommends that the significance is always ‘context specific’ (European Commission, 2017). Nonetheless, there some general criteria for significance determination can be suggested. Morrison-Saunders, for example, identifies a 4-step process. The process comprises—

- a) Determination of the threshold for significance for each environmental resource to be impacted.
- b) Weighing the evidence and consider predicted impacts.
- c) Deciding which side of a predetermined threshold the predicted adverse impacts fall on where the threshold is based upon acceptability of impacts in the specific context of the development area.
- d) For unacceptable impacts, determining whether mitigation measures can make the residual impact acceptable (A. Ehrlich & W. Ross (2015).

The EIA Guidelines (2021) also prescribe some broad guidance to this effect. According to the Guidelines the judgment regarding impact significance can be based on—comparison with relevant laws, regulations, national and international standards, reference to pre-set criteria, consistency with governmental policy objectives, comparison with best practices and acceptability of the general public. Moreover, in determining significance of impacts their magnitude, duration, frequency and prevalence etc. should be taken into consideration. So, impact prediction and evaluation must be conducted with due care and attention in the context of the proposed projects in question.

Mitigation of Impacts

Scoping, baseline data generation, impact prediction and evaluation stages give a clear picture of specific significant impacts which warrant mitigation treatment. Though mitigation mainly conducted after the impact assessment stage, it can be utilized at any stage of the EIA process. Thus, mitigation is linked with other steps and correctly called an ‘iterative process’. Glasson et al. (2012) emphasizes that— mitigation is not limited to one point in the assessment. Although it may follow logically from prediction and assessment of the relative significance of impacts, it is in fact inherent in all aspects of the process. Thus, in the most basic sense mitigation is a process in the EIA which determines the possible preventive, remedial or compensatory measures for the adverse impacts which have been evaluated as significant (EIA Guidelines, 2021). However, there must be a rational relationship between the mitigation and significance of an impact in terms of environmental risks.

Utility of mitigation process can be perceived from different angles and its objectives are broad. The common objectives include, *inter alia*, — a) avoiding and finding better alternatives and ways of doing things; b) minimizing the adverse impacts through adoption of mitigating measures; c) enhancing the environmental and social benefits of a proposal; and d) ensuring that residual adverse impacts are kept within acceptable

levels and compensated. The EIA Guidelines (2021) provide three consecutive levels of impacts mitigation e.g., avoidance, minimization and compensation. They can be illustrated as follows-

Figure V: Hierarchy of Mitigation Measures

Avoidance is the primary step of mitigation; in this stage the ultimate purpose is to avoid the significant adverse impacts altogether. The EIA Guidelines enlists few strategies in this effect. They are— not undertaking certain projects or elements that could result in adverse impacts, avoiding areas that are environmentally sensitive, putting in place preventative measures to stop adverse impacts from occurring, avoiding the use of certain technologies that are known to cause significant impacts.

When the adverse impact cannot be avoided altogether, then an attempt is made to minimize the impacts magnitude, duration, frequency etc. Thus, minimization is the second step of mitigation process. Minimization may relate to structural or non-structural aspects. Structural aspects include design or location changes, engineering modifications and landscape or site treatment and nonstructural aspects include economic incentives, legal, institutional and policy instruments, provision of community services and training and capacity building. The third and less desirable step relates to providing compensation or remedy for impacts which remain even after minimization strategies are taken. Thus, mitigation is an all-out approach to address the significant environmental impacts of a proposed project or industrial unit. In doing so, the EIA team must maintain a regular communication with the proponent and his capacity to bear the mitigation cost would play a major role in selecting mitigation plan.

Environmental Management Plan

With the adoption of ECR 2023, as a part of EIA report an Environmental Management Plan (EMP) also needed to be prepared in the manner prescribed in schedule XI of the ECR. Within the previous legal framework there was no legal requirement to prepare it. The prime object of an EMP is to suggest a road map that will ensure managing the environmental impacts within acceptable limits and enhancing the environment (Rathi, 2021). The significances of an EMP are, as stated in the EIA Guidelines (2021)—that

“The EMP contains commitments that are binding on the Project Proponent. It can be translated into project documentation and provide the basis for a legal contract that sets out the responsibilities of the Project Proponent. In turn, the Project Proponent can use the EMP to establish environmental performance standards and requirements for those carrying out works or providing supplies in accordance with the specifications in the EMP. An EMP can also be used to prepare an environmental management system for the operational phase of the project.”

Moreover, the Guidelines also suggest that a well-structured EMP shall cover all phases of a project life. Schedule XI thus provides that an EMP report shall contain details regarding, *inter alia*, project description, environmental policy, environmental compliance requirements, environmental impacts and mitigation measures, environmental surveillance, monitoring and auditing, organizational structure, contingency planning etc. (The EIA Guidelines for Industries 2021, Schedule XI).

2 Conclusion

Environmental Impact Assessment (EIA) is a multidimensional environmental management device based on the principle ‘prevention is better than cure’. It serves multiple purposes including complying with the principles of ‘precaution’ as well as ‘sustainable development’, providing the affected public an opportunity to have a voice in such decision-making process which may affect their fate. An effective EIA system may reduce environmental pollution from industrial units and projects significantly. In order to achieve the

intended outcomes from EIA implication an EIA system must have to 'effective' because a defective EIA system always has the potential to become a 'necessary evil' which increases time and cost of project implementation. Thus, it can either be a 'fulfilled potential or wasted opportunity' within an integrated approach of conserving environmental sanctity (Judith Peets, 1999). An EIA system can if properly implemented alleviate environmental risks. EIA should be understood as a 'means' and not an 'end'. EIA is directed to achieve a much broader goal that is conserving the environment. It is, thus, only a device or useful tool of environmental management. It must not be considered merely an administrative requirement that must have to be complied with before a new industrial unit or project is established.

The ECA 1995, ECR 2023 and Guidelines of 2021 are the instruments regulating the EIA system of Bangladesh. The first one is the main environmental legislation in Bangladesh enacted by Parliament and the other instruments are subordinate legislations adopted by the Government. Before, the adoption of the ECR 2023, the previous ECR was of 1997 which was in direct conflict with the Guidelines. Though the ECR 2023 has made sufficiently clear provisions regarding EIA but it still depends on the Guidelines for EIA procedure. The Guidelines which were made to deal with prior EIA 2023 conditions is not suitable enough to deal with the post ECR 2023 conditions. The Guidelines itself is an ill drafted instrument as it does not make concrete provision with sufficient clarity. Moreover, the ECR 2023 in some respect sets out ambiguous provisions. For example, it merely states that in respect of orange category industrial units or projects whether EIA needed will be decided by the ECCC in a case-by-case basis but it omits to lay anything regarding the procedure in those cases. Substantive perspective of EIA relates whether the EIA system in question is working successfully to achieve aimed objectives. From this point of view not only the EIA system of Bangladesh but also the environmental management system as whole has failed to achieve the desired success. *The Environmental Performance Index (EPI)*, (2024) has assessed environment management system of 180 countries where Bangladesh is ranked 175 among these countries. TIB's report (2022) shows that 73% red category industrial units covered by its survey have got environmental clearance certificate (ECC) and situate in residential areas and 22% industries did not submit the EIA report prior obtaining ECC. The legal regime regulating the EIA system of Bangladesh is plagued by some difficulties from the procedural fairness perspective. Firstly, there is no specific mention for considering alternatives during the various stages of EIA system. Secondly, though the requirement for public participation in the EIA process is recognized, the provisions regarding public participation are not sufficiently precise. Moreover, there no provision is made for giving special treatment, in relation to public participation, to the indigenous peoples when their lands are affected from the establishment or operation of industrial units or projects. Thirdly, though an 'Appellate Authority' is prescribed which is entirely composed of executive officials of the government and the only qualification is 'holding particular offices (*ex-officio*)'. How persons without having adequate experience and expertise regarding EIA can dispose of appeals relating to EIA effectively!

The Department of Environment (DoE), its local offices, the ECCC has to play an active and pivotal role in the process of EIA. It is, in fact, the authorization authority for terms of reference as well as for the EIA report. However, its lack of capacity, resources, practice of corruption has been hampering the effectiveness of the EIA system of Bangladesh. TIB's report shows that Although the number of approved posts in the Department is 1,141, there are only 475 staff (vacancy rate 59.25%). Due to the lack of manpower with relevant environmental and technical knowledge and expertise, environmental disasters and polluting sources cannot be detected quickly. The DoE has offices in only 21 districts. The absence of offices in all the districts of Bangladesh hampers the effective implementation of the vision and mission of the organization. Some offices have to conduct activities in 3-4 districts simultaneously. Field level offices have a shortage of necessary infrastructure. TIB's report also found instances of corrupt practices in granting ECC. For instance, 51%

industries (covered by TIB's survey) are alleged of committing irregularities in the EIA process and 56% have obtained ECC without an environmental management plan. In addition, about 66% of the surveyed industries made illegal financial transactions through collusion at various stages of obtaining environmental clearance. These issues have been hampering the effectiveness of EIA system of Bangladesh as a whole.

Thus, in order to alleviate environmental risks and impacts arising out of the operation and establishment of industrial units or projects, the EIA system of Bangladesh should be sounder and more effective from substantive, normative, procedural viewpoints and in respect of other pollutions and risks other curative and prevention measures should be taken. A new 'EIA Guidelines' replacing the Guidelines of 2021 should be made maintaining consistency with the post ECR 2023 conditions. Moreover, such Guidelines must adopt provisions with clear, unambiguous, specific language.

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