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Variation and Challenges in the Global Practice of Environmental Impact Assessment (EIA)

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ABSTRACT: Rapid project development in human societies across the globe has led to the need to strengthen environmental regulation in order to protect the environment, its features and inhabitants from the negative consequences of development without stifling urbanisation. Environmental Impact Assessment (EIA) is therefore, a legally-recognised measure of controlling the excesses of developers or proponents. This study investigated the wide variation in global EIA practice in terms of screening, scoping and administration. The current underlying challenges associated with the practice of EIA across the globe such as inadequate monitoring, bribery, excessive bureaucracy and obsolete environmental legislations were also studied. Some of the challenges were country or region-specific due to the following factors: geographical location, project type, socio-economic pattern and legal institutional framework; however, recommendations were offered on how these challenges can be managed effectively considering the environmental-specificity of the affected countries. The recommendations include: merging identical EIA administrative authorities to reduce bureaucracy; EIA should be carried out by the competent authority in each country and proper post-development monitoring should be encouraged as these would help curtail bribery and reduce bias; check and balance mechanisms must be set in place so as to reduce the excesses of the proponents since they fund the monitoring process; old legal EIA documents in affected countries should be reviewed to meet current needs.

KEYWORDS: Environmental Impact Assessment, global EIA practice, variation in EIA, EIA challenges, Screening in EIA, Scoping in EIA, EIA administration.

1 INTRODUCTION

Humans have begun to appreciate the value of the environment due to their inevitable reliance upon it [1]. Development is one of the major causes of environmental devastation [2] and, as a result, it has become imperative to conduct some kind of environmental assessment before approving any major development project. As early as 1969 in the United States, environmental assessment (EA) had become a practice with legal provisions [3]. A few years later, other countries around the world followed suit and, today, Environmental Impact Assessment (EIA) has become the general term used to describe the process.

EIA or EA (the term used by some countries) is the process of determining the environmental effects of proposed projects based on information gathered, which will be taken into account by the proponent as part of the project design/plan, and by

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the decision-making body in authorizing the execution of the project [4]. EIA sets out to achieve two objectives. The first is to determine whether the project will have a significant impact on the environment [5] and the second is to support sustainable development [6]. In other words, EIA was not established to stifle development, but to ensure that the environment is insignificantly affected even in the face of monumental development projects.

The procedural framework of EIA practices differs slightly but not fundamentally, across the globe. Therefore, the objective of this study is to reveal the existing variation in the global practice of EIA and suggest possible improvements. Figure 1 shows a generalised EIA framework; No country possesses all the stages but certainly has the basic components.

EIA is practised according to national law in most countries whereby the legal documents state the regulatory authority (for decision-making) and spell out the entire EIA process. In most cases, the process is fairly simple while in few others, the process is very complex.

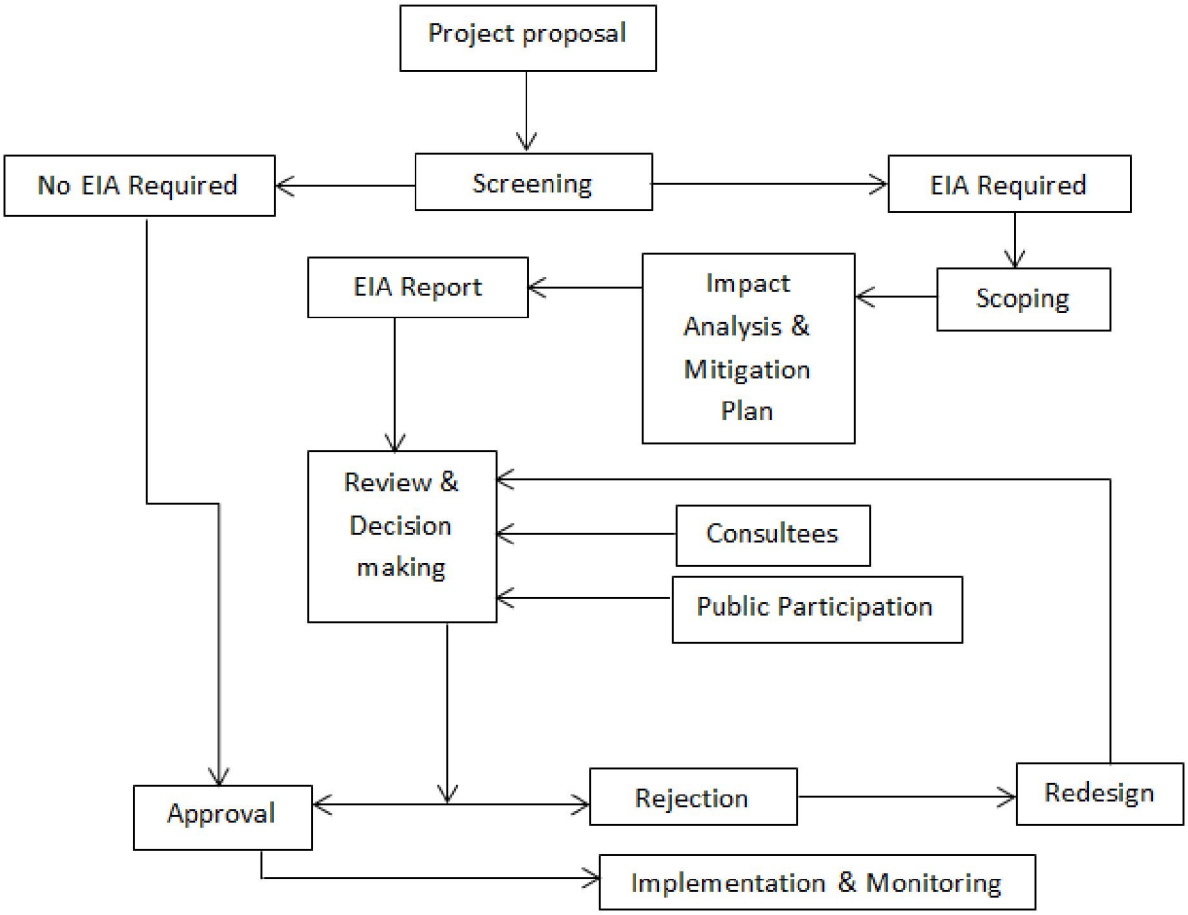

Fig. 1. A Generalised EIA Process [7]

2 THE GLOBAL PRACTICE OF EIA

The similarities and differences in EIA practice around the world will be examined on the basis of three important EIA stages which are as follows:

- Screening
- Scoping
- Administration

2.1 SCREENING

Screening is carried out to ascertain whether a development project requires an EIA or not because not all projects require an EIA. The method of screening varies from one country to another. Screening is carried out through the provision of

one of the following; listing approach (which involves the use of inclusion and/or exclusion lists) and a case by case study of proposed projects. The combination of both screening methods is used in some countries. Furthermore, there is a large variation in the use of the listing approach by many countries. Most countries have on their listings, project capacity thresholds, some have financial thresholds whilst others have no threshold. Some countries represented their listings with colours where each colour code for exclusion (requires no EIA) or inclusion (approved with a condition or requires full EIA).

An inclusion list is a standard list of projects which require EIA. In the countries where inclusion lists are used, thresholds (the minimum production capacity for individual projects, above which EIA will be required) are often established. For example, in France, a hydroelectric plant generating over 500KW requires an EIA [8]. Similarly, in the UK, a thermal/nuclear power station with a heat output of 300MW or more requires an EIA [9]. Exclusion lists on the other hand, are standard lists of projects which do not require EIA. Some countries use a single inclusion list, e.g., Canada, China, Brazil and Australia. In China, the inclusion list is contained in the *Classification Catalogue Management of Environmental Impact Assessment for Construction Projects* [3]. However, in some other countries, two inclusion lists are used, where one of the lists represents the projects that require mandatory EIA whilst the other represents the projects that require EIA only if the threshold is exceeded or projects that may be approved based on conditions.

A good example of the two-listing system is found in the UK, Germany and Turkey, as 'Annex I and Annex II listings', where Annex I listing represents a list of projects that require mandatory EIA and Annex II listing represents a list of projects that require EIA only if the threshold is exceeded. In Belgium, the two inclusion lists used are referred to as, list A and list B. List B requires minimal impact assessment whilst list A requires a full EIA [10]. In France, screening decisions are made based on two project categories, which are; projects requiring EIA (i.e., projects which always require EIA and projects which only require EIA when a standard threshold is exceeded) and projects with a smaller environmental impact which only require a *notice d' impact sur l'environment* (NIE) – an impact statement on the environment [8]. In Japan, large-scale development projects that could threaten the environment are categorised as 'Class 1' (requires full EIA), Class 2 (EIA necessity depends on a case-by-case study of individual project) and others (no EIA required) [11].

Thresholds help to standardize and reduce time wastage in the screening process. Thresholds may be based on production capacity or set in financial terms. In Canada and Brazil, production capacity thresholds are employed. For example, in Canada, the extention of a fossil fuel-fired electrical generating station with production capacity of 50% and above or 200MW and above will require an EIA [12]. Similarly, in Brazil, the following require EIA: activities using 10 tons of charcoal per day; power plants over 10MW; transmission lines over 230KV [13]. On the other hand, financial thresholds are used in France and India. In France, projects with a construction cost of 1.9 million Euro requires an EIA [8] and in India, investments on new projects which require more than 100 crores (i.e., 1 billion rupees) and refurbished projects involving an investment above 50 crores (i.e., 500 million rupees) both require an EIA (This threshold does not apply to Indian industries which process hazardous chemicals) [14]. However, there are countries which use listings but do not set any form of threshold, e.g., Turkey, Tunisia, China, and Australia. In order to augment the screening process in Australia and make it less ambiguous, a referral form from the proponent is sent to the regulatory officer who then decides whether the project requires an EIA or not [15].

In some countries where listings are used, there is no provision for exclusion lists (e.g., China and Brazil) whilst in some others both inclusion and exclusion lists are provided (e.g., Canada, Australia, France and the United States). In many countries, projects which do not require EIA (or projects on the exclusion lists) are granted approval without further assessment (e.g., Canada and United States) but in Ghana projects which do not require EIA still undergo inspection before an Environmental Permit (EP) is issued [16]. In the United States, only government-sponsored projects require an EIA; all private projects are exempted [9]. In India and Bangladesh, an NOC (No objection certificate) is issued for projects which do not require EIA [17] whilst in the United States, a FONSI (finding of no significant impact) is issued for projects which do not require EIA and an NOI (notice of intent) for projects which requires EIA [9].

Colour bands are used in some countries to simplify the screening process. Both inclusion and exclusion lists of projects in such countries are divided into categories represented by colours. For example, in Bangladesh, projects are divided into four coloured categories – Green, Amber A, Amber B, and Red – based on the location and environmental significance of the proposed project. Green projects do not require any initial assessment or EIA (an NOC will suffice), Amber A and B projects require limited assessment, and Red projects require both initial assessment and EIA. In addition, projects are divided into three coloured categories in Egypt – Black, Grey and White. Projects on the black list require full EIA; projects on the grey list do not require EIA but approval is based on conditions; projects on the white list do not require EIA or approval conditions [18]. For example, in the oil and gas sector in Egypt, petrol/natural gas stations proposed to be built in environmentally non-sensitive zones are included in the white list [19]. Environmentally non-sensitive zones are areas outside residential, protected and agricultural zones including specified areas by the regulatory authority (EEAA – Egyptian Environmental Affairs

Agency). In addition, a fuel (i.e., petrol, gas and diesel) storage tank with a storage capacity of 15, 000m^3 or less is included in the grey list but if the storage capacity of the fuel tank is exceeded, it will be included in the black list [19].

However, in Nigeria, a case by case approach is adopted in the screening process which is carried out by the regulatory authority. The regulatory authority conducts an IEE (Initial Environmental Evaluation) to determine the significant environmental impact of a project, which reveals whether an EIA will be required or not [20], but in Ghana, IEE is a post-screening process that determines the aspect of a project which requires scoping [16]. Unlike most countries, Nigeria has no provision for a standard inclusion or exclusion list. In Mexico, screening is based on the discretion of the state and local environmental authorities to classify projects into two categories – regional projects and particular projects. Regional projects are those with potential regional impacts whilst all other projects are particular projects which require less extensive assessment [21]. Egypt and Germany have listings but also apply the case by case method for projects that are insufficiently screened by the provided listings.

2.2 SCOPING

At the end of the screening exercise, those projects that do not require EIA will move over to the regulatory authority for approval. However, if the project has the potential to threaten the environment, then scoping is likely to be carried out (as it is not a mandatory process in few countries, e.g. UK and Spain). Scoping involves the decisions that will be made about which impact categories will be included in the EIA. It is considered as a critical element in the EIA process and therefore, requires clear guidance to be provided to those who will carry out the EIA [8]. The variation in scoping cannot be critically examined without determining who carries out the scoping, what the scoping will cover, the result of scoping, the provision for an alternative and site selection/approval.

The regulatory officer, or authority, carries out the scoping in Canada, UK, United States, India, and Australia, with the help of consultees or special agencies. In Canada, consultation with the Aboriginal group (natives of the land) is carried out during scoping [22]. In Australia, the regulatory officer consults with the appropriate Advisory Committee before concluding the scoping process. It should be noted that if measures to mitigate impact are well spelt out by the proponent and satisfactory to the regulatory officer, the project may be approved without an EIA [15]. In the United States, the competent authority (EPA – Environmental Protection Agency) is solely in charge of scoping [9]. In the UK, the proponent requests for a 'scoping opinion' (detailing the information to be provided) from the competent authority [9]. In contrast, scoping is carried out by the proponent in China, Ghana, Tunisia, Belgium, Nigeria and Brazil, with the help of a multi-disciplinary team or a consultant whose services are paid for by the proponent. In these countries, Terms of Reference (TOR) – in the form of a document which embodies the parts of the project which requires to be measured for environmental impact – is prepared by the proponent in conjunction with the consultant and then sent to the regulatory authority for further assessment. In Egypt, the proponent carries out scoping for projects on the black list but the competent authority carries out scoping for projects on the grey list. In Bangladesh, scoping is not well-defined. The proponent presents an application which contains; a feasibility study report, IEE, EIA, EMP (Environmental Management Plan – which reveals mitigation measures), NOC and PMP (Pollution Minimisation Plan) following which a site clearance may be given if the relevant authorities are satisfied [23].

In most countries, scoping covers similar areas with slight variations or minor additions. For example in the UK, scoping covers biodiversity, air, water, soil, climate, landscape and cultural heritage, which are contained in the scoping opinion [8]. Similarly in Egypt, scoping covers the biosphere (including living organisms, air, water, soil and establishments set up by man), public place (closed or semi-closed) and environmental resources [24]. In Canada, scoping covers physical and biological components (such as, air, water, vegetation, terrain, fish, wildlife and migratory birds), cultural heritage, historical structures and the socio-economic and health implications of the proposed project on the inhabitants of the area [25]. Scoping covers similar areas in Australia with the addition of wetlands of international importance, threatened species and impacts on the environment (both terrestrial and marine, commonwealth and aboriginal lands) [15]. In Belgium, scoping specification is designed by the Brussels Administration for Environmental Management (IBGE). This body sends to the proponent, the proposed content of the Environmental Impact Statement, detailing the areas that require scoping and the list of registered consultants who are allowed to carry out the EIA [8].

Scoping leads to the production of an Environmental Statement (ES) or a Draft EIA Report (DER), although the time span between scoping and ES/DER production is lengthy and varied. Both carry similar information – an analysis of the project, the risks involved and mitigation measures – useful for decision making. Some countries have multiple ES or EIS while some others have just one. Two EISs (draft EIS and final EIS) are used in Ghana, Denmark and US whilst three EISs (draft EIS, EIS and Final EIS) are used in Japan [11]. On the other hand, a single EIS is used in China [3]. Countries using DER often have two versions of EIA reports – DER and Final EIA report, e.g., Nigeria [20].

In Finland, Assessment Schedules – which reveals investigations to be taken –are submitted (rather than EIS or DER) by the proponent to the coordination authority. The coordination authority then distributes it to other relevant authorities for comments (including the public). The opinions gathered from the review are then sent to the proponent for the changes to be effected before approval can be made [8].

A development project with a highly significant environmental impact which has no sustainable mitigation plan is likely to face rejection. In some countries, there are provisions within the EIA framework for an acceptable alternative. In India, UK, Netherlands, Egypt and Turkey, alternatives are considered. India carries out the alternative study at the scoping stage [26]. In contrast, Tunisia does not consider alternatives [18].

In Addition, not many countries have project site selection or approval as part of the EIA process, but in India, UK, Bangladesh and Germany, there are provisions for it. In Bangladesh, Amber A, Amber B and Red projects all require site approval [27]. In Germany, site selection is carried out by the 'Landers' (the German land authorities) [28]. In India, site clearance is administered by the competent authority (MoEF – Ministry of Environment and Forest) and required for projects such as: mining and exploration of valuable minerals; thermal power machinery; multi-purpose river valley projects and important ports and harbours. Approval from Airport authority and State forest departments are required as well if the project is to be sited close to an Airport or in forestland [17].

2.3 ADMINISTRATION

The legal document which supports the practice of EIA in every country also states clearly who administers the EIA and who carries out the EIA. In some countries, the regulatory body performs both functions; in some others, the regulatory body administers whilst the proponent carries out the EIA through a hired consultant/team of experts. In addition, Consultees/review panels are often needed by the regulatory authority for better decision-making. In many countries, the review of the EIA report is carried out by consultees/review panels whilst in few others, the review is carried out solely be the regulatory authority. Public review or participation is a basic component of EIA in many countries but in quite a few numbers of countries, EIA reports are treated as confidential and kept away from the public. The right to appeal in case of a project proposal rejection is legally provided in some countries but absent in many others.

In Canada, United States and Australia, the regulatory authorities carry out the EIA but in slightly different ways. In Canada, the EIA is carried out by three regulatory bodies; Canadian Environmental Agency (CEAA), the Canadian Nuclear Safety Commission (CNSC) and the National Energy Board (NEB). The project assessed by each regulatory body depends on the speciality of the project. Nuclear related projects are assessed by CNSC, energy-based projects are assessed by NEB and every other project is assessed by CEAA [22]. In Australia, the responsible officer (The Minister, Department of Sustainability, Environment, Water, Population and Communities) carries out the EIA by assessing the referral information/ES or by public inquiry [15]. In the UK and the United States, the competent authorities, the Planning Committee and EPA respectively, carry out the EIA study.

In Nigeria, Phillipines, Bangladesh, India, Ghana, China and Brazil, the project proponent carries out the EIA through hired consultants, but the practices differ slightly among these countries. In Nigeria and China, the consultants hired by the proponent must be certified by the regulatory authorities, Federal Environmental Protection Agency (FEPA) and Ministry of Environmental Protection (MEP) respectively. In Brazil, Japan and Phillipines, the consultant needs no certification by the regulatory body, but the services provided (i.e., the EIA study) must be paid for by the proponent.

EIA administration (including decision-making and enforcement) in some countries is carried out by a single competent authority, usually with the help of consultees. In Canada Tunisia, Bangladesh, Germany and Australia, the sole administrators are as follows: the Minister of Environment; Agence Nationale de Protection de l'Environment (ANPE); Director General of the Department of Environment; Minister of the Environment, Nature Conservation and Nuclear Safety; and the Minister, Department of Sustainability, Environment, Water, Population and Communities respectively.

In other countries such as Nigeria, China, India, Egypt, Turkey and Brazil, multiple administrators are involved. In Nigeria, there are three regulatory authorities; Directorate for Petroleum Resources (DPR) (for petroleum-based projects), Urban and Regional Planner's Development Control (for state and local level construction projects) and FEPA (for general projects) [20]. Similarly, three regulatory bodies are involved in India at the central, state and provincial levels – They are: Ministry of Environment and Forest (MoEF), State Pollution Control Board (SPCB) and Department of Environment (DoE) respectively. In China, MEP is the national regulatory body while at the local level, Environmental Protection Bureau (EPB) administers the EIA [3]. In Brazil, an environmental protection agency, IBAMA (Instituto Brasileiro de Meio Ambiente e Recursos Naturais Renoraveis), is the national regulatory authority while the State Environmental Agency and the Municipal Environmental Authority administer EIA at state and local levels respectively [13]. In Egypt and Turkey, the regulatory bodies are: Egyptian

Environmental Affairs Agency (at the national level) and the sectoral competent authorities (at the local level); Ministry of Environment (at the national level) and local environmental committees respectively.

In many countries, there is no legal provision for the proponent to appeal in case the proposed project is rejected by the regulatory authority. In such countries, the decision of the regulatory body is final. Examples of these countries include: Turkey, Tunisia, South Africa, Nigeria, China, Canada and Brazil. However, in some other countries such as Egypt, UK, India and Denmark, the proponent has a legal right to appeal if the need arises. For example, in Denmark, the Nature Protection Board of Appeals is in charge of the Appeal process and the decision made by the Board is final (i.e., binding on both the competent authority and the proponent) [29]. Also, in the UK, the proponent has the legal right to make an appeal to the Planning Inspector if the competent authority (Planning Committee) rejects his project proposal [9].

In Nigeria, China and Brazil, a review panel – comprising a multi-disciplinary team of experts – is employed whilst in Australia multiple consultees make up the EIA process. In Australia, four advisory committees are consulted based on the speciality of the project. These committees are: the Biological Diversity Advisory Committee; the Indigenous Advisory Committee; the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development; and the Threatened Species Scientific Committee [15]. In the UK, the Planning officers serve as the consultees employed by the regulatory authority. In Canada, however, only aboriginal group participation is required (which is funded by the Canadian government); consultees are not part of the EIA process because three specialised regulatory authorities are already involved [22].

In some countries (Ireland, Denmark and France), the review stage has no legal provision, although a form of review is carried out during the EIA, but in Italy there is a mandatory review stage which is well represented by law. The review (of the EIS) is carried out by the EIA Commission – a 20 member team nominated by the competent authority for a term of three years [30]. In Tunisia, a review panel/consultee is not involved in the EIA process, instead, the competent authority (ANPE) reviews and makes decisions at its own discretion [18].

Many countries of the world (Canada, Brazil, Nigeria, China, Australia, Turkey, Ghana and India) have 'public review/participation' as a basic component of the EIA process, simply because the public will be the most affected if the proposed project has a significant impact on the environment. In contrary, EIA reports in Egypt are considered as confidential, therefore, public participation is not allowed [18]. Similarly, there is no provision for public review or participation in Tunisia [18].

3 CHALLENGES AND RECOMMENDATIONS

The variation in global EIA practice has led to a number of shortcomings. The following are suggested ways by which the challenges can be managed:

- In Nigeria, there is a problem with role-definition among the three legally-recognised competent bodies, which may lead to excessive bureaucracy and the duplication of duties. This can be solved either by merging two identical authorities or by clearly defining their duties and jurisdiction.
- The case by case approach for screening in Nigeria may be too time-consuming. This calls for the need to have an inclusive (with threshold levels) and exclusive lists which will likely help to save time and standardize the screening process.
- In China, Nigeria and Brazil, if the proponent must be the one to carry out scoping (based on the Terms of Reference defined by the competent authority), then the EIA study must be carried out by the competent authority in order to check the excesses/tendencies of the proponent.
- In Scotland and Brazil, the monitoring process is funded by the proponent and this may stir up bribery and a biased result. Therefore, a check and balance mechanism must be set up to regulate the excesses/tendencies of the proponent. The Canadian government can as well adopt this method since the monitoring exercise is currently not carried out in the country.
- In Brazil, the EIA study is carried out by an independent multi-disciplinary team hired by the proponent but may stir up bribery and a biased result. A possible solution is for the competent authority to certify the multi-disciplinary teams in order to regulate their activities and ascertain their integrity, as done in Nigeria and China.
- Scotland, Australia, Brazil and Nigeria all have old legal documents (14 years and even older) which certainly requires review. With the recent advancement in science and technology, new development projects that were not catered for in the document may have been proposed (e.g., Brazil's document does not address nuclear energy projects). Therefore, a more recent review of the legal documents will help protect the environment better.

4 CONCLUSION

It appears that the generalised EIA framework is idealised as no country in the world possess all the stages from project proposition to monitoring/auditing, although the overall objective of the process is not lost. Countries around the world selected independent EIA procedures that best suits them on the basis of geographical location, project type, socio-economic pattern and legal institutional framework. However, the variation in EIA practice has led to a number of shortcomings. One major challenge is the insufficient monitoring (which is completely absent in some countries) of the project after approval and commissioning, probably as a result of lack of funds or the lack of clarity as to who should carry it out. If the challenges associated with this stage can be resolved, it will help to ascertain whether the proponents are complying with environmental regulations which will serve as a reliable means of testing the level of success of EIA practice in each country.

However, it is recommended that 'monitoring' should be carried out by the regulatory authority and funded by the federal or central government as the case may be. Also, mechanisms should be put in place to check the activities of the proponent (in countries where the proponent carries out the EIA) whilst fairness should be considered by countries that disallow the legal appeal by proponents whose projects were rejected. In addition, countries with the use of EIA legislative documents that are out-of-date and insufficient to meet current trends, should review their legal documents to meet the demands of modern development in a rapidly changing society. It is expected that all these would generally improve the quality of EIA practice across the globe.

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