Artificial Intelligence Implementation Process into ESIA Permitting System

Case Study from Nigeria (RAAMP Project)

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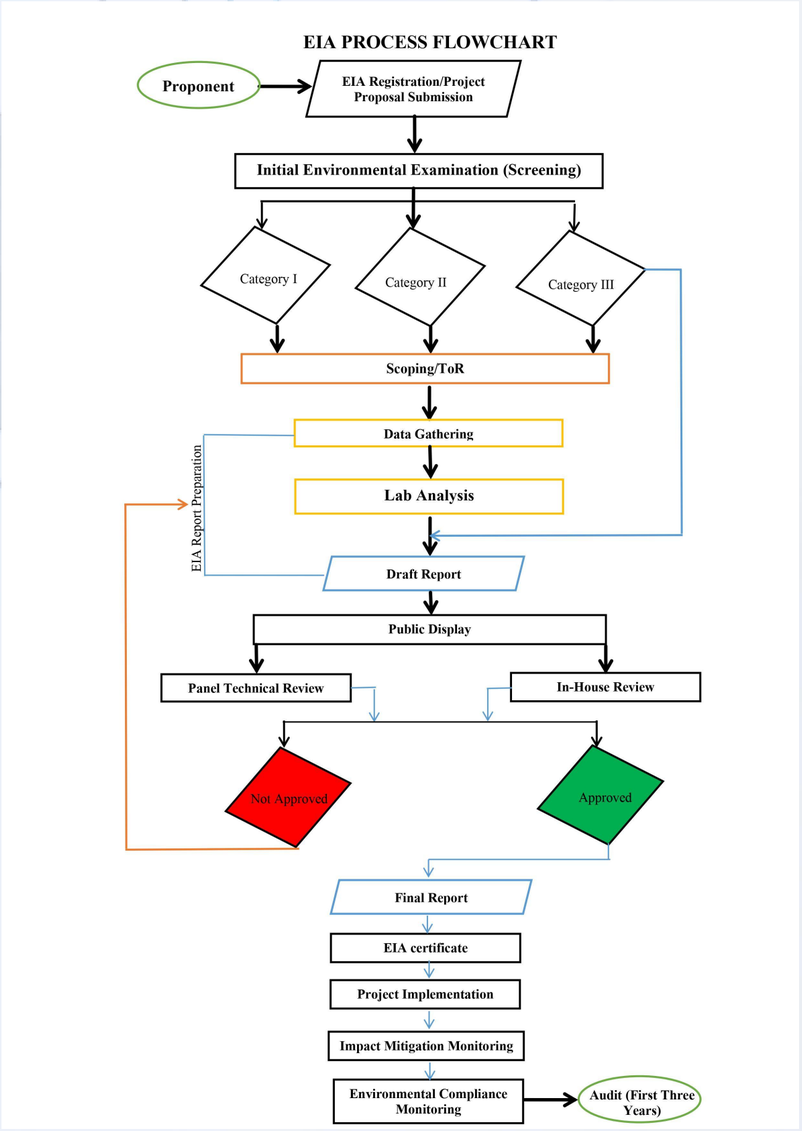
Background



ESIAs are fundamental for ensuring sustainability in development projects.

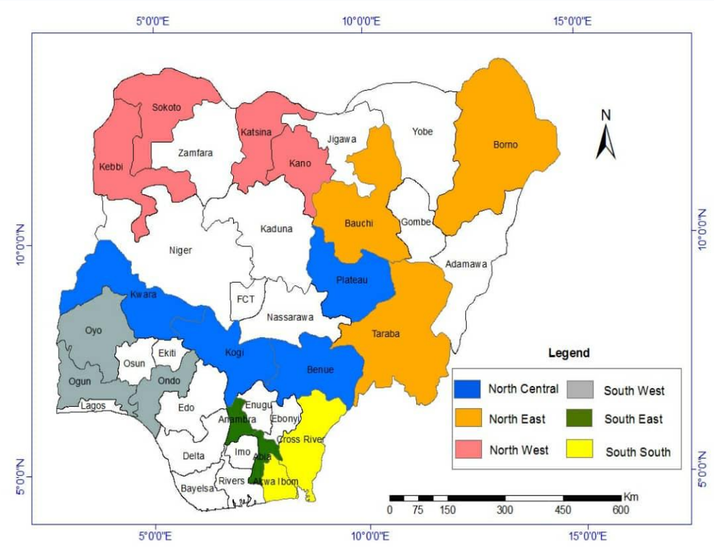
Traditional ESIAs are faced with challenges such as Fragmented data flows, limited transparency, inadequate Data collection and utilization.

The Need for Innovation due to growing infrastructure projects in developing countries in Africa demand faster, more reliable, and more inclusive ESIA processes.

Development of an AI-based institutional permitting platform for ESIA and SEA processes

Project Case Study

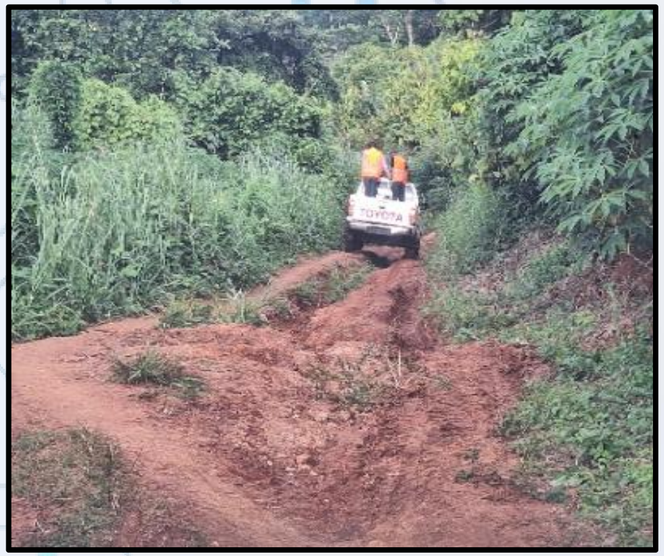
The Rural Access and Agricultural Marketing Project (RAAMP) is structured around four strategic components, each designed to address critical gaps in rural infrastructure, governance, and sustainability in Nigeria.



The project is implemented across 19 participating states, with the objective of improving rural connectivity and agricultural value chain efficiency through both physical infrastructure and institutional reform.

Rehabilitation of rural roads, with targets of up to 160 km per state, and Upgrading of agro-logistics centers

Pilot Context: RAAMP Project – Nigeria

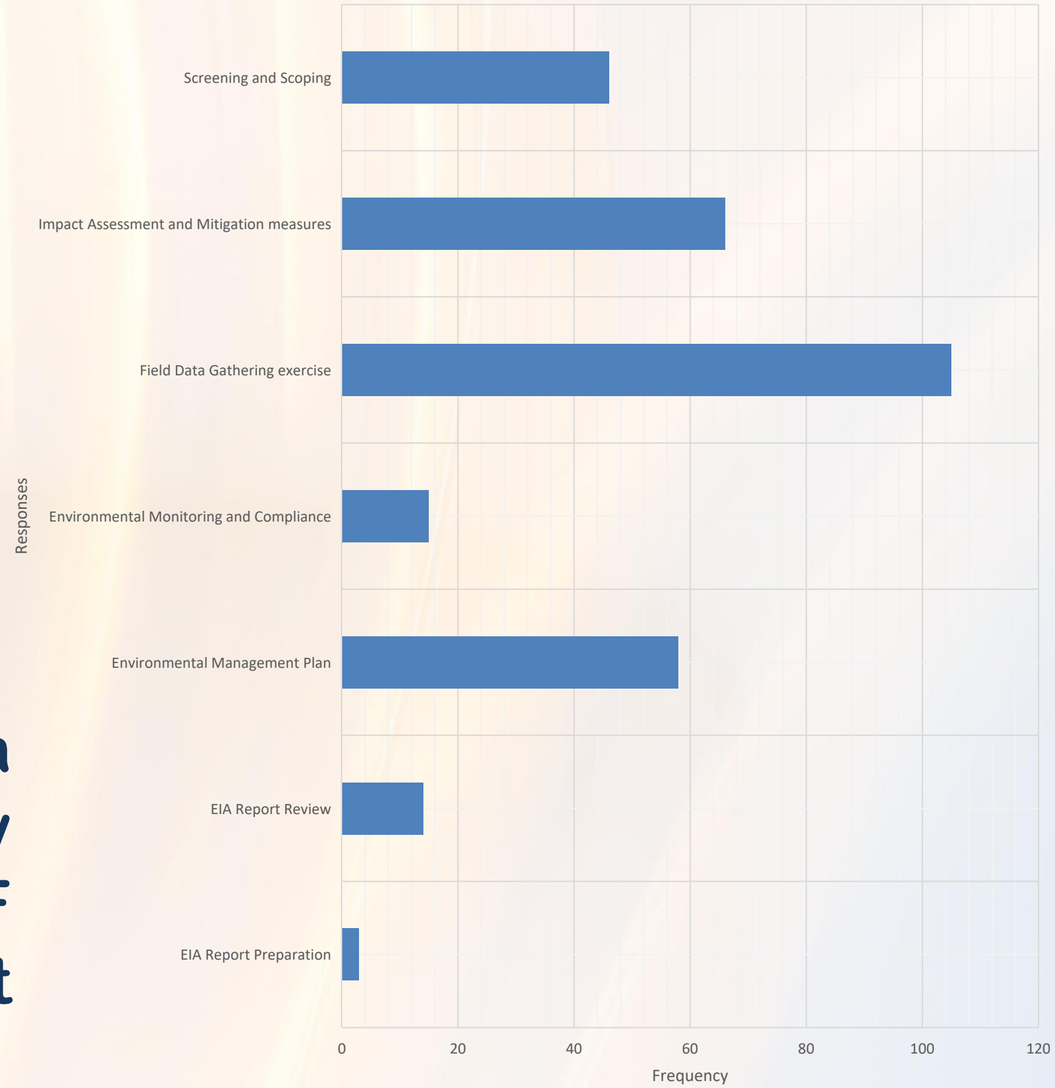


Data Collection Protocol

Semi-structured surveys (N=307) across three target **groups**: regulatory officials, ESIA practitioners, and civil society actors

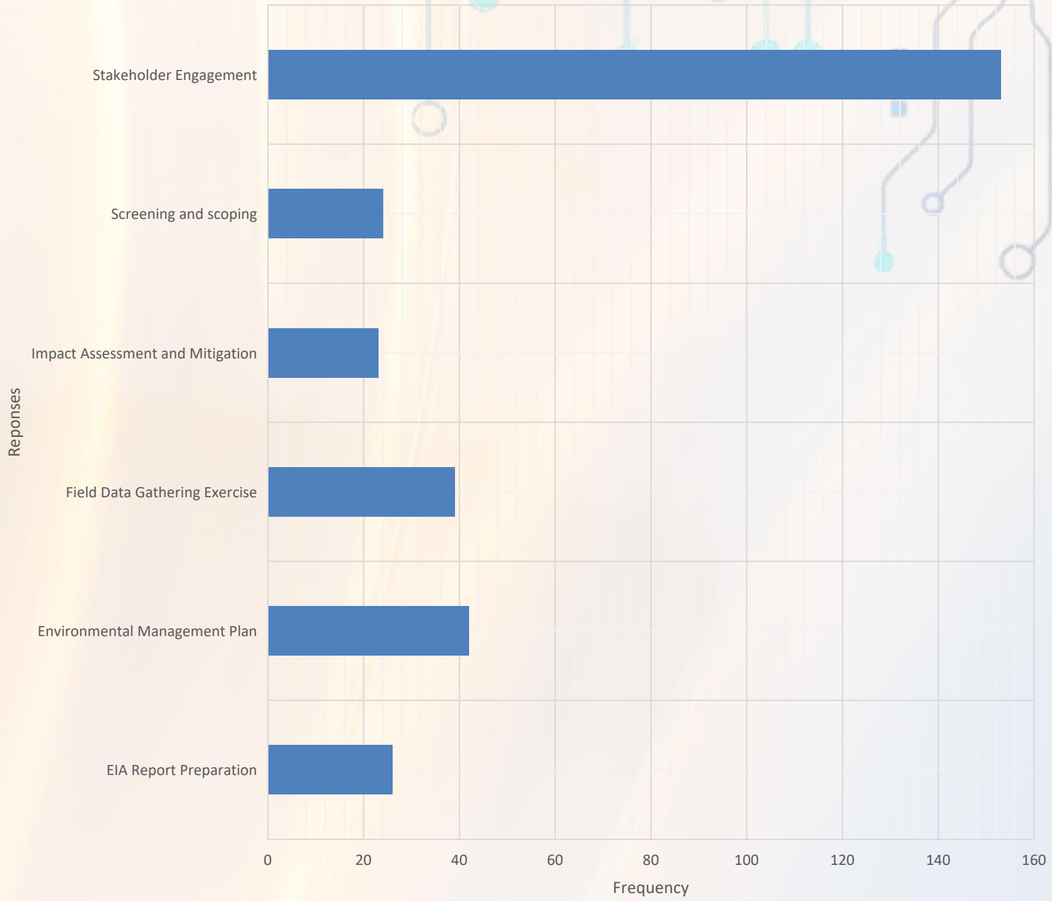
Project performance data collected through digital monitoring of RAAMP infrastructure and logistics components.

Environmental and Social Baseline Data derived from remote sensing, community feedback loops, and state-level ESMF (Environmental and Social Management Frameworks).



Discussion of Result: Stakeholders Perception

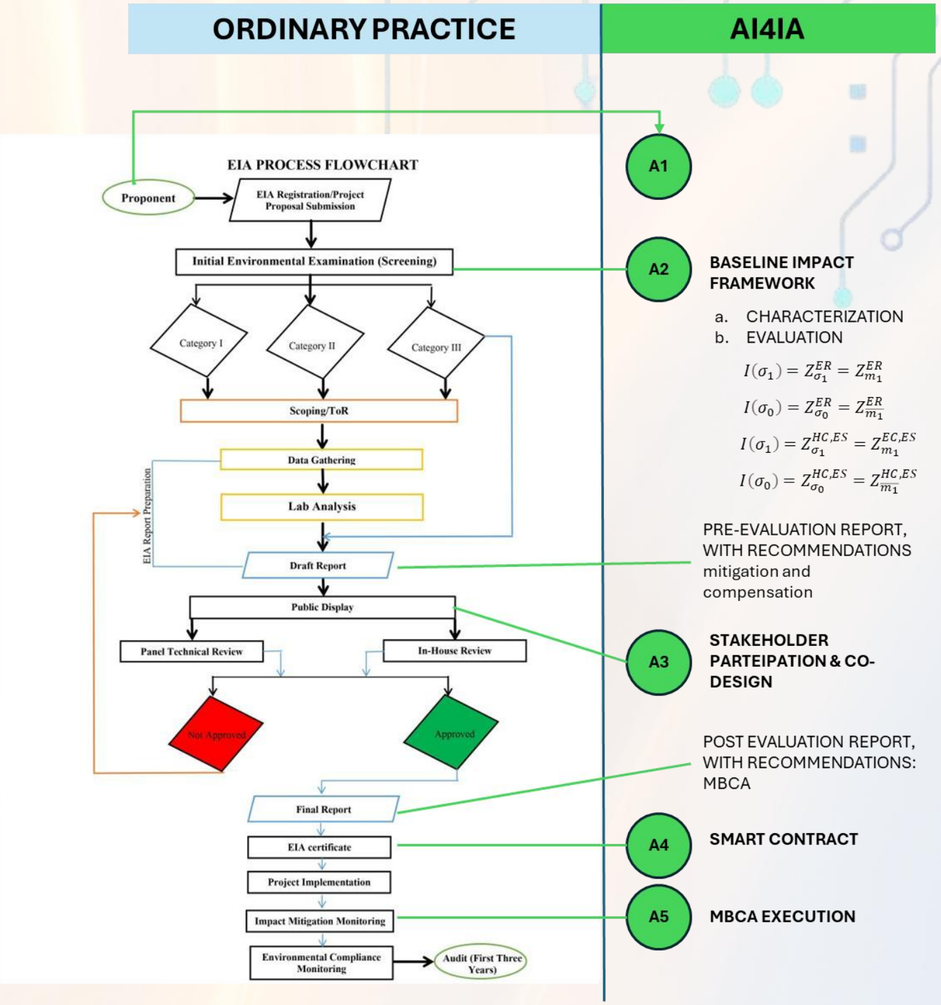
- ✓ The most frequently mentioned application of AI is in the field data gathering exercise. This stage is critical as it forms the foundation upon which the entire EIA process is built.
- ✓ The overwhelming majority of participants (286 out of 307, or 93.2%) reported being familiar with the concept of AI. This suggests that AI is a well-known and understood topic among the surveyed population.
- ✓ While AI can assist in organizing and analyzing feedback, it lacks the human touch necessary for building trust, understanding subtle cues, and fostering meaningful dialogue.



Discussion of Result: AI4IA System Architechture

The AI4IA permitting platform is structured into five sequential implementation phases

- ✓ **Phase A1 – Institutional Training and Agreement Framework**
- ✓ **Phase A2 – Characteriation of the territory and Sustainability mapping**
- ✓ **Phase A3 – Stakeholder Co-Design of Functional Specifications**
- ✓ **Phase A4 – System Implementation and Beta Calibration**
- ✓ **Phase A5 – Adaptive Monitoring and Performance Analytics**



Discussion of Result: Institutional Rediness

- ✓ AI Awareness among stakeholders reached, with. expressing confidence in AI-enabled permitting systems.
- ✓ Perceived limitations included digital literacy gaps, data privacy concerns, and inconsistent access to IT infrastructure at local levels.
- ✓ The co-design process enhanced stakeholder trust, particularly among rural community leaders and women' and cooperatives impacted by Component B interventions.

Conclusion

AI4IA Strengthened Core Areas

- ✓ Decision-Making: Faster, evidence-based approvals and monitoring.
- ✓ Predictive Mitigation: Smarter, proactive impact management.
- ✓ Stakeholder Trust: Higher transparency and participatory governance.

Future Directions

- ✓ Expand AI4IA integration with national platforms like NiRTIMS and NiMet Data Base.
- ✓ Scale the permitting model into new sectors: renewable energy, extractive industries, and beyond.

Let’s continue the conversation!

Message me your questions or comments in the IAIA25 app.

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