

Theme Forum – April 27, 2024

The Future of the IA Profession: Transition or Transformation?

Advancing E&S Impact Assessment for Operations at the World Bank with AI Technology



Hak Joo Song

The World Bank – Environmental Specialist, Tech-for-ESF Program Lead

USA / South Korea

hsong4@worldbank.org

www.linkedin.com/in/hsong4

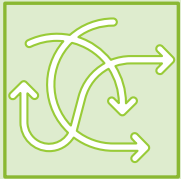
www.worldbank.org



Why does impact assessment need to change?



Difficult to get the right information at the right time, from the field (e.g. remote areas, project sites) and also from the hundreds of pages of documents.



Loss of information and reasoning for decisions through the project lifecycle



Areas with minimal available baseline information &
Areas with lots of baseline information that is not publicly available

How can we use existing technologies and make the best of them to increase the benefit and efficiency of Impact Assessment/Safeguards?

- 1. Adapting and using** existing technologies in impact assessment (being aware of the limitations)
2. Putting in place **consistent processes** and **methodologies** for impact assessment tasks (aided by technology)
3. Monitoring **emerging technologies** and look back to point 1!

Existing Technologies

that can be used for
**Impact Assessment
& Safeguards**

- a. Drones (UAVs)
- b. On-the-Ground Survey Tool (e.g., Kobo Toolbox)
- c. Remote sensing (Satellite Images)
- d. AI Applications (e.g., WB ESF Risk Assessment Toolkit)**
- e. GIS & Geospatial Toolkit
- f. Biodiversity Data and Analytics (IBAT, etc.)
- g. Digital GRM (Grievance Redress Mechanism)
- h. Impact assessment database/applications
- i. ... and more

World Bank is developing enterprise-approved versions of ChatGPT and other AI tools

- World Bank is leveraging partnerships with Microsoft/Open AI and Google to develop enterprise friendly versions of generative AI tools with **additional safeguards built into safeguard WBG staff and interests.**



What is being done in the World Bank's Operations side using AI?

→ Using AI for our ESF/Safeguards work!

- What is ESF (Environmental and Social Framework) of the World Bank?
 - The Environmental and Social Framework (ESF) is a set of guidelines with 10 E & S Standards developed by the World Bank to ensure the sustainability of development outcomes to support Borrowers' projects
 - The Environmental and Social Framework (ESF) applies to all Investment Policy Financing (IPF) projects initiated after October 1, 2018.
- Some of the issues in the ESF context:
 - There are tens of thousands of ESF documents (each are hundreds of pages)
 - Timing-consuming to apply the existing knowledge database to current project design and implementation

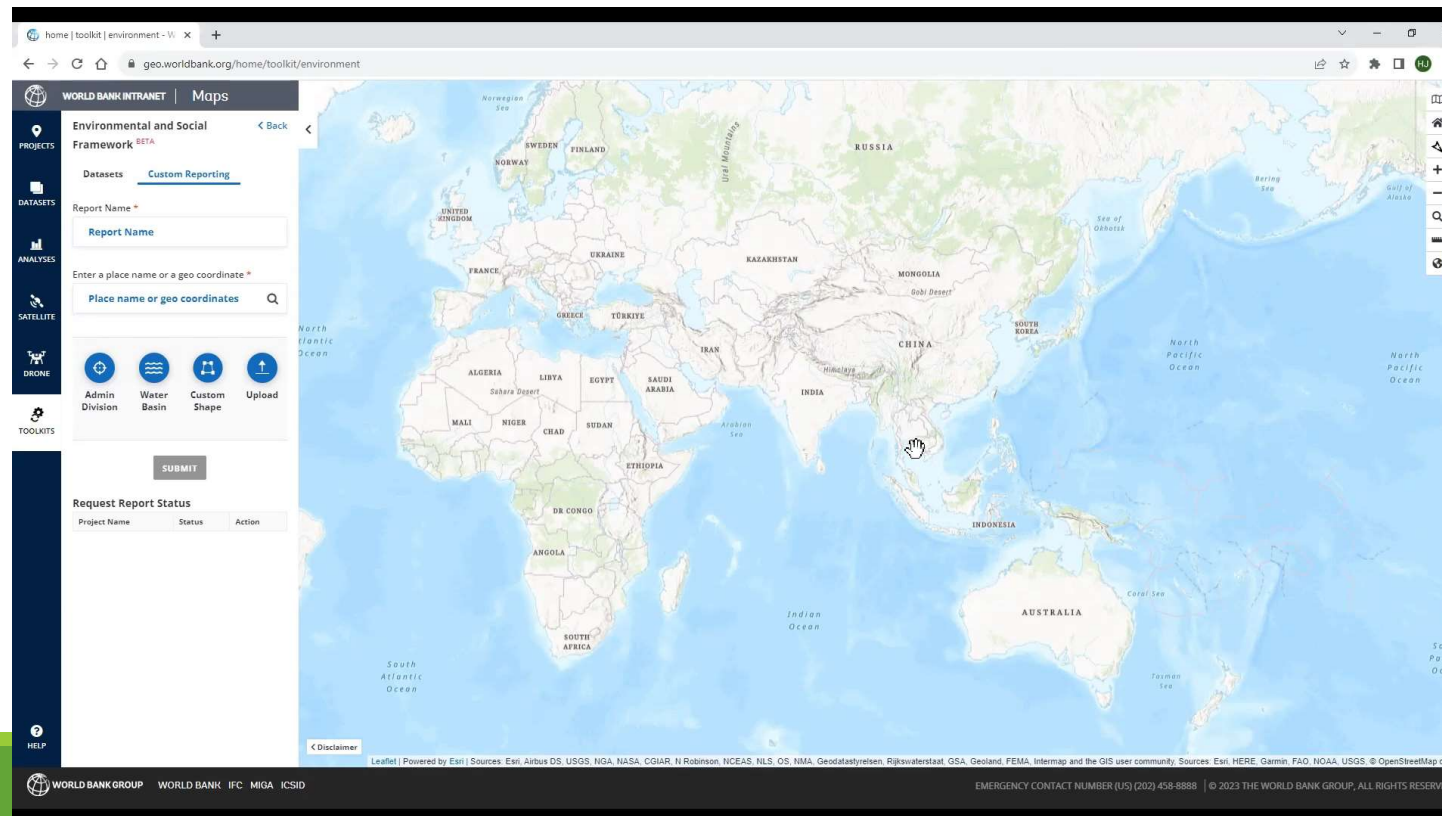


World Bank Internal AI applications for ESIA

(1) mAI

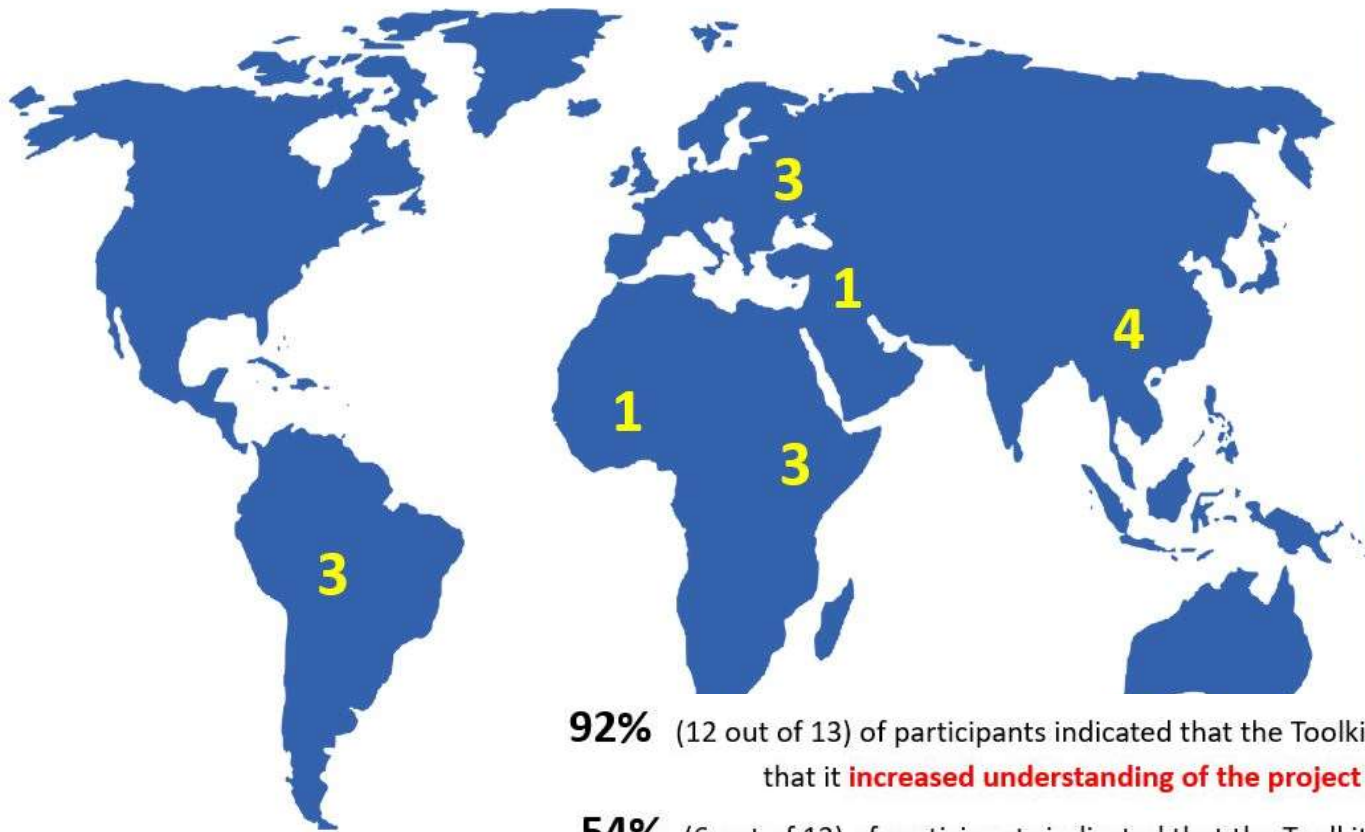
(2) Geospatial ESF Risk Assessment Toolkit

1. **World Bank Tech-for-ESF (Technology for ESF) Initiative** has been rolling out the project **“Integrating AI-GPT Technology to ESF”**, and started to upgrade and streamline **AI applications for ESIA**
2. Rolled out **pilots of AI-powered Geospatial ESF Risk Assessment Toolkit** to more than 25 project teams globally



AI-GPT Applied ESF Report Toolkit Pilot Overview

GP	Number of Pilot Teams
ENB	13
SSI	2
Total	15



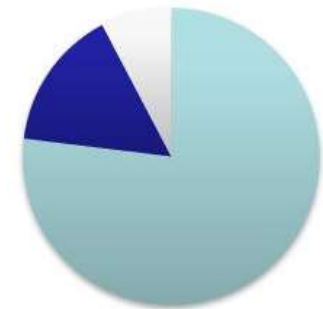
Region	# of pilots
AFE	3
AFW	1
EAP	4
ECA	3
LAC	3
MENA	1
Total	15

92% (12 out of 13) of participants indicated that the Toolkit's **strongest point** is that it **increased understanding of the project sites**.

54% (6 out of 13) of participants indicated that the Toolkit's **second strongest point** is that it **saved time**.



85% (11 out of 13) said the AI-GPT applied ESF Report Toolkit **helped enhance their ESF work**



Well Neutral Not Well

77% (10 out of 13) of participants stated that the **AI-GPT ESF Report provided information very well**, while 2 out 13 said neutral and 1 out 13 said it didn't.

Space for Technology in Impact Assessment

1. Our journeys into technology in impact assessment
2. Why we think technology needs to be a key part of impact assessment



DISCUSSION

1. What is your topic of interest?
2. What sort of technology do you use in your field?
3. What benefits are you seeing from technology (including AI) in your field?
4. What challenges/concerns are technology giving you?

Intro of The World Bank Tech-for-ESF Initiative

“How can we use existing technology to increase the efficiency of design and implementation of the ESF?”

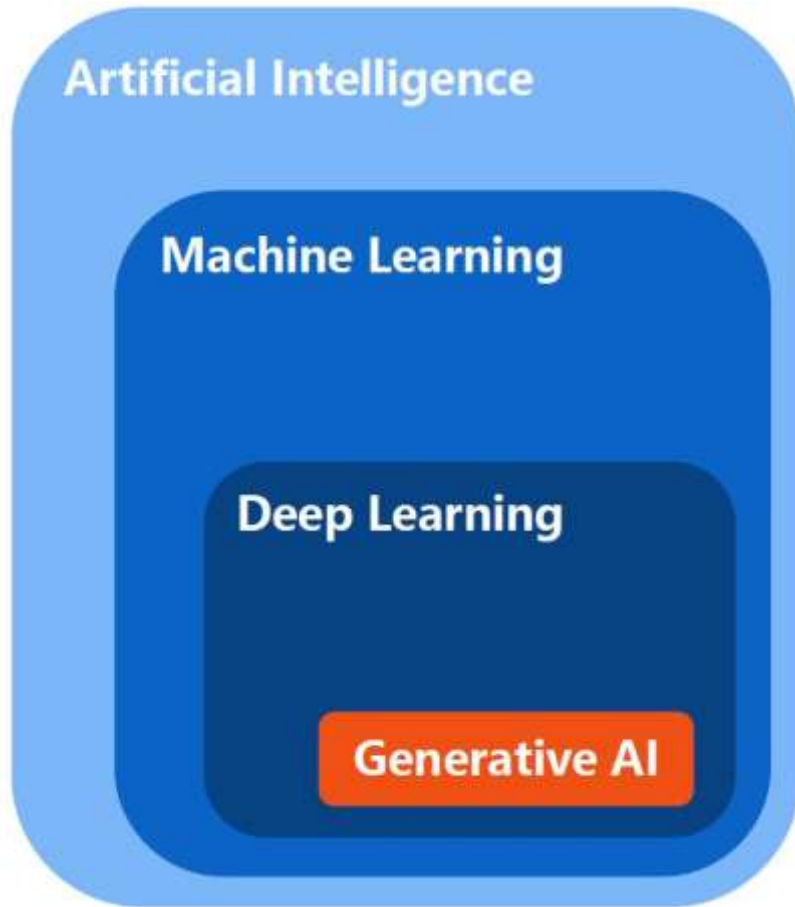
- **Tech-for-ESF (Technology for ESF) program** was launched at the Global Unit of ENB GP to provide support to ENB and SSI ESF colleagues in the field by:
 - (1) streamlining the **adoptable existing technologies**
 - (2) sharing **good practices cross-regionally**
 - (3) **monitoring the emerging tech** in the world that can be useful for ESF in a practical way
- Tech-for-ESF demonstrates **how the inventory of applicable technologies is being used in current ESF projects**



Available AI applications for ESIA in the World Bank

1. **Geospatial ESF Risk Assessment Toolkit** (WB Internal)
2. **mAI** (WB Internal)

What is AI? ChatGPT?



1956

- **Generative AI (Artificial Intelligence):**

Type of AI that generates new content (text, images, video, etc.) based on the data it has been trained on using deep learning algorithms.

1997

- **Open AI ChatGPT:**

ChatGPT is a large language model developed by OpenAI that is based on the GPT (Generative Pre-trained Transformer) architecture.

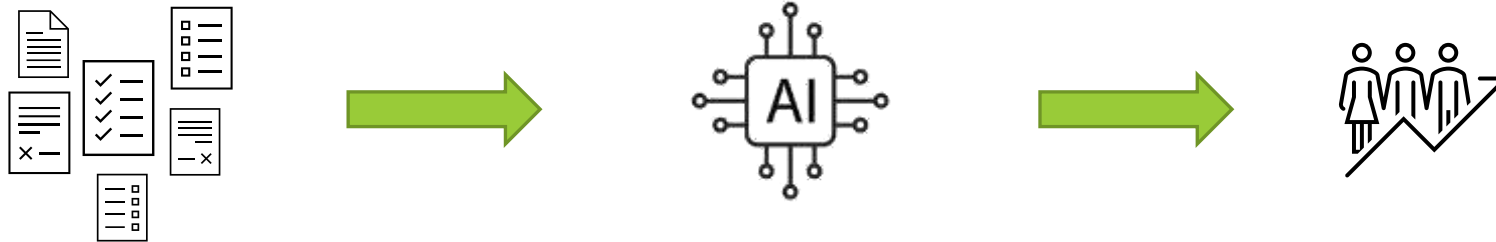
2017

It is designed to interact with humans through natural language conversations and generate human-like responses.

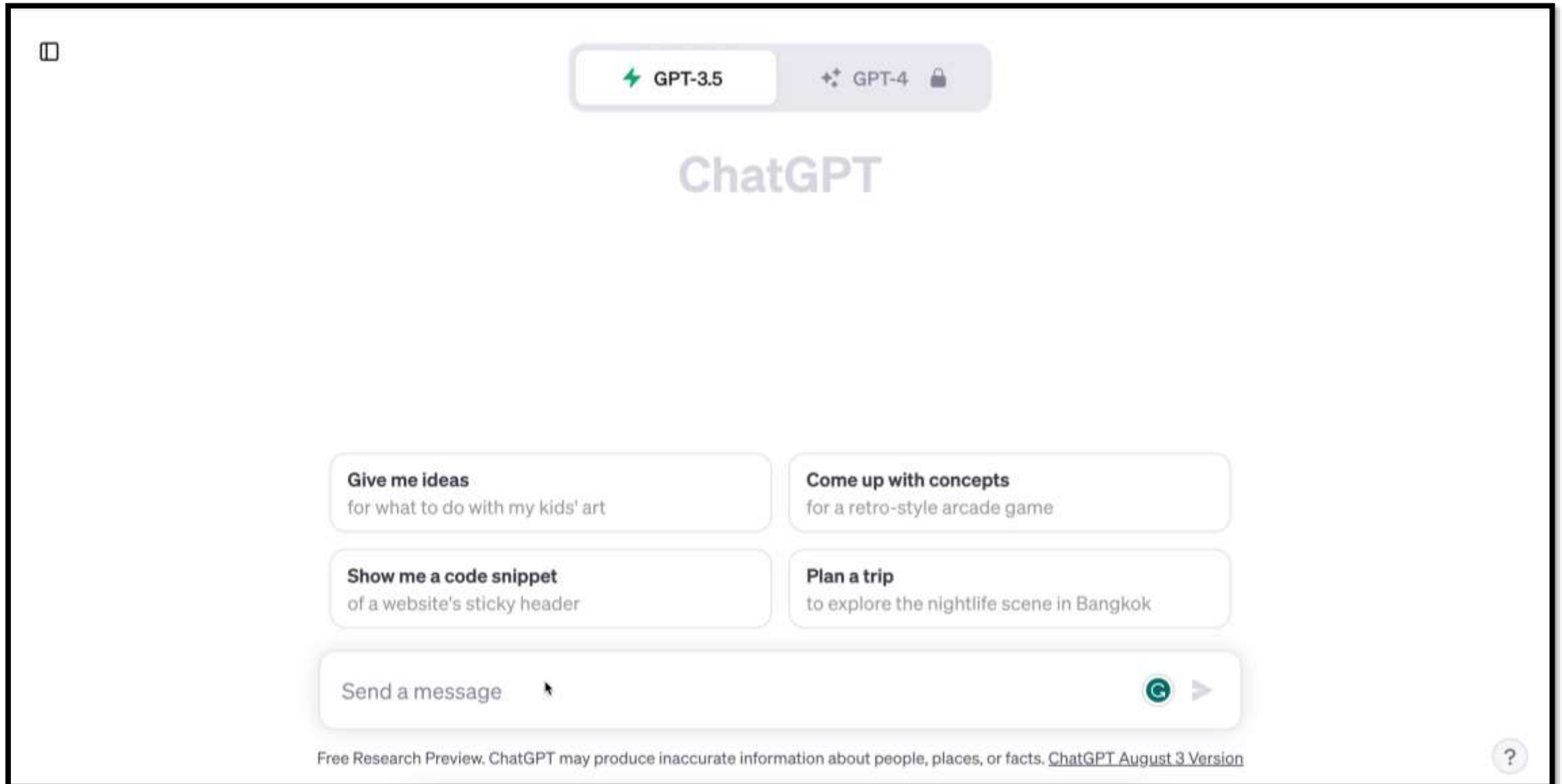
2021

ChatGPT Capabilities

- ChatGPT can answer questions, analyze text, produce write-ups on specific topics, and perform sentiment analysis within text, which makes it a potential option for a wide range of use cases within WBG.
- Some use cases for the World Bank Group could be:
 1. Analyzing and summarizing text (including documents)
 2. Improving staff productivity (And save time)
 3. Knowledge management (conduct quick research in WBG's existing data)



Use Case of External AI application: Coding by ChatGPT



But..



Publicly available version of OpenAI ChatGPT has **no contractual protection** that are critical to safeguard WBG interests such as legal privileges & immunities.



Datasets uploaded into the publicly available OpenAI's ChatGPT become part of a larger data pool, accessed by unauthorized parties for various commercial or nefarious purposes.

So, we need to..



Use similar services under existing enterprise contracts such as **Microsoft's Azure OpenAI**, which has the necessary contractual safeguards.



Do not upload or process in OpenAI's ChatGPT any restricted WBG data, including client data i.e., data classified as "official use only", "confidential" or "strictly confidential" pursuant to AMS 6.21A

"However, at the WBG, we believe technological innovation is a key driver of development impact. As such, rather than curtail use of this potentially transformative technology, we are encouraging a measured approach to ensure a responsible use of AI."

- WBG Senior Leadership Team, May 4th 2023

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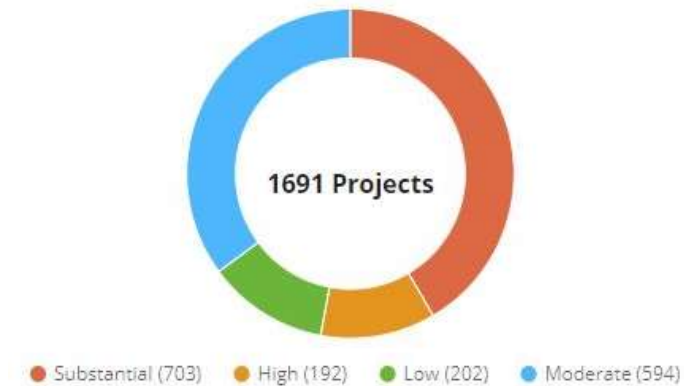
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World Bank Internal AI applications for ESIA



AI chatbot with WBG safeguards and limited internal content

[Try Now →](#)

(1) mAI

(2) Geospatial ESF Risk Assessment Toolkit

- Published an internal application integrated on the geospatial platform utilizes the powerful analytical tools of **Google Earth Engine**, combined with the **generative abilities of ChatGPT**, to provide insightful information on each of the Environmental & Social standards (ESS).

WB Tech-for-ESF under ENB GP (FURL: techforesf/)

1. Tech-for-ESF is rolling out the project **“Integrating AI-GPT Technology to ESF”**, and started to upgrade and streamline **AI tools for ESF**
2. **Environment GP, Social GP, OPCS, and ITS** are all on board with this project.
3. Tech-for-ESF and ITS have been rolling out **Pilots of AI-powered Geospatial ESF Risk Assessment Toolkit** to more than 25 Environment & Social teams in the region

AI-powered Geospatial ESF Risk Assessment Toolkit



WB's AI-powered Geospatial ESF Risk Assessment Toolkit

Provides baseline information in details of the project sites (both in area of interests as well as with some buffer zones, and region/nation-wide information)

e.g. Under ESS3, Soil type information with sub order and satellite images are provided.

e.g. ESS6 - Biodiversity Conservation and sustainable Management of Living natural resources

The screenshot displays the 'Quick Screening' interface. On the left is a large map area. On the right, there is a panel with the following content:

Quick Screening

The quick screening uses publicly available Geospatial data to flag prominent environment and social risks. A lack of warning indicator does not indicate a lack of risk as these are based on available data where there may be gaps.

Basic Data on the Area of Interest

Name/ID of the user request	Report: Mindanao Transport Connectivity Improvement Project (P17917) requested by swp@wfp.org	
Date of the report	Dec 9, 2023	
Type of Area	Position of the area of interest	Area (ha)
Project	Philippines - Region 10 - Bukidnon Philippines - Region 11 - Davao del Sur Philippines - Region 12 - South Cotabato Philippines - Region 12 - Sultan Kudarat Philippines - Region 12 - Cotabato Philippines - Region 10 - Misamis Oriental Philippines - Region 12 - Sultan Kudarat Philippines - Region 11 - Davao Occidental Philippines - Region 11 - Davao del Norte	1,294,478

At the bottom of the right panel, there is a map showing the geographical location of the area of interest in Mindanao, Philippines, with a red outline indicating the project area.

Toolkit - ESF Report

PRINT REPORT 

Project Name: Mindanao Transport Connectivity Improvement Project - (P177017)

Quick Screening

Full Report

Knowledge Base

Recommender System

Quick Screening

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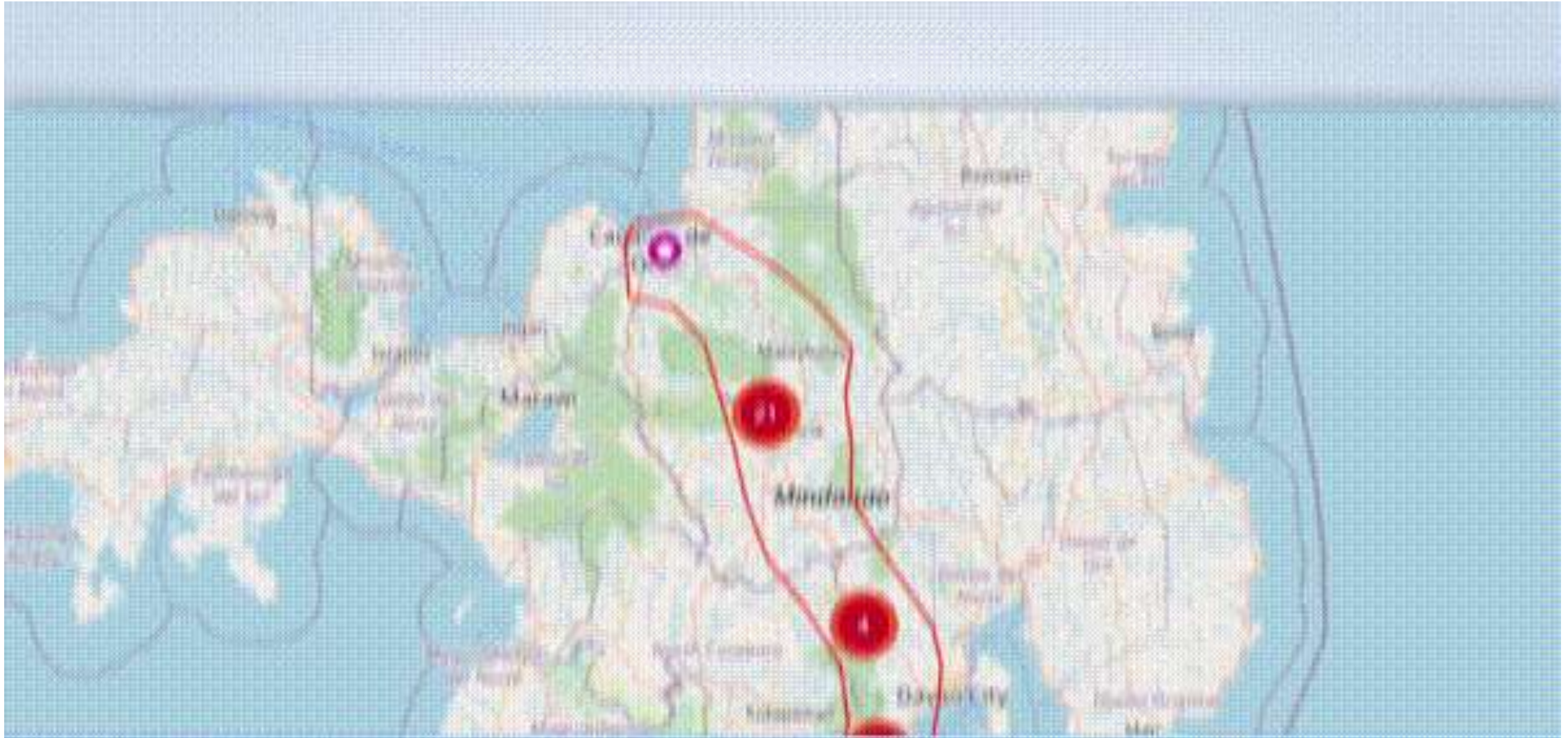
Name/ID of the user request

Report 'Mindanao Transport Connectivity Improvement Project - (P177017)' requested by djones@worldbankgroup.org

Generate info from external data

Generate info from internal WB data

This AI-powered toolkit (1) Displays **a list of past World Bank projects** within the area of interest, (2) Also helps the specialists understand the **key technical issues** (e.g. current state of roads) and **provide the source of data**.



Specialist Comments for ESS 4

Summary

The ESS4 Community Health and Safety text discusses potential health and safety risks associated with various projects, including construction activities, healthcare, gender-based violence and harassment, and adherence to guidelines from the World Bank.

Risks and impacts

- Potential health and safety risk
- Nuisance from noise, dust, and emissions
- Healthcare wastes generated by projects
- Potential exposure to COVID-19
- Potential for gender-based violence
- Potential exposure of fisher communities to pollution
- Potential smells and pollution from construction activities
- Potential risks associated with construction activities
- Potential community exposure to construction activities
- Potential risks of gender-based violence
- Potential increase in project-related risks

Mitigation

Mitigation measures include conducting an inventory of cultural heritage sites during ESA, implementing a cultural heritage protection plan which includes chance finds procedures, and including guidelines for a site-specific Cultural Heritage Plan in the project's ESMF to deal with potential encounters with cultural heritage.

Specialist Comments for ESS 8

Summary

The ESS8 Cultural Heritage text discusses the potential impacts of a project on cultural heritage, both tangible and intangible. It mentions that while some civil works are minor and may not affect cultural heritage, others, such as excavations and earth moving activities, may encounter cultural heritage sites. The text also highlights the importance of a Cultural Heritage Plan in the project's ESMF to deal with potential encounters with cultural heritage during project implementation.

Risks and impacts

- Potential impact on cultural heritage from civil works and earth moving activities
- Adverse effects on tangible and intangible cultural heritage due to coastal zone planning
- Commercial use of the intangible cultural heritage of IP communities embodying traditional lifestyles
- Potential impact on historical sites and structures in coastal areas

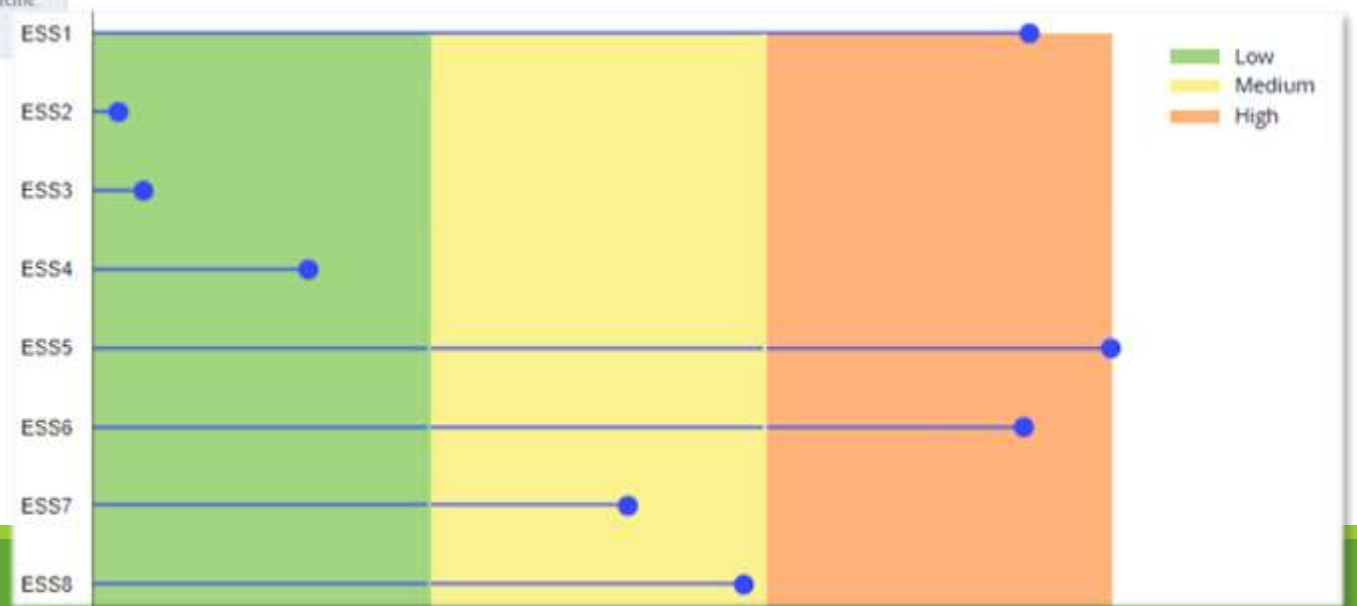
Mitigation

The mitigation measures include proper siting to avoid impacts on cultural heritage, conducting an inventory of cultural heritage sites during ESA, implementing a cultural heritage protection plan which includes chance finds procedures, and including guidelines for a site-specific Cultural Heritage Plan in the project's ESMF to deal with potential encounters with cultural heritage.



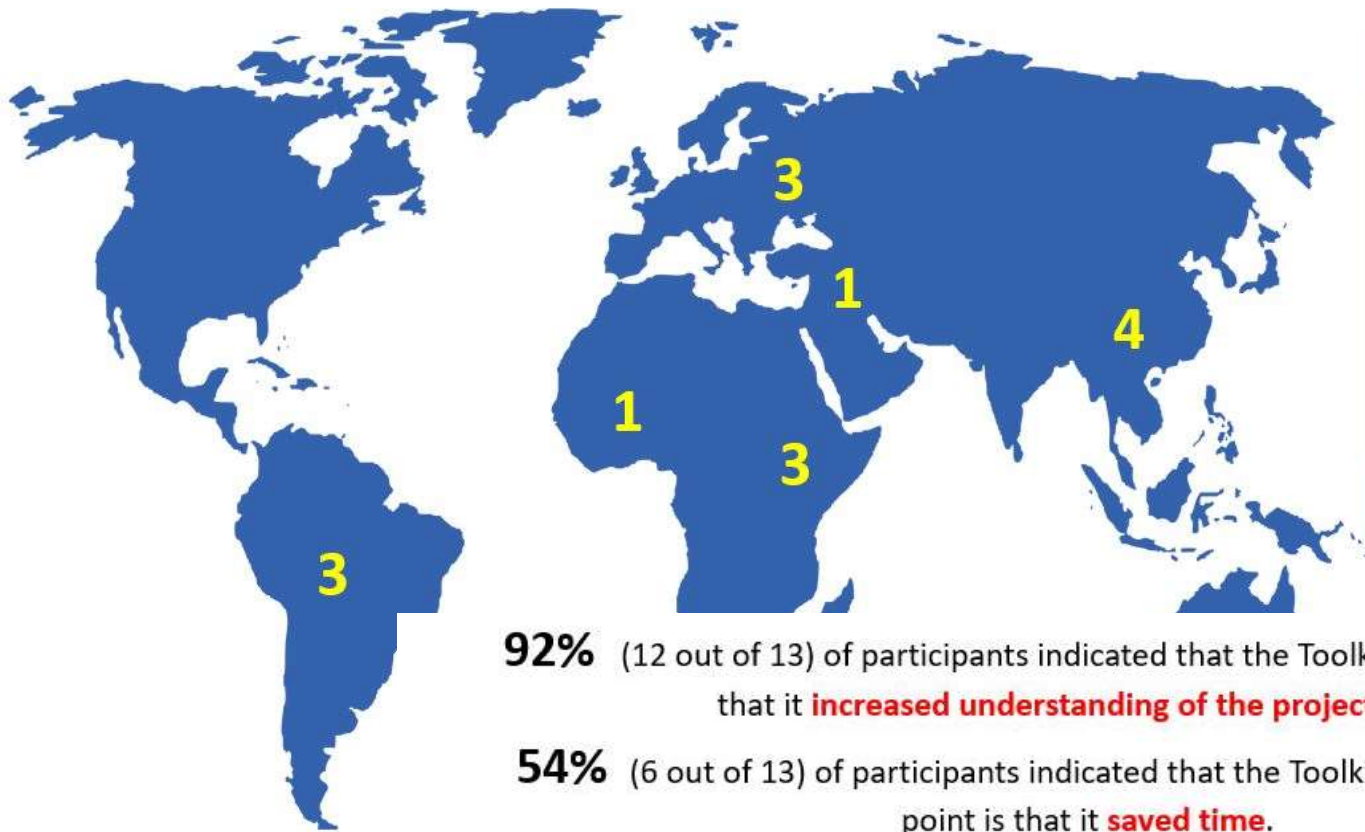
It quickly generates **summaries of specialists' justifications from past World Bank projects in the same geographical area**, highlighting E&S risks and successful mitigation measures.

- It calculates the ESS recommendations, based on past project ESS classifications, to flag potential E&S outcomes.



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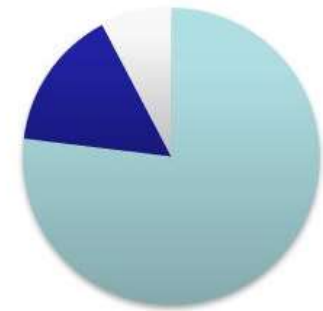
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Where does the
result of this ESF Report
fit into your ESF work?

Top 4

1. Due Diligence Process :10

2. Concept ESRS :5

✓ ESRS: Environmental and Social Review Summary

3. Appraisal ESRS :4

4. Implementation Stage :3

✓ Geospatial ESF Risk Assessment Toolkit allows for increased efficiency by **consolidating various data layers into a single platform** and at your fingertips.

✓ **ESF reports that are generated by this AI-enabled toolkit can:**

1. Help the project teams to carry out strategic dialogues with key government agencies
2. Guide the consultants doing the technical studies as part of the project preparation
3. Support the detailed project preparation work of the client (implementing agency).
4. Be printed as PDF or hard-copy, and can be shared to the colleagues, clients, consultants, and stakeholders who work on the same project.

mAI (WB Internal ChatGPT)

Including the ESF Guidance Chatbot:

Safeguarding WB internal/confidential info & Bridging ESF with AI

<https://ai.worldbank.org/chat/mai>

+ NEW CHAT

- ESF policy implications.
- ESF grievance redress provisi...
- ESF grievance redress provisi...
- Bank Policy on Involuntary R...



ESF Guidance

Explore the World Bank's ESF documents through this AI-powered chatbot built with extra safeguards to protect WBG information.

As with any AI, results may be inaccurate or misleading. Please explore responsibly and apply judgment before incorporating into your work.

💡 Samples

- What are our ESF provisions on grievance redress? →
- How can we protect the workforce executing the project? →
- What is the bank policy on involuntary relocation? →


😊 Capabilities

- Remembers what was said earlier in conversation
- Allows user to provide follow-up corrections
- Allows user to upload and query a document

⚠️ Cautions

- Responses may not be accurate or reliable
- Do not upload restricted or personal information
- Limited knowledge of world and events after 2021

Ask me anything...  

[+ NEW CHAT](#)restation mitigat... 

hallenges Dakar BRT.

grievance redress provisi...



Detail the mitigation strategies outlined in the WBG ESF regulations for addressing deforestation. How comprehensive are they?



The WBG's Environmental and Social Framework (ESF) includes several mitigation strategies for addressing deforestation. These strategies include conducting an environmental and social risk assessment to identify potential deforestation risks and impacts, developing an Environmental and Social Management Plan (ESMP) to address these risks and impacts, and implementing measures to avoid, minimize, and/or compensate for any adverse impacts on forests and other natural habitats. The ESF also requires the use of sustainable forest management practices and the protection of high conservation value forests. Additionally, the ESF encourages stakeholder engagement and consultation with local communities and indigenous peoples to ensure their rights and interests are respected and protected. The comprehensiveness of these strategies depends on the specific project and context, but overall they provide a strong framework for addressing deforestation and promoting sustainable forest management.

Source: [Environmental and Social Management Framework \(ESMF\) Template: Food and Nutrition Security Response, ESS1: Assessment and Management of Environmental and Social Risks and Impacts](#)



Powered by OpenAI GPT and [Microsoft Azure Cloud Services](#)

Note: Microsoft service interruptions may be possible due to high demand.

Can upload a PDF document
(e.g., ESIA, PAD, ESRS, etc.)

The screenshot displays the mAI WBG GPT interface. At the top, the logo 'mAI WBG GPT' is shown with a 'BETA' badge. Below the logo, a message states: 'Mai offers the same exciting potential of OpenAI's ChatGPT but with World Bank safeguards to better protect our data. We strongly encourage you to "try Mai" over public AI chat options. As with any AI, results may be inaccurate or misleading. Please explore responsibly and apply judgment before incorporating into your work.' The interface is divided into three columns: 'Samples', 'Capabilities', and 'Cautions'. The 'Samples' column includes prompts like 'What are top ten climate action initiatives? →', 'Can you give me a good example of exchange rate reform from IMF? →', and 'Find a French-speaking energy specialist →'. The 'Capabilities' column lists features such as 'Remembers what was said earlier in conversation', 'Contains World Bank People, Projects, and Documents & Reports' (marked with a 'NEW' badge), and 'Allows user to upload and query a document'. The 'Cautions' column lists 'Responses may not be accurate or reliable', 'Do not upload restricted or personal information', and 'Limited knowledge of world and events after 2021'. At the bottom, there is a chat input field with the placeholder text 'Ask me anything...'. A red box highlights a document upload icon (a blue square with a white document symbol) located to the left of the input field. A red arrow points from the text on the left towards this icon. Below the input field, it says 'Powered by OpenAI GPT and Microsoft Azure Cloud Services' and 'Note: Microsoft service interruptions may be possible due to high demand.' A 'FEEDBACK' button is visible in the bottom right corner.

To interact with AI models like ChatGPT, **prompts** are essential.

They serve as the questions or statements guiding the AI's response. Prompt engineering is the art of crafting these prompts to be precise and effective, ensuring that the information retrieved is both relevant and accurate.

For ESF specialists, this means framing queries in a way that the AI clearly understands the context of ESF.

Prompt Engineering:

Refining the prompts and suggestions of prompts for the E&S Specialists to use when asking to mAI (WB internal ChatGPT) regarding their ESIA work.

1. Using formal language, generate a summary (maximum 2000 characters) of the key factors contributing to environmental risk rating, in accordance with the ES Directive and the Technical Note on Screening and Risk Classification under the ESF.
2. Using formal language, generate a summary (maximum 2000 characters) of the key factors contributing to social risk rating, in accordance with the ES Directive and the Technical Note on Screening and Risk Classification under the ESF.
3. Generate a social risk rating based on the World Bank Group's Environmental and Social Framework, taking into account the primary elements that contribute to this rating as outlined in the ES Directive and the Technical Note on Screening and Risk Classification?
4. Review the mitigation strategies implemented for the [specific environmental issue, e.g., deforestation or river pollution] in [specific project name]. How effective were they?
5. Compare the ESF implementation in [specific project name] to similar projects in [different country/region]. What lessons can be drawn?
6. Provide the best applicable free remote sensing tools for monitoring the construction site and ensuring compliance with the Environmental and Social Framework (ESF).
7. Provide best practices for engaging with local communities during the assessment phase of ESF implementation.

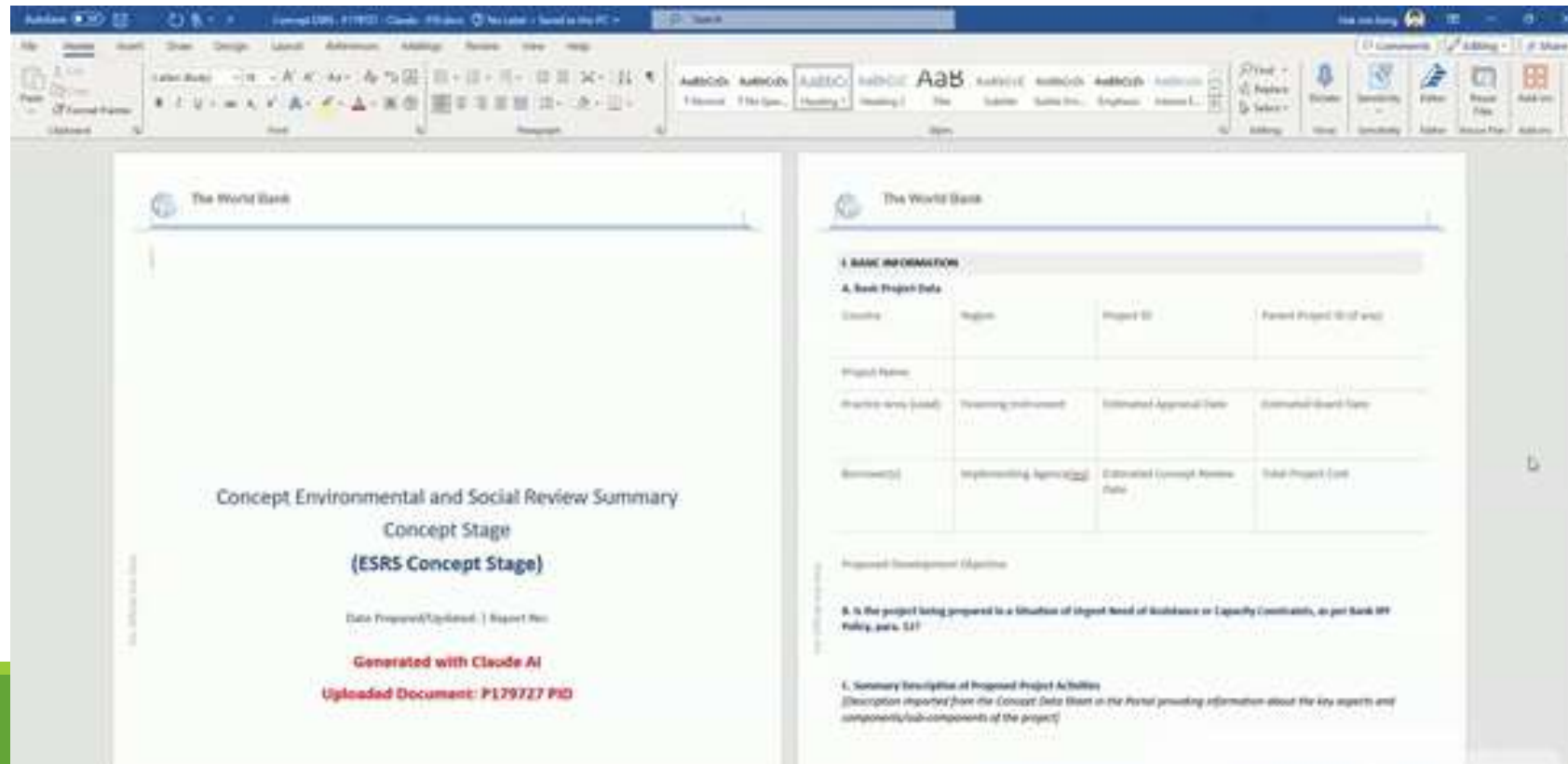
What's next?

Now the World Bank Tech-for-ESF team is working on

(1) developing the **external version** of the **Geospatial ESF Risk Assessment Toolkit**

(2) developing the **C-ESRS Generator using the latest AI LLM**, to automate C-ESRS report creation.

- This AI tool will facilitate a straightforward process where E&S experts can upload project documents (PID –Project Information Document & PCN-Project Concept Note), through prompt engineering, delivers relevant and accurate first drafts of C-ESRS reports.



Sharing Best Practices

A world map with a dark blue background and glowing yellow city lights. Six yellow arrows point downwards to specific regions: South America, West Africa, East Africa, Europe, India, and East Asia.

Organized **Tech-for-ESF Advisory Group** with E&S Specialists and task teams across the regions and units/GPs who accumulated experience in using tech and tools on their ESF works

- East Asia & Pacific, South Asia, West Africa, East Africa, Latin America and Caribbeans, Europe and Central Asia, etc.

Rolling out as a **Global Engagement Program**, and aim to work with three levels of stakeholders

- E&S Specialists
- Country Clients
- Task Team Leaders of the WB Projects
- (Collaborating with internal & external partners)

Discussion points

1. Concerns about the hallucination and false outcomes from AI
2. Concerns about the prompts
3. Which AI applications generate good & useful results?
4. What kind of data layers need to be updated further?

**“AI is not about replacing what we do,
but augmenting what we can achieve”**

Thank You

Hak Joo Song, Environmental Specialist & Tech-for-ESF Lead, The World Bank

hsong4@worldbank.org

