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Environmental Impact Assessment Reporting and the Importance of Data Collection

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What is EIA

A formal process of Identifying changes likely to occur on the current state(baseline) of the Environment should be the proposed project be implemented

Environment, within the context of EIA,

Surroundings and their conditions which affect the Quality of life

spans:

- Physical Environment (soil, water, air quality, and landscape, geology, climate)
- ✓ Biological Environment (flora and fauna, habitat, biodiversity), Social and
- ✓ Cultural Environment (demographics, heritage, archaeological),
- ✓ Economic Environment (income sources)

EIA vs SEA

Strategic Environmental Assessment (SEA)

✤ A formal process of identifying likely long term impact of a policy, a programme, or plans on the Environment, Health and Social-Economic Status.

Environmental Assessment

Environment

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Environmental Changes

Environmental Changes include :

- Changes in Biodiversity (living organisms and vegetation)
- Changes in Human Health include changes in the Quality of Air
- Electromagnetic radiation emission levels, while
- Changes in Social Economic changes include migration of people and new settlements emerging.

Spans :

During project development (Short Time), During project operations (Long term) Decommissioning phases (Short Time)

Environmental Changes

Five main reasons exist, namely:

- → United Nations Objective
- → Government Requirements
- → Donor Requirements
- → Corporate Social Responsibility (CSR)
- → Environmental Sustainability and Governance (ESG) Program

⊗ The United Nations, an international organization, whose objectives are defined by its founding Charter has *promoting sustainable development*, as one of its objects.

To actualise this objective, the UN developed 17 Goals (Sustainable Development Goals) to Transform the World, all aimed at promoting prosperity while protecting the planet.

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Member states of the UN, having accepted obligation of the UN charter therefore *strive to adhere* to the mission of the UN under the SDG by enacting environmental laws that mandate the need for EIA

→ Government Requirements

Individual governments can also impose EIA requirements, out of need to align with UN Objectives and own initiatives geared for example Food sustainability. National Laws and Agencies are established to see to it that National environment is concerned for future generations.

GOVERNMENT

- → Donor Requirements
- ⊗ Donor's who fund various projects in different parts of the world also require EIA before they can fund any project.

- → Corporate Social Responsibility
- \otimes A company's commitment conducting its operations ethically and responsibly, considering its impact on society, the environment, and its stakeholders.

- \rightarrow Environmental, Social and Governance (ESG)
- ⊗ A framework supported by concrete evidence and data for measuring a companies' sustainability from its core purpose and activities.

% Screening: reviewing the project proposal with an environmental prism(lens)to determine whether Environmental Impact Assessment is required, this produces an *Environmental Screening Summary Note* (ESSN). Determines whether to carry out Environmental Appraisal , Environmental Audit, or EIA

 \mathfrak{H} Scoping: Development of the Terms of Reference for the EIA process

H Impact Identification and Mitigation: Gather environmental intelligence through consultation with relevant agencies and experts and a review of applicable laws and regulations. Derived based on how the project will interact with the environment, identify stakeholders

Dimensions for impact categorizations include:

- Magnitude and Frequency
- Mitigation Measures
- Duration
- Spatial distribution
- Reversibility
- Positive/Negative effects
- Likelihood of occurrence

Reporting: EIA Report: Geared for the stakeholders and decision makers

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Review and Licensing:

Factors to consider, within ICT sector:

✓ Type Approval Status of Equipment (EMF, RF Power, Technology (waste))

Review and Licensing:

Factors to consider, within ICT sector:

✓ Telecommunication Infrastructure Sharing

Review and Licensing:

Factors to consider, within ICT sector:

✓ e-waste framework (circular economy)

Review and Licensing:

Factors to consider, within ICT sector:

✓ Alternative technology

Review and Licensing:

Factors to consider, within ICT sector:

EMF (Baseline and Projections)

Review and Licensing:

Factors to consider, within ICT sector:

✓ Co2 Reduction Efforts

Review and Licensing:

Factors to consider, within ICT sector:

✓ Power sources

Review and Licensing:

Factors to consider, within ICT sector:

Project Materials and Processes (sustainable Alternatives if they exists)

bamboo; recycled plastic bricks; recycled steel for masts

✓ Manual vs machine operated processes

- \Rightarrow Checklists: to do list and possible effects
 - a) Simple- Where a list of activities is drawn up against which, the aspects it will impact is written down.
 - a) Descriptive- Along with the aspects, information on how this aspect is affected is written down. This is where levels of impact is considered.
 - a) Scaling- Against each impact, a scale of 1-3 is used to quantitatively estimate the impact (completely subjective).

 \Rightarrow Questionnaire: set of questions to be administered to stakeholders/experts

 \mathfrak{H}

⇒ Matrices: Table showing link between activity and impact identifies the environmental factors that the project may impact and the potential effects of those factors.

Sample matrix

No.	Activitity		Significance		
		No Effect	Beneficial Effect	Moderate Negatives Effect	Adverse Effect
1.	Excavation			~	
2.	Transportation of equipment and Material			~	
3.	Installation of equipment	~			
4.	Operation of equipment		~	~	
5.	Disposal of equipment				~

 \Rightarrow Networks : Diagram depicting cause and effect from proposed project activities

Illustrates and helps in understanding of primary, secondary and tertiary impacts of a developmental activity.

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Takes form of radiation diagrams or flow chart

⇒ Map overlays: Transparent maps Each representing the spatial distribution of an environmental characteristic, Intensity of impacts is presented by colour shading

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⇒ Geospartial tools : Set of technologies for acquiring, processing, storing and visualizing geographical(location) and spatial(topography and usage) data e.g. GIS, GPS, Remote Sensing, geofencing

⇒ Task-specific computer modelling: quantified effects developed into a mathematical algorithm, useful when many complex links exists between actions and effect on environment ; and handling of large quantities of data

 \Rightarrow **Expert Systems**: knowledge from human experts collated in a computer based system

5. Salient EIA Report Contents

- * Sources of Impact
- * Project Inputs
- * Project Activities
- * Areas of Impact on the Natural and Human Environments
- * Environmental Impacts (General Impacts on the Natural and Human Environment)
- * Environmental Guidelines and Standards (National Legislation, International guidelines. International Conventions and Treaties)
- * Mitigation Measures, Environmental Management Plan

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☑ Effectiveness of the EIA system

EIA reports contain a section on Environmental Management Plan that involves monitoring the measures put in place to mitigate against adverse environmental effects.

From this data it could be established whether the EIA system is functioning as per expectations and lessons learnt could aid in improvement of the process.

Provides Data for SEA

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POLICY & PLANNING

Control of Projects and their Environmental Impact

Data derived from EIA helps shape the project activities in so far as executing them in a way that is least detrimental to the environment.

Improve scientific and technical knowledge (modelling and simulations, prediction models, engineering designs)

Automation of environment impact assessment requires training of computer models using data from real EIA. The EIA data and the data from Environmental Management Plan act as training data from computer models thus increasing their precision in prediction.

Improve public awareness and acceptance

Data Collection during EIA provides the public with factual information about the impact of the project on the environment, this enhances public awareness and increases public buy in on projects due to quantification of project impact.

Compliance with Legal and regulatory requirements

EIA reports identify all applicable legal and regulatory requirements and therefore mitigations measures are set taking cognisant of existing Legal and regulatory requirements

Make informed decisions

Regulatory agencies responsible for approving projects rely on factual data from EIA and analysis of adequacy of mitigation measures and environmental management plan. This are vital for arriving at an informed decision.

Forecasting the possible environmental changes, society, and economy once the project is underway.

EIA data provides a crystal ball of how the environmental will be during and after implementation of the project. This helps the affected communities or government institutions in planning future social economic programs or projects in the area.

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