

# MATALAS

An AI Augmented Geospatial Tool for  
Environment and Social Screening and Scoping



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*<https://www.adb.org>*





# Our Mission

The Asian Development Bank (ADB) envisions a prosperous, inclusive, resilient, and sustainable Asia and the Pacific, while sustaining its efforts to eradicate extreme poverty in the region.

## Strategic Focus Areas



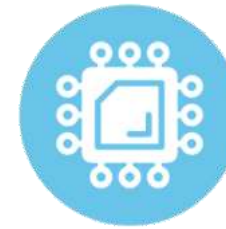
Climate  
Action



Private Sector  
Development



Regional  
Cooperation &  
Public Goods



Digital  
Transformation



Resilience &  
Empowerment



# Introducing **ADB Safeguards**



## **E&S Safeguards Management**

Ensure that environment and social impacts are properly management in all ADB-funded projects



## **Implementation of Frameworks**

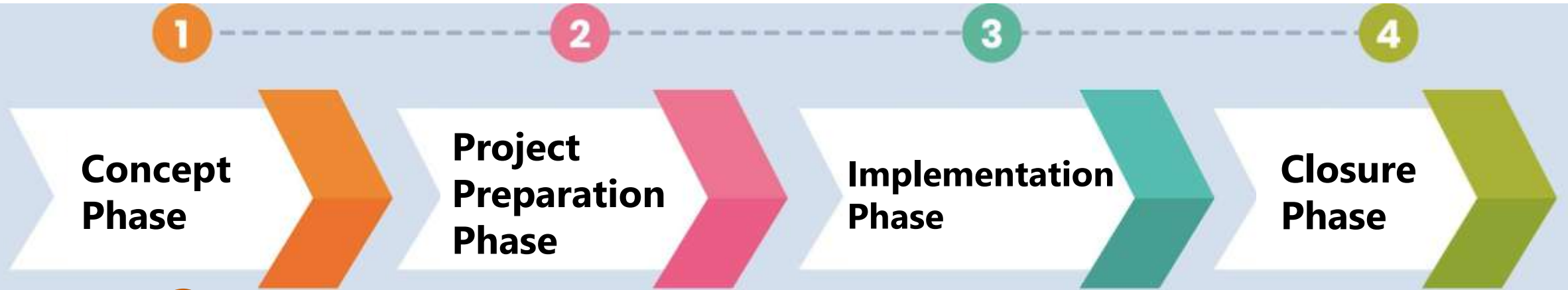
Operation involves comprehensive policies, procedures, and tools to assess, mitigate, and monitor potential adverse effects on environment and communities



## **Promote Sustainable Development**

Integrate safeguards into project planning and implementation thereby protecting people and environment from harm

# Safeguards in the ADB Project Life Cycle



## Risk Classification / Screening & Categorization

An internal process to assess the risks and identify mitigating measures for implementing the project. This is a collaboration of the Safeguards Specialist, Project Team Leader, and respective Directors



# Safeguards Tools



## **Integrated Safeguards Management System**

One-stop-shop App that centrally manages E&S business process, milestones, documents, monitoring reports, indicators, and complaints.

**MATALAS**

## **MATALAS Geospatial Screening Toolkit**

A geospatial toolkit for mapping geolocations and performing analysis on ADB projects and various map layers including protected areas.

**ADBGenie**

## **ADB Genie AI-powered Assistant**

A collection of LLM powered agents, including safeguards, that takes knowledge on ADB operations to assist in document review and generation.

# A Day In a Life of a Safeguards Specialist

Meet Brian ...

a newly hired Safeguards Specialist at ADB. He received an email from the ISMS



Hi Brian,

An E&S safeguards task with the following details has been assigned to you.



**Project** Nepal : Kathmandu Valley Water Supply Improvement Project

**Task** Screening & Categorization – Environment Specialist Review

**Due Date** **May 4, 2025**

How will I be able to  
accomplish a  
screening and  
categorization of the  
project in just **1 day !!!**

Simple !!!  
Use **MATALAS**  
and **ADBGenie**





A map of Asia and Oceania, including India, China, Southeast Asia, and Australia. The map is covered with numerous colored circles of varying sizes, representing the geolocations of ADB projects from 2010. The colors correspond to different project sectors: blue for water and urban infrastructure, red for transport, orange for ICT, light blue for energy, and green for agriculture and rural development. The circles are densely packed in India and China, and more sparsely distributed in Southeast Asia and Oceania.

MATALAS

A SMART AT HOME/ABROAD TOOL FOR RISK AND SCORING

- Water and other urban infrastructure and services
- Transport
- Information and communication technology
- Energy
- Agriculture, natural resources and rural development



## View All Project Geolocations

All ADB projects' geolocation (points, lines, and polygons) from 2010 are digitized and made available for analysis





PROJECT  
INFORMATION

PROJECT  
TEAM

SITE  
LOCATIONS

ANALYSIS

Number 34304-043

Name Kathmandu Valley Water Supply Improvement Project

Country NEP

Division

Modality Loan

Sector Water and other urban infrastructure and services

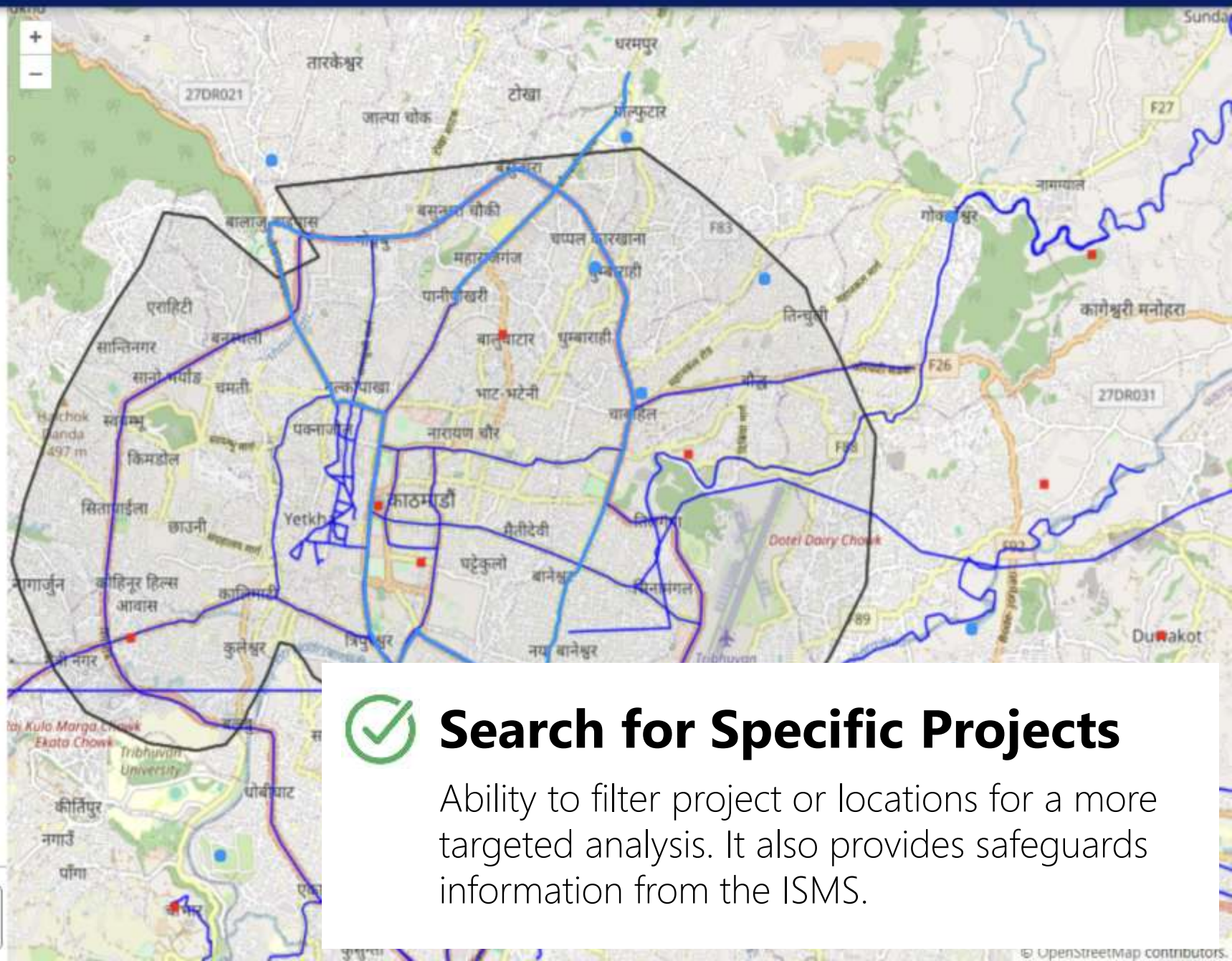
Status Processing

Link <https://www.adb.org/projects/34304-043/main>

Environment B

Indigenous People C

Involuntary Resettlement B



## Search for Specific Projects

Ability to filter project or locations for a more targeted analysis. It also provides safeguards information from the ISMS.





PROJECT  
INFORMATIONPROJECT  
TEAMSITE  
LOCATIONS

ANALYSIS



POINT



LINE



POLYGON

Points:



Reservoir A



Pumping Station



Reservoir B



Filtering Plant



Lines:



Main Line A



Distribution Line



Polygons:

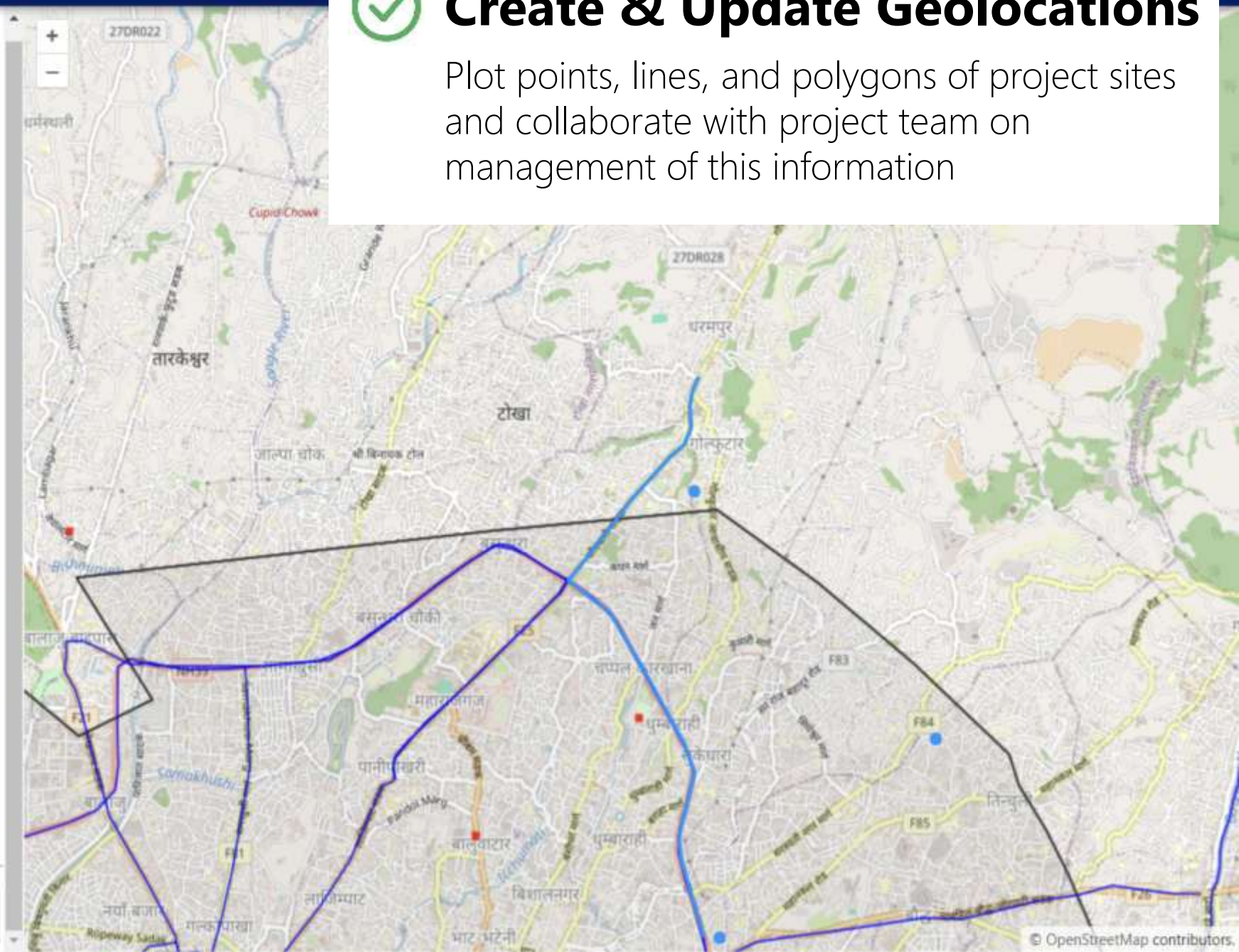


-



# Create & Update Geolocations

Plot points, lines, and polygons of project sites and collaborate with project team on management of this information







PROJECT  
INFORMATION



PROJECT  
TEAM



SITE  
LOCATIONS



ANALYSIS

25

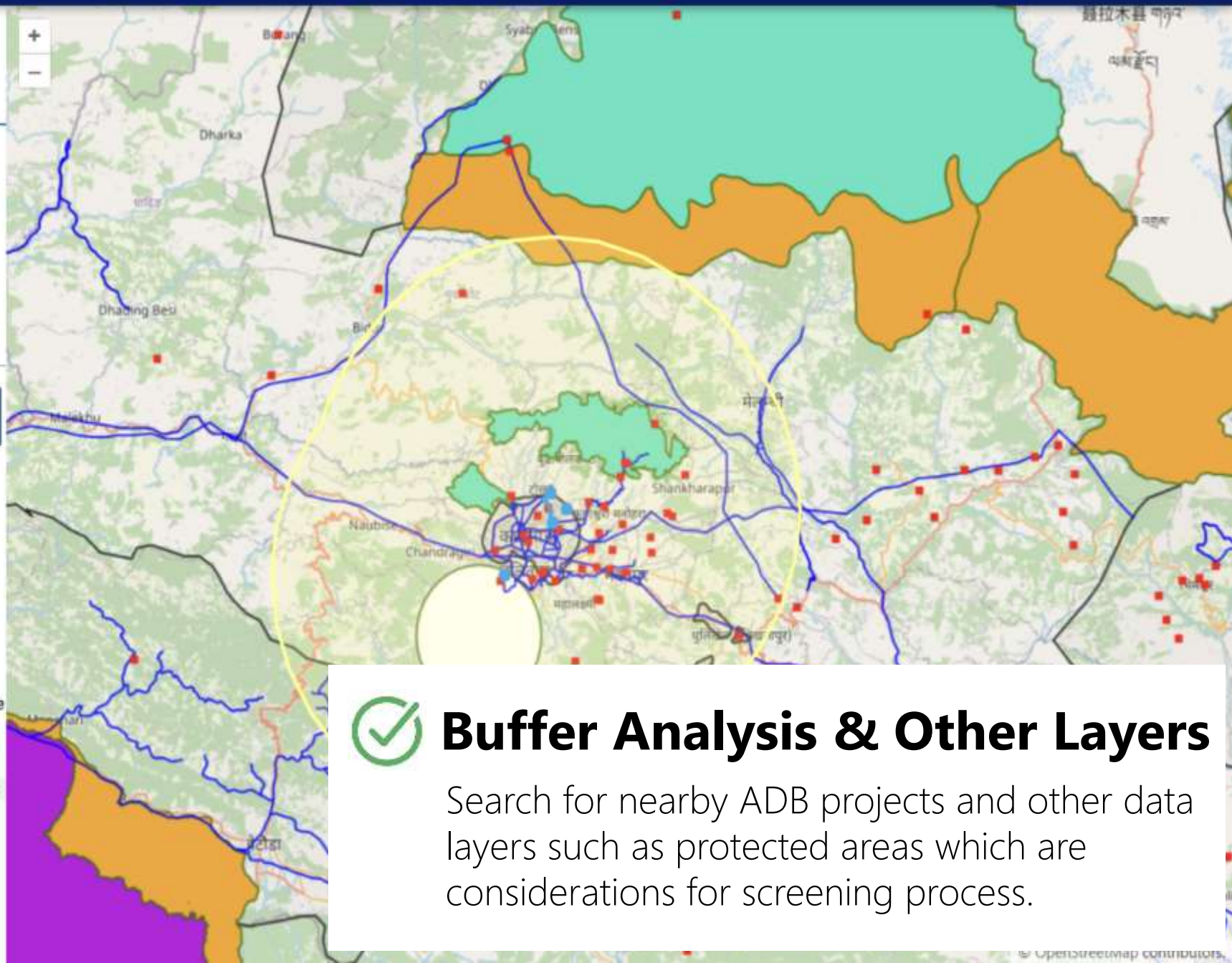
Found 9 projects within 25 km.

SHOW DETAILS

#### WORLD DATABASE ON PROTECTED AREAS (WDPA)



- IUCN Cat Ia: Strict Nature Reserve
- IUCN Cat Ib: Wilderness Area
- IUCN Cat II: National Park
- IUCN Cat III: Natural Monument or Feature
- IUCN Cat IV: Habitat/Species Management Area
- IUCN Cat V: Protected Landscape/Seascape
- IUCN Cat VI: Protected area with sustainable use of natural resource
- IUCN Cat: Not applicable, not assigned, or not reported



## Buffer Analysis & Other Layers

Search for nearby ADB projects and other data layers such as protected areas which are considerations for screening process.



Nearby projects

Name	Number	Country	Sector	Division	Modality	Status	Link	Environment	Indigenous People	Involuntary Resettlement
Prevention and Control of COVID-19 through WASH and Health initiatives in Secondary and Small Towns	55060-001	NEP	Water and other urban infrastructure and services		Grant	Processing	<a href="https://www.adb.org/projects/55060-001/main">https://www.adb.org/projects/55060-001/main</a>	B	B	B
Electricity Grid Modernization Project – Additional Financing	54107-002	NEP	Energy		Loan	Processing	<a href="https://www.adb.org/projects/54107-002/main">https://www.adb.org/projects/54107-002/main</a>	B	B	B
Project Preparatory Facility for Energy	47036-001	NEP	Energy		Grant	Processing	<a href="https://www.adb.org/projects/47036-001/main">https://www.adb.org/projects/47036-001/main</a>	C	C	C



Analyze Impacts of Related Projects

Use all operations and safeguards documents of nearby projects for analysis on potential impacts and risk of the project being screened.

	B	C	B
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## Safeguard Documents

See also: Safeguards →

Safeguard documents provided at the time of project/facility approval may also be found in the list of linked documents provided with the Report and Recommendation of the President.

Title	Document Type	Document Date
Electricity Grid Modernization Project: Social Monitoring Report (January-June 2024)	Social Monitoring Reports	Jul 2024
Electricity Grid Modernization Project: Environmental Monitoring Report (January-June 2024)	Environmental Monitoring Reports	Jul 2024
Electricity Grid Modernization Project: Social Monitoring Report (January-June 2023)	Social Monitoring Reports	Jul 2023
Electricity Grid Modernization Project: Environmental Monitoring Report (January-June 2023)	Environmental Monitoring Reports	Jul 2023
Electricity Grid Modernization Project: Environmental and Social Monitoring Report (July-December 2022)	Environmental and Social Monitoring Reports	May 2023
 <b>Analyze Impacts of Related Projects</b> Use all operations and safeguards documents of nearby projects for analysis on potential impacts and risk of the project being screened.	Environmental and Social Monitoring Reports	Nov 2022
	Environmental and Social Monitoring Reports	Nov 2022
	Environmental Monitoring Reports	Mar 2022
	Environmental Monitoring Reports	Jun 2021
	Environmental Monitoring Reports	Jun 2021

Great!

I now have tons of information about the **geolocation features** of the proposed Kathmandu Valley Water Supply Improvement Project and **surrounding projects and protected areas**

I now have to prepare the **Environmental Checklist** to understand if there are specific considerations for this project.  
I'll use **ADB Genie** to help me





New Genie Chat

- Intelligent Apps
- AuditGenie
- EVA
- Doc. Generator
- Library
- Collections
- Documents
- Chats

Hello, I'm ADBGenie  
How can I help you?

Environment & So...

Internal & External S...

OpenAI GPT-4

Anthropic Cla...

DeepSeek De...

Ask ADBGenie a question...

0/2000



Select an Agent & Source

Agents (like E&S Safeguards) filter the knowledge base to consult when interacting to a user prompt. Source of documents to consult is also an option

All

114,500+ documents

Climate & Disaster Risk

360+ documents

Environment & Social Safeguards

35,200+ documents

Sustainable Procurement

1,100+ documents

Transport

28,000+ documents




Agriculture, Food, Nature & Rural Development

COMING SOON



Notify Me

 New Genie Chat


Intelligent Apps

-  AuditGenie
-  EVA
-  Doc. Generator

Library

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-  Chats

 FAQ

 brafor.consultant@adb.org

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DeepSeek De...

Ask ADBGenie a question...

0/2000



## Select LLM(s) to Use



**Anthropic Claude 3**

*Strikes balance between performance and speed*



**Claude 3 Haiku**

*Extremely fast version of Claude 3*



**DeepSeek DeepThink R1**

*Able to reason effectively through hypothetical scenarios*





**Meta Llama 3**



**OpenAI GPT-4**

*Among the most widely known and performant large language models*

 Environment & Social Saf... ▾

 Internal & External Source ▾



OpenAI GPT-4 

What are the top **E&S risks** and **concerns** for the **Kathmandu Valley Water Supply Improvement Project**. Consult **safeguards documents** from **nearby ADB projects**, related documentations on **protected areas**, and **social issues** of concern.



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Based on internal and external information, the top environmental and social risks and concerns for the Kathmandu Valley Water Supply Improvement Project (project number 34304-043) can be summarized as follows:

### Environmental Risks and Concerns:

- **Impact on Water Sources and Ecosystems:** The project involves significant infrastructure upgrades, including the construction of the Melamchi tunnel and the expansion of the water treatment plant, which could potentially impact water sources and surrounding ecosystems <sup>[1]</sup>.
- **Environmental Monitoring:** Continuous environmental monitoring is necessary to ensure that the project does not adversely affect water quality and availability <sup>[2]</sup>.



### Social Risks and Concerns:

- **Resettlement and Rehabilitation:** The construction activities associated with the project can disrupt local communities, necessitating careful planning and implementation of resettlement and rehabilitation measures <sup>[3]</sup>.
- **Social Safeguard Monitoring:** Ongoing social safeguard monitoring is crucial to mitigate any adverse social impacts during the project's implementation <sup>[3]</sup>.
- **Budgeting for Social Protection:** Insights from other nearby ADB projects highlight the importance of allocating sufficient funds for social protection measures, including resettlement and rehabilitation <sup>[4]</sup>.



## Prompt -> Results

LLM must first understand what you want before it identify where to draw the information and filter the results to display.



Based on internal and external information, the top environmental and social risks and concerns for the Kathmandu Valley Water Supply Improvement Project (project number 34304-043) can be summarized as follows:

### Additional Context from Related Projects and Policies:

- **Urban Water and Sanitation Services:** The state and effects of urban water supply and sanitation facilities in Kathmandu Valley, as well as existing programs and policies, play a significant role in shaping the project's implementation and addressing related social issues <sup>[3]</sup>.
- **Protected Area Management:** The management of protected areas in Nepal, which covers nearly 24% of the country's landmass, is relevant to ensuring that the project's environmental impacts are minimized and managed effectively <sup>[4]</sup>.
- **Water Supply and Sanitation Policies:** The Kathmandu Valley Water Supply and Sanitation Sector Policy and Strategies, approved by the Government of Nepal, facilitate the implementation of the Melamchi Water Supply Project under ADB assistance, providing a framework for addressing both environmental and social concerns <sup>[5]</sup>.



### Related Projects Data

Assessments now expands to related projects that are geographically related or share similar sectoral/thematic features thus may pose similar risks and impacts.



References are great tools to validate results, verify supposed facts which domain experts has expertise on.



B

Based on the information in our knowledge base and external sources, can you please provide a screening checklist narrative on whether the project is sitting within vicinity of environmentally sensitive areas like cultural heritage site, legally protected area, wetland, mangrove, estuarine, or special area for protecting biodiversity.



Based on internal and external information, the screening checklist for the Kathmandu Valley Water Supply Improvement Project (project number 34304-043) regarding its impacts on environmentally sensitive areas can be summarized as follows:

#### Screening Checklist Narrative:

##### 1. Cultural Heritage Site:

- The Kathmandu Valley is renowned for its rich cultural heritage, housing several UNESCO World Heritage Sites. These include exceptional architectural typologies, palace complexes, temples, and stupas that illustrate the highly developed culture of the Valley, particularly between 1500 and 1800 AD [1]. The project area includes significant cultural heritage sites such as Patan Darbar Square and Kathmandu Darbar Square [2]. The project must ensure that construction and operational activities do not adversely affect these heritage sites and comply with relevant heritage conservation guidelines.

##### 2. Legally Protected Area (Core Zone or Buffer Zone):

- The project is situated in an area that includes legally protected zones. For instance, the Chure Conservation Area requires that any project activities within its vicinity adhere to the management plans and conservation measures to promote and enhance its conservation aims [3]. Ensuring compliance with these plans is crucial to mitigate any potential adverse impacts on these protected areas.

##### 3. Wetland:

- There is no specific mention of wetlands directly impacted by the project in the provided documents. However, continuous environmental monitoring is necessary to ensure that the project does not adversely affect water quality and availability [4].

##### 4. Mangrove:

- There is no specific mention of mangroves directly impacted by the project in the provided documents.

##### 5. Estuarine:

- There is no specific mention of estuarine areas directly impacted by the project in the provided documents.

##### 6. Special Area for Protecting Biodiversity:

- The project must consider the potential impacts on ecologically sensitive areas. Further biodiversity assessment and management planning are required for all project components affecting these areas to demonstrate that "no net loss of biodiversity" can be achieved through mitigation and offset measures [5].

#### Additional Context from Related Projects and Policies:

- Water Supply Deficiency:** The Kathmandu Valley faces a significant shortage of drinkable water from piped water, with Kathmandu Upatyaka Khanepani Limited (KUKL) covering only a fraction of the water demand during both dry and wet seasons [4]. This underscores the importance of the project in addressing water supply issues while ensuring environmental and social safeguards.
- Air Pollution:** The Kathmandu Valley experiences severe air pollution, primarily from transportation, household biomass use, and industrial emissions [3]. Implementing air quality management measures as part of the project could lead to significant climate co-benefits and improved public health outcomes [3].
- Disaster Risk:** The Kathmandu Valley is highly vulnerable to natural hazards such as earthquakes, landslides, and floods [3]. The project must incorporate disaster risk reduction measures to enhance resilience and minimize potential impacts on the local population and infrastructure.



Thanks for recommending to use of **MATALAS** and **ADB Genie**. It helped me carry out initial screening work for my project



That's great! Other than **validating the results**, provide **feedback** as well in the app whether the results is helpful or not. It improves responses over time

# Thank you



# Let's continue the conversation!

Message me your questions or comments in the IAIA25 app.

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**#iaia25**