# Brief
# Scoping Study on the Use of Artificial Intelligence in Climate Change Evaluations

## Introduction and Objectives

AI has the potential to improve the quality and efficiency of evaluations. It has significant value in its analytical capabilities, given the increased focus on evidence-based and data-driven decision making, and the role of data as the engine of AI. **This scoping study explores the potential of AI, assesses risks and opportunities, and provides insights into future applications in climate change evaluations.**

## Methodology

- Literature review
- 19 semi-structured interviews with International Organization (IO) representatives
- Online survey of evaluation practitioners

## Cautionary Notes

- AI is a broad term with diverse tools and methods
- Findings are time sensitive due to rapid AI evolution
- Ongoing supervision and adaptation required
- Study is based on peer organization experiences within the UN working in climate change

## Common AI Categories

The terminology used in the AI field is complex due to the diversity of methods and approaches used. The following list contains some key terms relevant for this study:

- **Machine Learning (ML)** - focuses on algorithms and models, instructs computers to learn from large data and make predictions or decisions without being programmed for specific tasks.
- **Non-Generative AI** - analyzes and reorganizes, without being able to generate any new content.
- Generative AI - a system capable of creating new content out of existing information. This includes text, images, voice, or other forms of data.
- **Natural Language Processing (NLP)** - uses ML techniques to enable computers to understand, interpret, and generate language in a meaningful way. NLPs perform tasks like translation, sentiment analysis, and summarization of text. NLPs can be of both generative and non-generative in nature.
- **Large Language Models (LLMs)** - a subset of NLP, LLM models are typically trained on vast amounts datasets, which enables them to understand information and generate human-like text.

# Key Findings - AI in evaluations

## Current use:

There is an increasing adoption of AI use, though slower than in other fields. In climate evaluations, despite its potential, use is limited. Some common uses of AI within international organizations include:

- Document synthesis and summarization;
- Qualitative data analysis, external validity and coding;
- Evidence extraction from large datasets;
- Geospatial analysis (e.g., satellite imagery);
- Climate modeling and impact prediction; and
- Sentiment analysis of stakeholder feedback.

## Opportunities:

- Enhanced efficiency and quality of evaluations
- Cost and time savings
- Better handling of complex data and systems and larger sample sizes
- Improved predictive capabilities for climate impacts

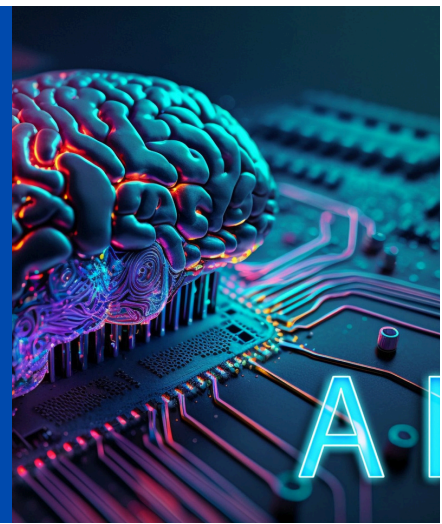## Challenges, considerations and risks:

There is a strong need for human oversight and validation when considering the use of AI in evaluations. Human judgment remains crucial for context and causality. For data and technology, there are common concerns for privacy, security, bias, and quality. For generated results, there is a risk of perpetuating existing biases, interpretability issues, and "black box" challenges. There is therefore a need to balance efficiency gains of AI with result quality.

For evaluators, there is a need for capacity building in AI literacy, issues of unequal access to AI tools, and determining best practices in AI integration into evaluation processes.
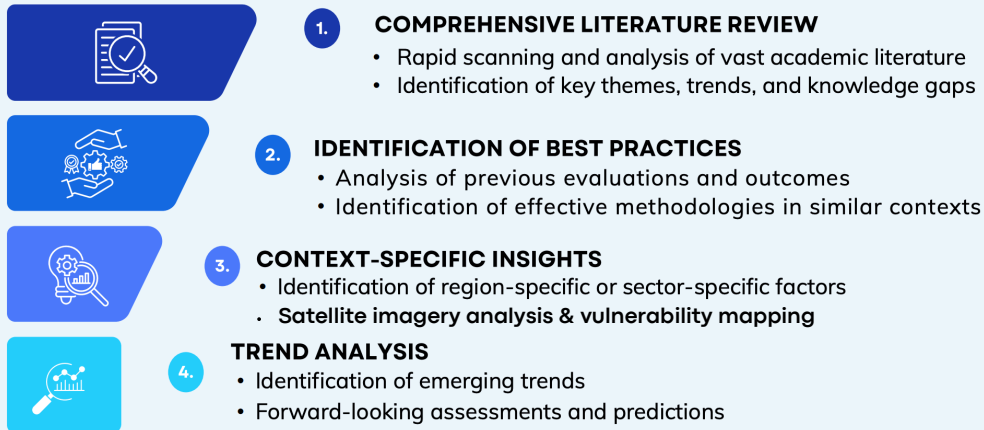
## Risk Mitigation:

- Human-AI collaboration and oversight
- Rigorous validation processes
- Development of ethical guidelines and frameworks
- Continuous learning and adaptation
- Investment in AI literacy and capacity building

"AI can contribute to qualitative analysis across contexts. On the other hand, deeper meanings, lived experiences…currently remain challenging for AI."
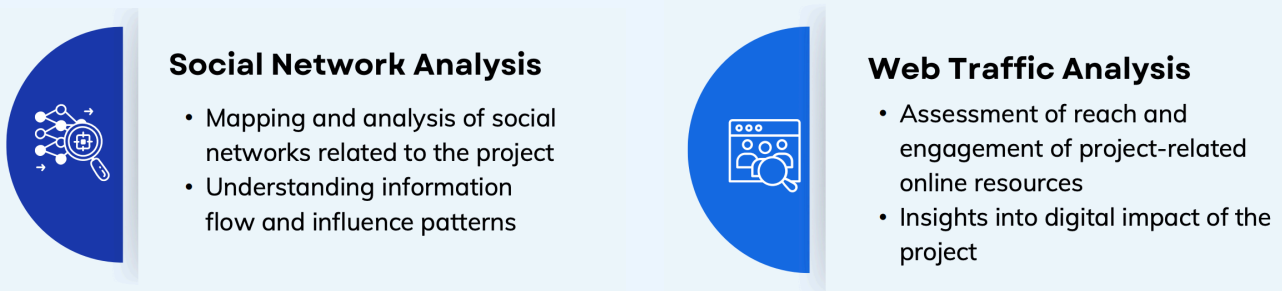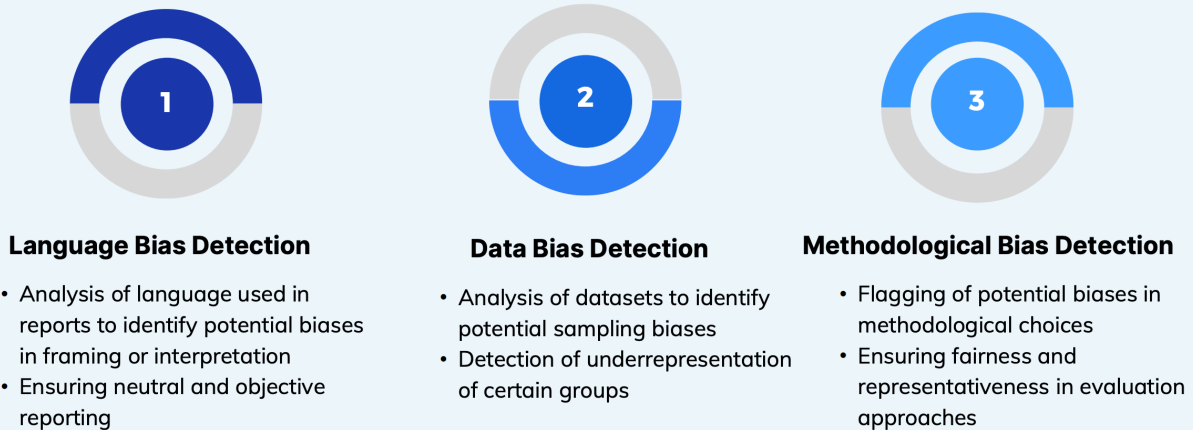
# Examples of uses of AI in evaluation phases

## Design: *Synthesis of existing evidence & knowledge*

**1. COMPREHENSIVE LITERATURE REVIEW**
- Rapid scanning and analysis of vast academic literature
- Identification of key themes, trends, and knowledge gaps

**2. IDENTIFICATION OF BEST PRACTICES**
- Analysis of previous evaluations and outcomes
- Identification of effective methodologies in similar contexts

**3. CONTEXT-SPECIFIC INSIGHTS**
- Identification of region-specific or sector-specific factors
- **Satellite imagery analysis & vulnerability mapping**

**4. TREND ANALYSIS**
- Identification of emerging trends
- Forward-looking assessments and predictions

## Implementation: *Social media and web analytics*

### Social Network Analysis
- Mapping and analysis of social networks related to the project
- Understanding information flow and influence patterns

### Web Traffic Analysis
- Assessment of reach and engagement of project-related online resources
- Insights into digital impact of the project

## Quality Control: *Bias detection*

**1 Language Bias Detection**
- Analysis of language used in reports to identify potential biases in framing or interpretation
- Ensuring neutral and objective reporting

**2 Data Bias Detection**
- Analysis of datasets to identify potential sampling biases
- Detection of underrepresentation of certain groups

**3 Methodological Bias Detection**
- Flagging of potential biases in methodological choices
- Ensuring fairness and representativeness in evaluation approaches

## Use & Dissemination: *Synthesis of evaluation results*

### Meta-analysis
- Sophisticated analysis across multiple evaluation reports
- Identification of common themes, trends, and patterns
- Comprehensive understanding of program effectiveness across contexts and time periods

### Cross-sectoral Insights
- Identification of connections and insights across different sectors or program types
- Uncovering unexpected synergies or lessons

### Trend Analysis
- Identification of emerging trends, persistent challenges, and evolving best practices
- Longitudinal analysis of program implementation and outcomes

### Contextual Analysis
- Analysis of how different contextual factors influence program outcomes
- Understanding what works, where, and why
- **Adaptation effectiveness analysis**

# Recommendations

## Strategic Approach

- Adopt AI use gradually, critically, and responsibly
- Start with simple applications, then progress to complex tasks
- Develop tailored AI applications for evaluation needs
- Foster a culture of experimentation and innovation
- Continuously assess the impact of AI and its value-added
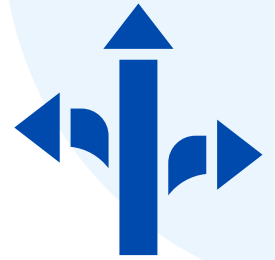
## Governance and ethics

- Develop AI governance frameworks and ethical guidelines
- Establish protocols for data privacy and security
- Create risk assessment procedures for AI projects
- Ensure transparency in AI use within evaluations
- Conduct regular ethical reviews of AI systems and outputs

## Capacity building

- Invest in AI skills and training for evaluation staff
- Promote collaboration between evaluators and AI experts
- Organize workshops and knowledge-sharing sessions
- Develop AI literacy across all levels of organization
- Create a core team of "AI champions"
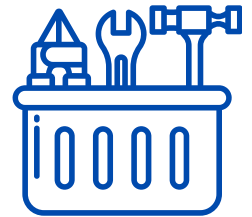
## Implementation

- Conduct AI readiness assessments
- Implement pilot projects with clear objectives
- Develop AI-assisted evaluation toolkits
- Establish validation frameworks for AI outputs
- Create feedback loops for continuous improvement
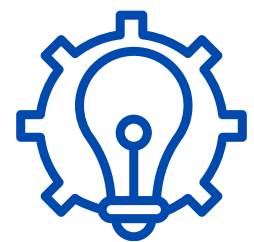
Technical Evaluation Reference Group ADAPTATION FUND

CIF CLIMATE INVESTMENT FUNDS

IEO Independent Evaluation Office GLOBAL ENVIRONMENT FACILITY

GREEN CLIMATE FUND | Independent Evaluation Unit