

Development of a web portal for EIA with AI tools: A potential game changer for EIA Practice in Nepal



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Chairperson,

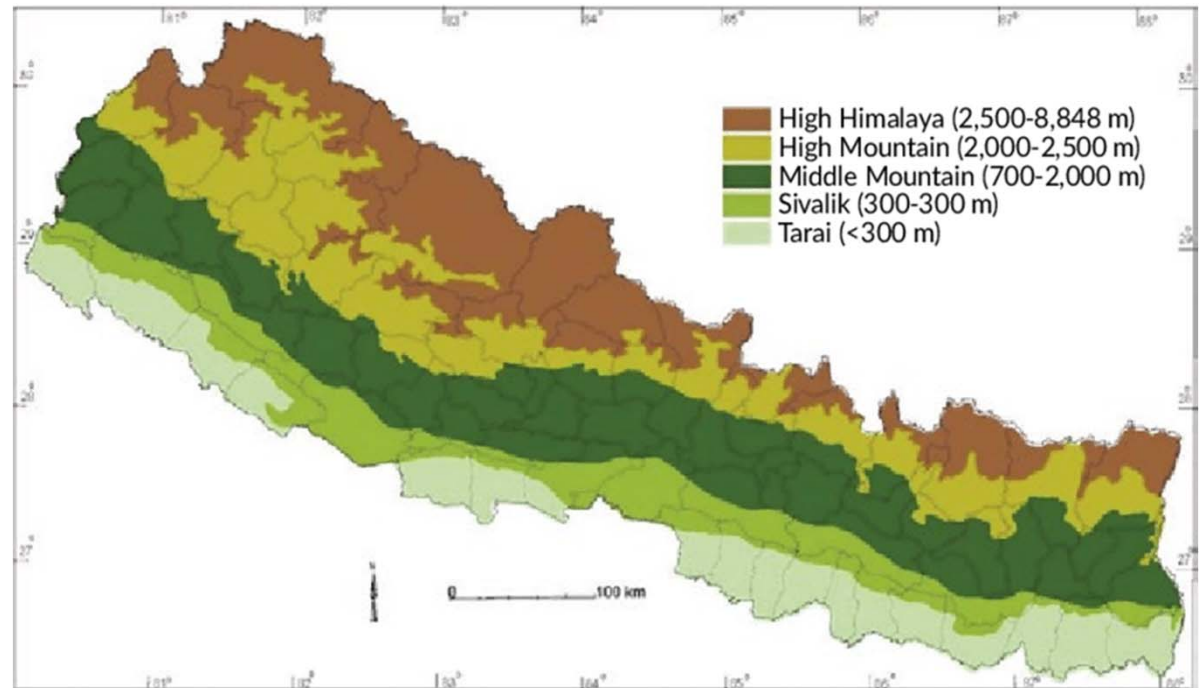
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Introduction

- Nepal is a Himalayan country of great diversity in geography, climate, ethnicity and language.
- Nepal is a developing country, so environmental and social impact assessment is crucial for its sustainable development.
- Nepal's estimated hydroelectric potential is 83,000 megawatts.



Evolution of EIA in Nepal

1980s • Concept of EIA introduced in major infrastructures projects

1993 • Environmental Impact Assessment Guidelines

1996 • Environment Protection Act

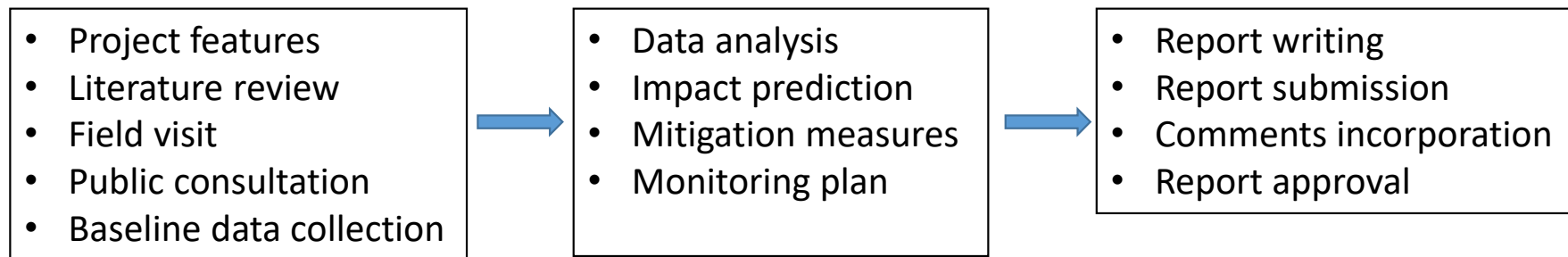
1997 • Environment Protection Rules

2019 • Environment Protection Act

2020 • Environment Protection Rules

Current EIA Practice

The Environment Protection Rules 2020 have set a framework for EIA report.



EIA Process

Major Challenges of Current EIA Practice in Nepal

- EIA is a tedious job.
- Time-consuming (often blamed for delaying projects).
- Costly human resources
- Capacity-building requirements (Gap between the University curriculum and EIA practice).



The **Government of Nepal's** concept paper on AI encourages the adoption of **AI technology** in various sectors and governance (July 2024).



NAIA envisions a web application with AI tools to overcome these challenges in the EIA practice in Nepal.

Solution to the challenges of the EIA practice in Nepal

The Automated EIA (Auto-EIA) Tool can be used in the drafting process of the EIA Report:

- To provide a working virtual platform with templates and tools in a web portal,
- To coordinate with each other in a multidisciplinary team,
- To make it easy for feedback/comments on the draft report from stakeholders,
- To supervise the work progress in real time,
- To overcome the time-consuming process, reduce human hours and costs.

Environmental Impact Assessment (EIA) Tool

Evaluate the potential environmental effects of proposed projects before implementation.
Identify positive and negative impacts, recommend mitigation measures, and promote sustainable development.

[Get Started](#)

Laws and Legislation Revolving Around EIA

In Nepal, Environmental Impact Assessments (EIAs) are governed by key legislation such as the Environment Protection Act, 2076 (2019), and the Environment Protection Regulations, 2077 (2020). These laws ensure compliance with environmental safety and sustainability standards.

Globally, EIAs are supported by frameworks like the Rio Declaration, Espoo Convention, and European Union EIA Directive, which emphasize public participation and environmental accountability.

[Learn More](#)

Why Choose Our Tool?

Efficiency & Cost Savings

Accelerates EIA completion, reduces costs, and streamlines project approvals.

Accuracy & Consistency

Processes large datasets with high precision and produces regulation-compliant reports.

Better Decision-Making

Simulates scenarios, predicts outcomes, and suggests optimized mitigation strategies.

Risk Management

Ensures regulatory compliance and flags potential risks early.

Accessibility

User-friendly interfaces and cloud-based tools enable remote collaboration.

Stakeholder Engagement

Visualizations and clear reporting enhance communication and transparency.

Scalability

Handles multiple projects efficiently, ideal for diverse portfolios.

[Learn More About Us](#)

Get Started with Our EIA Tool Today!

Join our community of users who are already making an impact with efficient Environmental Impact Assessments. Register now or log in to begin your journey towards sustainable development.

[Sign Up](#)[Login](#)

How does Auto-EIA Tool work?

Identification of Variable Data and Sample Section Compilation

Each section of an EIA report contains specific variable data that is identified and interpreted by IA professionals. The tool utilizes a structured approach to extract and integrate these variables:

- **Expert Identification of Variables:** IA professionals determine key data points required for each section of the EIA report.
- **Sample Section:** Numerous sample reports from government agencies responsible for EIA approval are analyzed to establish baseline structures and content expectations.
- **Automated Sample Section Generation:** Using the identified variables and curated samples, a standardized framework for EIA reporting is established within the tool.

How does Auto-EIA Tool work?

Contd.

Data Entry and Report Generation with Open AI Integration

- Users enter project-specific variable data into designated fields within the tool.
- The backend system structures the entered variable data and integrates it into predefined section templates.
- A coding mechanism feeds this structured data into OpenAI, generating a report section based on trained AI models.
- The AI-generated section is formatted and displayed on the tool's interface for review.

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CHAPTER 1: INTRODUCTION -

Project Proponent -

1.1 Project Proponent

Proponent Name

Project Name

Issuing Authority

Survey License Issue Date (BS)

Survey License Issue Date (AD)

Survey License Validity Date (BS)

Survey License Validity Date (AD)

Reference to Survey License (Annex Number)

Address of the Project Proponent:

Address

Telephone Numbers

Fax Number

P.O. Box

View Sample PDF

Generated Text:

1.1 Project Proponent
Nepal Electricity Authority is the proponent of the proposed Kali Gandaki Corridor 220 kV Transmission Line Project. The Ministry of Energy (MoE) has granted a survey license for Kali Gandaki Corridor 220 kV Transmission Line Project to Nepal Electricity Authority on 2068/12/08 (March 21, 2012). The license is valid up to 2070/12/07 (March 21, 2014). A copy of the survey license is attached in Annex I.

Address of the Project Proponent:
Nepal Electricity Authority
Durbarmarg, Kathmandu
Tel: 01-415 3045, 415 3055
Fax: 01-415 3013
P.O.B. 10020, Kathmandu

Generate Document

Commenting System:

- **User Comments:** Stakeholders and reviewers can add comments on specific sections to suggest improvements or highlight missing information.
- **Expert Review Integration:** Experts can review and incorporate feedback before finalizing the report.
- **Approval Workflow:** The tool tracks modifications, ensuring transparency and compliance with regulatory requirements.

Translation System:

- Inbuilt Translator for specific content that is needed in Nepali language
- This model can be used for other languages too.

EIA Tool

Home Legislative About Dashboard File Unit Converter Translator Formula Logout

Nepali-English Translator

Nepal Electricity Authority is the proponent of the proposed Kali Gandaki Corridor 220 kV Transmission Line Project. The Ministry of Energy (MoE) has granted a survey license for Kali Gandaki Corridor 220 kV Transmission Line Project to Nepal Electricity Authority on 2068/12/08 (March 21, 2012). The license is valid up to 2070/12/07 (March 21, 2014). A copy of the survey license is attached in Annex I.

English to Nepali

Translate

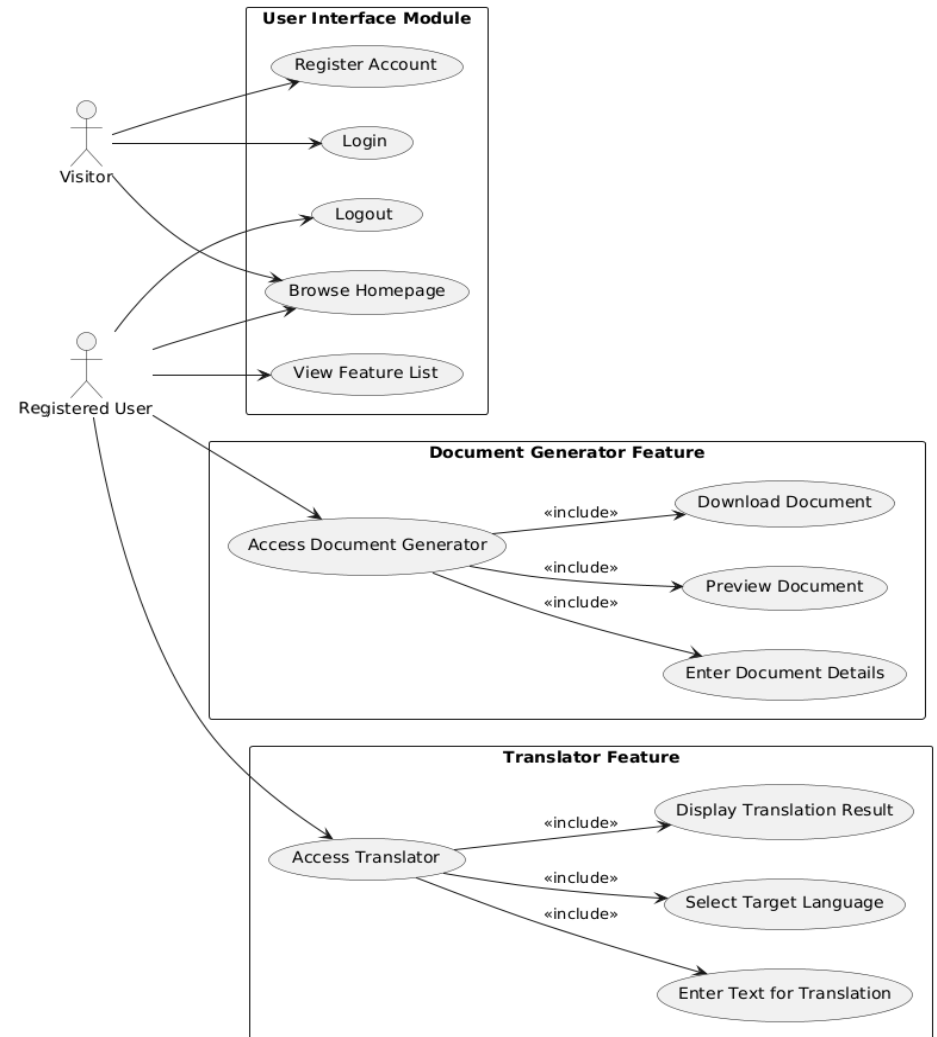
Translated Text:

नेपाल विद्युत प्राधिकरण प्रस्तावित काली गण्डकी करिडोर २२० केभी प्रसारण लाइन परियोजनाको प्रस्तावक हो। ऊर्जा मन्त्रालयले २०६८/१२/०८ (मार्च २१, २०१२) मा नेपाल विद्युत प्राधिकरणलाई काली गण्डकी करिडोर २२० केभी प्रसारण लाइन परियोजनाको लागि सर्वेक्षण इजाजतपत्र प्रदान गरेको छ। यो इजाजतपत्र २०७०/१२/०७ (मार्च २१, २०१४) सम्म मान्य छ। सर्वेक्षण इजाजतपत्रको प्रतिलिपि अनुसूची १ मा संलग्न गरिएको छ।

Frontend Workflow:

Frontend handles three key components including the following:

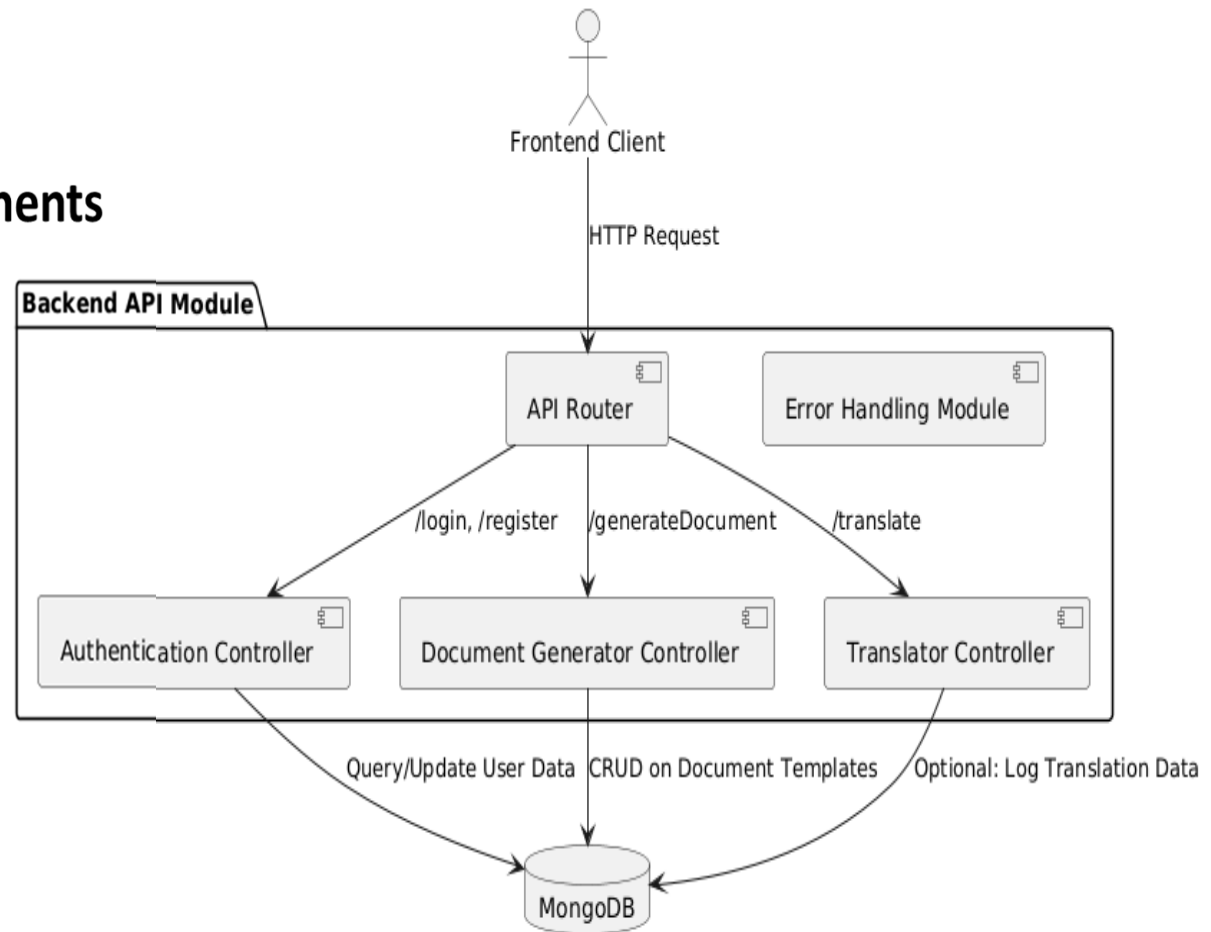
- User Interface Module
- Document Generator Feature
- Translator Feature



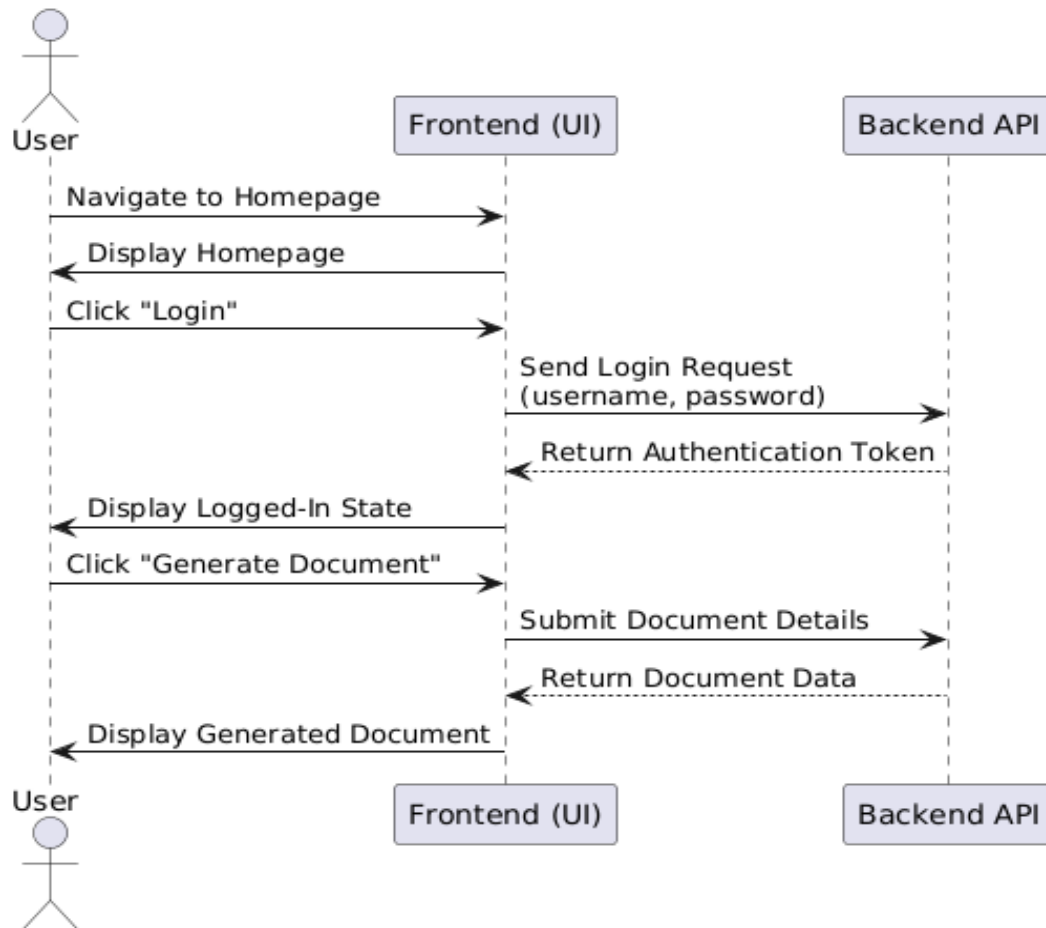
Backend Workflow:

Backend handles four key components including the following:

- Authentication Controller
- Document Generator Controller
- Error Handling Module
- Translator Controller



Sequence Diagram



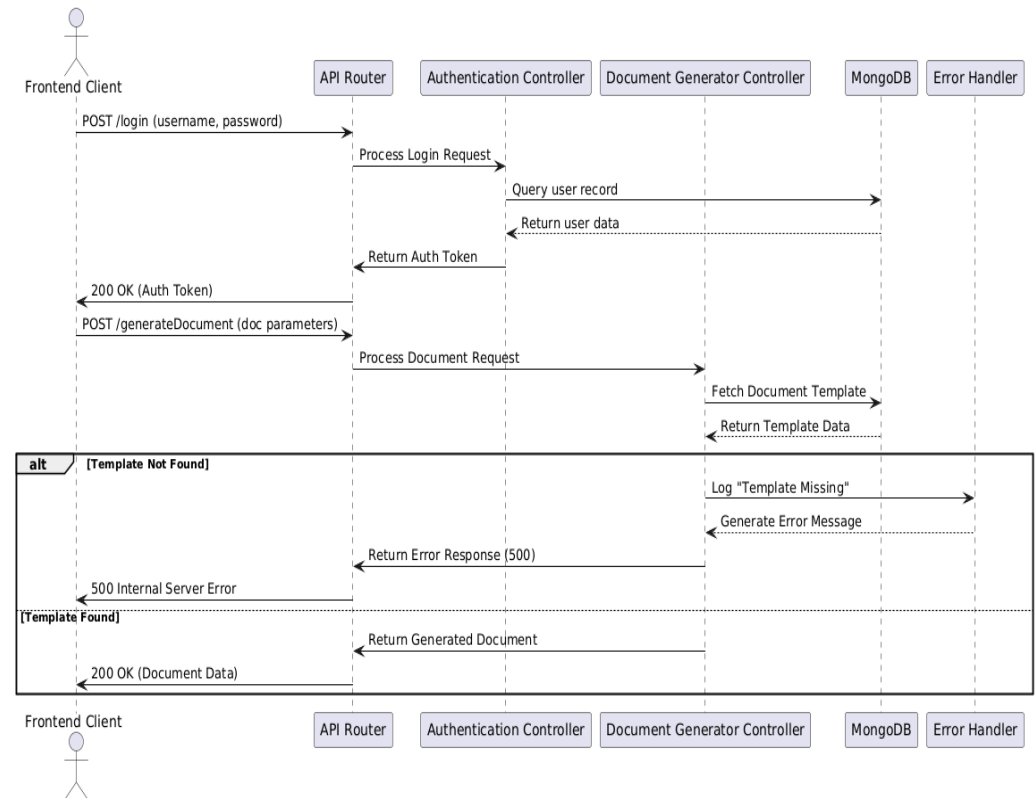
The Sequence Diagram shows what the user experience consists of. The two major components of the sequence of works include:

- **Frontend User Interface (UI)**
- **Backend Application Programming Interface (API)**

Error Flow and Processing Logic:
The error flow and processing logic allows the tool to guide the Frontend client through the following steps:

- Frontend UI
- API Router
- Authentication Controller
- Document Generator Controller
- Database Manager (MongoDB)
- Error Handler

Error Flows and Processing Logic



Limitations of the Auto-EIA Tool

- **Depends on Correct Data Entry**

If users enter wrong or incomplete data, the report will be inaccurate.

- **One Format Doesn't Fit All Rules**

The tool may not match different countries or regions legal requirements.

- **No Built-In Rule Checker**

It doesn't automatically check if the report meets legal or environmental standards.

- **No History Tracking**

It doesn't keep a record of changes made to the data or report over time.

Problems and Challenges

- **Legal:** Amendments in the existing environmental laws adopting AI in the EIA practice.
- **Financial:** Lack of funding for further development of this prototype version.
- **Psycho-social:** Fear of AI and acceptance by the IA professional community itself.

Conclusion

AI technology will soon change the IA practice, like other sectors. The proposed Web portal, equipped with the Auto-EIA tool, will empower IA practitioners for their capacity building in Nepal.



Let's continue the conversation!



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