



## SUMMARY NOTES

### EEAP WEBINAR 13

#### AI and Evaluation of Energy Programs and Policies

On November 12, 2024, the Energy Evaluation Asia Pacific (EEAP) hosted its 13th webinar focusing on the important topic of 'AI and Evaluation of Energy Programs and Policies'. This insightful webinar featured three notable speakers:

- Edward Vine, Affiliate, Lawrence Berkeley National Laboratory (LBNL) and Steering Committee Member, Energy Evaluation Asia Pacific (EEAP)
- Haider Khan, Vice President Energy Analytics, ICF
- Laura Gagliardone, Programme Coordinator Consultant UN WOMEN Headquarters, New York

Ed's presentation focused on equipping evaluators with foundational knowledge and actionable guidance on utilizing AI to enhance the evaluation of energy programs and policies, emphasizing key concepts, challenges, and practical approaches for informed decision-making. Haider shared insights and experiences on how AI is transforming energy programs and policies by highlighting current trends, groundbreaking innovations, and future possibilities, offering a comprehensive view of the evolving landscape. Laura provided the participants with practical guidance for assessing the risks of AI applications in monitoring and evaluation, emphasizing ethical considerations, data reliability, and potential biases.

This webinar explored the broader implications of integrating AI into the evaluation of energy programs and policies, focusing on how AI enhanced energy-related assessments and evaluations. It delved into the opportunities AI presented to transform traditional evaluation practices while addressing key challenges like ethics, accountability, and managing the risks of AI applications. Participants gained valuable insights into balancing cutting-edge technologies with responsible, impactful evaluation approaches aligned with the evolving needs of the energy sector.

This document summarizes the key discussion points from the webinar.

#### Webinar Agenda

Time (PDT)	Sessions/Speakers
9:00-9:05 AM	<b>Welcome Remarks &amp; Context Setting</b>

	<b>Anindita Sharma</b> , Partner, Aartha, Regional Director Asia Pacific, ROI Institute and Steering Committee Member, Energy Evaluation Asia Pacific (EEAP)
9:05-9:50 AM	<p><b>Presenters</b></p> <p>1. <b>Edward Vine</b>, Affiliate, Lawrence Berkeley National Laboratory (LBNL) and Steering Committee Member, Energy Evaluation Asia Pacific (EEAP)</p> <p><i>“AI and Energy Program and Policy Evaluation: Setting the Stage and Guidance for Evaluators”</i></p> <p>2. <b>Haider Khan</b>, Vice President Energy Analytics, ICF</p> <p><i>“AI for Energy Programs and Policies Unveiled: Current Trends, Innovations, and Future Horizons”</i></p> <p>3. <b>Laura Gagliardone</b>, Programme Coordinator Consultant UN WOMEN Headquarters, New York</p> <p><i>“Quick Tips to Assess the Risks of AI Applications in Monitoring and Evaluation”</i></p>
9:50- 10:10 AM	<p><b>Moderated Audience Q&amp;A</b></p> <p>Moderated by <b>Anindita Sharma</b>, Partner, Aartha, Regional Director Asia Pacific, ROI Institute and Steering Committee Member, Energy Evaluation Asia Pacific (EEAP)</p>
10:15 AM	<p><b>Concluding Comments &amp; Vote of thanks</b></p> <p><b>Anindita Sharma</b></p>

### Introduction and Context Setting

Anindita Sharma, Partner, Aartha, Regional Director Asia Pacific, ROI Institute and Steering Committee Member, Energy Evaluation Asia Pacific (EEAP)

Anindita, a member of the Steering Committee for EEAP, greeted the participants and speakers, introduced EEAP and provided a context of the webinar.



### **Introduction to Energy Evaluation Asia Pacific (EEAP)**

Anindita introduced EEAP to the participants. Established as a non-profit organization in 2018, and modelled after IEPEC (US, since 1983) and IEPPEC (Europe, since 2010), EEAP is focused on expanding the practice of objective evaluation in the Asia Pacific region. EEAP's mission is to

lead in expanding evaluation practices, building capacity, and understanding the impact of energy efficiency and renewable energy programs and policies, aiming to provide a strong evidence basis for continuous improvement in these areas.

EEAP fosters exchange and interaction among evaluators, NGOs, government agencies, and academics to promote the value of energy evaluation and capacity building. EEAP offers a database of resources on best practices, holds webinars on various topics, and organizes international events and conferences, particularly in relation to the Sustainable Development Goals (SDGs).

EEAP brings stakeholders together to support data-driven decision-making in the energy sector. One of its main objectives is capacity building, especially in the rapidly growing Asia Pacific region.

### **Context of webinar topic, ‘AI and Evaluation of Energy Programs and Policies’**

Anindita introduced the webinar being on the intersection of artificial intelligence (AI) and energy evaluation, highlighting its significance as a groundbreaking topic. She positioned AI as a transformative force comparable to the Internet and emphasized its importance in the energy sector, which powers all human activities. Anindita encouraged viewers to pay attention to the Q&A section, where speakers provided actionable advice, including AI tools for evaluators to use immediately.

### **Presentation by Speakers**

#### **AI and Energy Program and Policy Evaluation: Setting the Stage and Guidance for Evaluators**

Edward Vine, Affiliate, Lawrence Berkeley National Laboratory (LBNL) and Steering Committee Member, Energy Evaluation Asia Pacific (EEAP)



Ed explored the implications of artificial intelligence (AI) for energy program evaluation. He noted that while AI is widely discussed across various sectors, there has been limited focus on its application in energy evaluation. Therefore, this webinar was organized to address this gap and provide evaluators with essential guidance.

Ed defined AI as systems capable of performing tasks that typically require human intelligence, highlighting its potential applications in design and evaluation processes. He outlined several benefits of AI, including increased efficiency, accuracy, and the ability to automate tasks such as data cleaning and generating insights. Additionally, he pointed out that AI can foster innovation and creativity in evaluations, enabling the exploration of new data sources and methods.

However, Ed stressed the importance of balancing AI's use with human judgment and values. He cautioned against over-reliance on AI, emphasizing the need for critical evaluation of AI outputs to avoid false conclusions, often referred to as “hallucinations.” He raised concerns about intellectual property, data privacy, and potential biases in data collection, urging evaluators to ensure the validity and reliability of their results.

Ed highlighted the critical role of education in preparing evaluators to effectively integrate AI into their work. He encouraged participation in online courses, webinars, and community networks focused on AI and evaluation. He also referenced a UN report titled *Governing AI for Humanity*, which addresses governance issues related to AI. He concluded by prompting evaluators to consider whether certain evaluations should not be conducted using AI and emphasized the importance of compiling examples of AI applications in program evaluation to guide future practices.

## Main Takeaways

- **Balancing AI with Human Judgment:** It's essential to combine AI tools with human judgment to ensure valid conclusions and maintain ethical standards in evaluations.
- **The Role of Education and Governance:** Ongoing education for evaluators is crucial, along with establishing regulatory frameworks to address governance issues related to AI, such as data privacy and intellectual property.

### AI for Energy Programs and Policies Unveiled: Current Trends, Innovations, and Future Horizons

Haider Khan, Vice President Energy Analytics, ICF



Haider explored the transformative role of AI in addressing complex challenges within the energy sector. He began by expressing optimism about AI's potential to enhance efficiency and problem-solving capabilities in the industry. He provided a broad overview of AI, defining it as technology that mimics human behaviour, and discussed its subsets, particularly machine learning and deep learning.

Haider delved into current trends, emphasizing how machine learning was applied in energy forecasting, optimization, and evaluation. He discussed the significance of both long-term (30-year) and short-term (3-5 year) forecasts for effective policy setting and program design. Additionally, he highlighted the operational applications of machine learning, such as real-time forecasting that considered factors like weather and market conditions, which were crucial for effective energy management.

Haider also covered the concept of digital twins, which were innovative representations of physical systems developed by his company, ICF. These digital twins modelled both the supply and demand sides of energy systems, allowing for detailed forecasting and program design. He noted the impressive creation of 2.3 million digital twins representing buildings within utility jurisdictions, which facilitated real-time evaluation and continuous improvement of energy management strategies.

Haider also discussed the future of AI in energy, particularly the evolution of large language models capable of solving complex equations related to energy systems. This advancement promised to enhance efficiency and scalability in energy management, indicating a significant shift in how energy resources were understood and utilized. Overall, he underscored AI's potential to revolutionize energy management and policymaking, paving the way for innovative solutions in the industry.

## Main Takeaways:

- **AI Enhances Energy Management:** AI, especially through machine learning and deep learning, significantly improves energy forecasting and operational efficiency.
- **Digital Twins for Real-Time Insights:** Digital twins provide detailed modeling of energy systems, enabling effective management and continuous improvement in response to challenges like grid congestion.

## Quick Tips to Assess the Risks of AI Applications in Monitoring and Evaluation

Laura Gagliardone, Programme Coordinator Consultant UN WOMEN Headquarters, New York



Laura focused on assessing the risks associated with AI applications in monitoring and evaluation (M&E) within the context of the Sustainable Development Goals (SDGs). She began by defining AI as the ability of machines to perceive, synthesize, and process information, highlighting its long-standing use in various sectors, including health, agriculture, and education. Despite its benefits, Laura emphasized that AI posed several risks, such as bias, data misinterpretation, privacy concerns, security vulnerabilities, and ethical dilemmas.

She discussed how AI leveraged big data for decision-making and crisis management, particularly in relation to SDGs 11 and 13. Laura provided examples of AI applications in M&E, including tools for data analysis, predictive analytics for emergencies, and fraud detection. She highlighted specific AI solutions like the United Nations Development Program's (UNDP) AIDA platform, which allowed users to search through thousands of evaluation reports, and the Geo AI platform developed in partnership with the University of Nottingham to address environmental compliance issues.

To assess the risks of AI applications, Laura presented a four-step model: framework analysis, data collection, model development, and monitoring and evaluation. She stressed the importance of involving diverse stakeholders in the risk assessment process and emphasized ethical considerations throughout. Each step included guiding questions to help organizations evaluate their AI applications effectively.

Laura concluded that AI enhanced evaluations by analyzing data across various sectors, but it also posed risks that could be mitigated through ethical protocols and human oversight. She encouraged organizations to build institutional memory around AI practices to facilitate replication and innovation in the future.

### Main Takeaways:

- **AI Enhances Evaluations:** AI improves data analysis and decision-making across sectors but introduces risks such as bias, privacy concerns, and security vulnerabilities.
- **Mitigation Through Oversight:** These risks can be addressed by implementing ethical protocols, maintaining human oversight, and involving diverse stakeholders in the evaluation process.

