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The author gives a brief definition of "Environmental Intelligence" and how this can be adopted in Environmental Management Systems (EMS) for a given project. The EI can be better understood through Environmental Management Systems (EMS) for a project that include: a) Screening of the Project; b) Preliminary Assessment of Environmental Impact; c) Design Revision and Phased Environmental Analysis; and; d) Detailed or Formal Environmental Impact Assessment; e) Improving the effective use of assessments. Further what notes on application of guidelines need to be looked into while shaping an environmental impact assessment of a project by applying environmental intelligence.

Article forwarded for Derivative Book on:
"*Multiple Intelligences for Managers*"

I Preamble:

1.01 In recent years there has been growing recognition that many actions taken to generate development in the immediate future fail to sustain the momentum of growth in the longer term. At best they prove to be insufficient simply to fail after a while or well conceived robust to become sustaining. At the most short term achievements may result in degradation or destruction of the stock of natural capital for sometime but can revive if timely environmental intelligence is adopted to maintain growth in future.

1.02 That attracts to the very word of '***environmental intelligence***'. This can be defined in few paragraphs below. E.g. ***Environment*** can not be talked alone, unless we understand "*natural environment*", commonly referred to simply as the environment, is a term that comprises all living and non-living things that occur naturally on Earth or some part of it (e.g. the natural environment in a country). This term includes a few key components like: *quote*

- Complete ecological units that function as natural systems without massive human intervention, including all vegetation, animals, microorganisms, rocks, atmosphere and natural phenomena that occur within their boundaries.
- Universal natural resources and physical phenomena that lack clear-cut boundaries, such as air, water, and climate, as well as energy, radiation, electric charge, and magnetism, not originating from human activity.
- The natural environment is contrasted with the built environment, which comprises the areas and components that are strongly influenced by man. A geographical area is regarded as a natural environment, if human impact on it is kept under a certain limited

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level (similar to section 1 above). This level depends on the specific context, and changes in different areas and contexts. This also introduces a term called as wilderness, on the other hand, refers to areas without any human intervention whatsoever (or almost so).

- But that throws challenges to *natural environment* that underlies environmentalism — a broad political, social, and philosophical movement that advocates various actions and policies in the interest of protecting what nature remains in the natural environment, or restoring or expanding the role of nature in this environment. While true wilderness is increasingly rare, wild nature (e.g., unmanaged forests, uncultivated grasslands, wildlife, wildflowers) can be found in many locations previously inhabited by humans.

1.03 On the other hand ***Intelligence*** comes from the Latin verb "intellegere", which means "to understand". By this rationale, intelligence (as understanding) is arguably different from being "smart" (able to adapt to one's environment), or being "clever" (able to creatively adapt). That can be explained e.g.

- Intelligence is an umbrella term used to describe a property of the mind that encompasses many related abilities, such as the capacities to reason, to plan, to solve problems, to think abstractly, to comprehend ideas, to use language, and to learn. There are several ways to define intelligence. In some cases, intelligence may include traits such as creativity, personality, character, knowledge, or wisdom. However, some psychologists prefer not to include these traits in the definition of intelligence.
- At least two major "consensus" definitions of intelligence have been proposed. First, from Intelligence: knows and unknowns.[2] Individuals differ from one another in their ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought. Although these individual differences can be substantial, they are never entirely consistent: a given person's intellectual performance will vary on different occasions, in different domains, as judged by different criteria. Concepts of "intelligence" are attempts to clarify and organize this complex set of phenomena. Although considerable clarity has been achieved in some areas, no such conceptualization has yet answered all the important questions and none commands universal assent. Indeed, when two dozen prominent theorists were recently asked to define intelligence, they gave two dozen somewhat different definitions.
- A second definition of intelligence comes from "Mainstream Science on Intelligence"[3],:A very general mental capability that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience. It is not merely book learning, a narrow academic skill, or test-taking smarts. Rather, it reflects a broader and deeper capability for comprehending our surroundings—"catching on",

[2] A report of a task force convened then by the American Psychological Association in 1995.
[3] This was signed by 52 intelligence researchers in 1994.

"making sense" of things, or "figuring out" what to do.

II Environmental Management Systems (EMS) consulting needing intelligence decisions to cover:

2.01 The environmental intelligence can be better understood through Environmental Management Systems (EMS) for project that include: a) Screening of the Project; b) Preliminary Assessment of Environmental Impact; c) Design Revision and Phased Environmental Analysis; and; d) Detailed or Formal Environmental Impact Assessment. These aspects from an environmental point of view can be defined as per below:-

a) Screening of the Project: The screening would normally consist of a meeting between planner (s) of a project and relevant government officials (environmental protection, natural resources, public health, social affaires, etc.). At such meeting, the likely biophysical and socio-impacts of the project discussed and further regulatory steps, if any, can be decided. Depending on the circumstances, the meeting can be attended by the independent experts, e.g. for a forestry project, wildlife experts from the university or research centre, if the forestry project happens to be in or near a particularly sensitive wildlife area. The screening might take the form of a run-through of a checklist of potential impacts that are attached as guidelines at the end of this note. Thus the intelligent statement would be to the effect that :

1. The proposed project has no likely harmful impact and no further environmental action is required;
2. Certain environmental aspects of the project (including mitigative methods) are poorly known or unknown, and a more systematic assessment is needed by means of Preliminary Assessment of Impact (see blow);
3. The project has one or several specific impacts, but these impacts can be prevented or mitigatd by means of a revision of the project design, or by means of an environmental programme phased over the implementation of the project (see blow);
4. The project is in such an environmentally sensitive area, has an inevitable massive impact, or fails to maximize benefits that a detailed, formal assessment of the impact is required; detailed assessment is defined primarily to consider alternative sites or development methods, and to weigh more

accurately socio-economic benefits against environmental loss.

5. These steps and / or options can be summarized as per below: -
   i. Option-1: No Significant Environmental Impact- no further environmental action required;
   ii. Option-2: Preliminary Assessment of Environmental Impact;
   iii. Option-3: Design Revision or Phased Environmental Analysis;
   iv. Option-4: Detailed Environmental Impact Assessment.

b) Preliminary Assessment of Environmental Impact: If the initial screening of a project has deemed a Preliminary Assessment of Environmental Impact necessary, further planning of the project need to include this assessment, and eventually can take its recommendations into account. In general, effective environmental planning and control would require a mix of regulatory action, the goodwill of proponents, and requirement on the part of funding agencies that proper environmental safeguards be built into the project. Thus these require:

1. Data Base and Familiarization with Project Area;
   i. The project being assessed need to examine in relation to other past, present or foreseeable development projects in the basin, region or other pertinent geographical area in order to evaluate possible cumulative impacts;
   ii. The project need to examine the context of regional or national land-use planning, if such issues exists;
   iii. The project needs examination in relation to existing, planned or potential conservation areas (parks, nature reserves, game refuges, protection forests), specifically, the distances and types of habitats between the project area and conservation areas to be determined with a view to assessing the potential indirect impact of he project on these areas;
   iv. Basic environmental information such as soils, vegetation, geologic or hydrologic maps, if available needs to be obtained from government agencies,

research centers, universities or technical assistance programmes. This information can be used directly or can be interpreted.

v. Regional or national floras, especially classifications of vegetations for conservation purposes, and general guides to fauna and its preferred habitats need to be consulted so as to place the project area in its broad ecological context;

vi. A special effort need to be made to consult the local population for information and opinions, especially regarding traditional resources use and other aspects of the local economy as well as social values and aspirations; local residents may also know much about animals, their habitats and the formal taxonomy of the vegetations; consultations also serves to establish good relations;

vii. Existing guidelines concerning logging methods, road constructions, erosion control and other forms of environmental protection need to be consulted, particularly their recommendations concerning terrain to be avoided;

viii. Existing literature on the project area or region, including prior impact reports, need to be consulted for any information that may facilitate the prediction of impacts;

ix. Regional, national or international research centers or data banks need to be contacted, if necessary, for the purpose of obtaining data and opinions concerning the environment in the project area and its relative sensitivity to disturbances;

x. As per as possible, a map need to be prepared outlining major habitats near the project area, using information obtained from local residents and research centers, from ground and aerial reconnaissance surveys of the main terrain and vegetation types, and from existing topographic, geologic, vegetation and other maps, aerial photographs, that serves as an aid to impact

assessment with regularity authorities or other agencies.

2. Preparation of the Checklist: The checklist is structured primarily on the basis of environmental components in the case of the biophysical environment, and of socio-economic concerns in the case of activities, man-made structures, institutions or demographic-economic changes brought about or needed by a project.

3. Administrative Follow-up: The completed checklist can accompany statement that recommends either

i. No further environmental action other than routine environmental protection during the implementation of the project;

ii. Further environmental action, as specified on the basis of the findings of preliminary assessment.

c) Design Revision and Phased Environmental Analysis: Initial screening or preliminary assessment of the environmental impact of a project may recommend, as the final environmental action, either a revision of the project design, or an environmental analysis phased over the duration of the project and possibly some time thereafter. A combination of the two is also possible. The administrative outcome of detailed EIA may, likewise, be a design revision or a phased environmental analysis. The phased environmental analysis might also include post-developmental remedial work and monitoring of the recovery of certain environmental elements. These elements could be the regeneration of the basic inputs having financial conditions, such as payment of rehabilitation, attached to findings of poor or no recovery.

d) Detailed or Formal Environmental Impact Assessment: The preparation of **a** detailed, formal document is determined during Screening or Preliminary Assessment of the Project. The EIA can be either partial or full, depending on the findings of the earlier stages of EIA. A partial EIA may be the one that, e.g. considers only the biophysical environment as the project area might be located in an uninhabited region, and no permanent settlements or other infrastructure are contemplated. The EIA' s should possibly reflect: -

1) Interests related to: review of boards, panels or commissions and issues on Conservation, development, the public at large, scientific community;

2) Reviews of independent witnesses or independent scientific or other opinions;
3) Procedures that must follow orderly and well-advertised steps, and the decisions of the review bodies with justified component-wise related required actions;
4) Provide authorized binding perceptions concerning mitigation, phased analyses, post-development audits or monitoring; where reviewers are authorized to issue conditional approvals;
5) Filings of documents to ensure compliance with the environmental conditions attached to project approvals;
6) Requirement of proponents to file operational (i.e. actually used by field personnel) handbooks concerning routine methods of project components & other activities. The procedures described in these handbooks may be declared binding.
7) Authors of EIR and their experience and qualifications;
8) Time taken to prepare the EIR, including field data collection;
9) Overall planning of the project were environmental factors taken into account;
10) Principal responsibility for selecting the alternatives and for designing the preferred alternative;
11) The extent to which the opinion of conservation and / or regulatory agencies were taken into account in the selection of alternatives, in judging the adequacy of baseline data and the prediction methods, and in the recommendations of remedial measures;
12) Whether the impacts of the developmental and operational phases of a project have been considered separately insofar as these impacts may be different;
13) Exactly who will bear the responsibility for applying and supervising mitigation measures in the field during actual development;
14) Availability of operational handbooks for various aspects of environmental protection (unless these handbooks are automatically are filed with the EIR).

d) Improving the effective use of assessments: Decisions often are made on the basis of one type of impact, such as economic impact, rather than on the basis of a range of impacts and their interactions. Different impact criteria may be used at different stages of project development, so that assessment results at different project stages cannot be compared. Therefore, better links between project impact assessment and decision-making are needed. For such stages usage of environmental intelligence can do wonders.

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Appendices / Notes on Application of Guidelines: e.g.

I. *Checklist for Preliminary Assessment;*
II. *Environmental Aspects or Socio-economic concerns;*
III. *Checklist of Potential Environmental Impacts*

I Checklist for Preliminary Assessment: Nature of Impacts like: Long-term; Short-term for Local; Regional; Trans-boundary; Direct or Indirect on:

A. *Biophysical components: Landforms and Soils; Water Resources; Climate & Air Quality; Vegetation; Wildlife & Fisheries and other;*
B. *Socio—economic concerns: Traditional Cultures & Subsistence Economy; Cash Economy & Demography; Epidemiology, Conservation & Other ;*

II. Environmental Aspects or Socio-economic concerns on: Slopes; Soils; Sedimentation; Climate and Air Quality; Vegetation; Wildlife and Fisheries; Local culture and Subsistence Economies; Epidemiology, Conservation

III Checklist of Potential Environmental Impacts: Landforms and Soils; Water Resources; Climate & Air Quality; Vegetation; Wildlife & Fisheries, Epidemiology, Conservation

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