







Scaling Clean Energy Innovation: De-Risking Demonstration Projects Through Inclusive Safeguards

# Pre-Forum Event Asia Clean Energy Forum 2025

Monday 2 June 2025, 14:00 – 16:00 (PHT)









Time	Activity	
14:00 – 14:05 Welcome Remarks:		
	Mr. Peter Warren, A2D Facility Manager, UNIDO	
14:05 – 14:20	<ul> <li>Opening Remarks:</li> <li>Mr. Teddy G. Monroy, UNIDO Representative for the Philippines</li> <li>Keynote Remarks:</li> <li>Mr. Sean Richmond, UK Government</li> <li>Ms. Emma Frances Marsden, Principal Safeguards Specialist, Office of Safeguards, Asian Development Bank</li> </ul>	
14:20 – 14:35	<ul> <li>A2D Facility Overview and Current Projects:</li> <li>Ms. Lorena Alberte, Project Administrator, A2D Facility, UNIDO</li> <li>Ms. Giovanna França, Project Associate, A2D Facility, UNIDO</li> </ul>	
14:40 - 14:50	<ul> <li>Showcasing Inclusive Safeguards: A2D Facility Case Study in Nepal:</li> <li>Ms. Moon Pradhan, Practical Action Nepal</li> </ul>	
14:50 – 15:30	<ul> <li>Panel Discussion: Scaling Clean Energy Innovation: De-risking Demonstration Projects Through Inclusive Safeguards Moderator: Ms. Lorena Alberte, Project Administrator, A2D Facility, UNIDO</li> <li>Mr. Bruce Dunn, Director, Office of Safeguards, Asian Development Bank</li> <li>Ms. Emma Frances Marsden, Principal Safeguards Specialist, Office of Safeguards, Asian Development Bank</li> <li>Ms. Moon Pradhan, Practical Action Nepal</li> <li>Ms. Anna Lobanova, Energy Connectivity Expert, UN ESCAP</li> </ul>	
15:30 - 15:45	Q&A Session	
15:45-16:00	Closing Reflections and Feedback Form: • Mr. Peter Warren, A2D Facility Manager, UNIDO	







# **Opening Remarks**



# Mr. Teddy G. Monroy

# UNIDO Representative, UNIDO Country Office Philippines







# **Keynote Remarks**



# Mr. Sean Richmond

# Climate Innovation Programme Manager, UK Government







# **Keynote Remarks**



Ms. Emma Frances Marsden

Principal Safeguards Specialist, Office of Safeguards, Asian Development Bank







# De-Risking Demonstration Projects: Accelerate-to-Demonstrate (A2D) Facility







## **Importance of Implementing Demonstration Projects**

- Accelerating clean energy innovation is increasingly recognized as vital in global efforts to combat climate change and to meet the Sustainable Development Goals (SDGs).
- The International Energy Agency (IEA) highlights that almost 35% of the emissions reductions necessary for achieving a global net-zero scenario by 2050 will come from technologies that are still in the demonstration or prototype phase.
- Alongside the important need for leveraging private sector finance, at least USD 90 billion in public funding is needed globally by 2026 for clean energy demonstration projects to be commercially ready by 2030.
- The A2D Facility contributes to filling this important gap in support to developing countries by targeting the demonstration phase of the innovation chain, bridging earlier-stage and commercial-scale projects.

Relative increase in carbon dioxide emissions savings in 2050 by current technology maturity category:



Energy Technology Perspectives 2020. IEA, 2020.







# **United Nations Industrial Development Organization (UNIDO)**

- UNIDO is the UN Agency for the promotion of inclusive and sustainable industrial development in developing countries.
- UNIDO focuses on three main priorities:



Supporting sustainable supply chains so that developing country producers get a fair deal and scarce resources are preserved.



**Limiting climate breakdown** by using renewable energy and energy efficiency to reduce industrial greenhouse gas emissions.



**Ending hunger** by cutting post-harvest losses and developing agribusiness value chains.

- **UNIDO's expertise:**
- Technical assistance and capacity building
- Investment and innovation funding
- Partnerships and collaboration
- Policy dialogues







# **Overview of A2D Facility**

#### The Solution

The A2D Facility aims to accelerate the commercialization of innovative clean energy solutions in developing countries by supporting catalytic and scalable demonstration projects in:

- Clean hydrogen
- Critical minerals
- Smart energy
- Industrial decarbonization







Activities bringing **transformational solutions** to the market at scale.

### **Initial Funding and Timescales**

- Initial contribution of ~USD 80 million from the UK Government
- Initially operates from April 2023 to March 2029
- Projects supported through calls-for-proposals (first call in July 2024)
- Global (developing country-focused) programme
- Grants of USD 1-5 million per project.
- Main Sustainable Development Goals (SDGs)-of-focus:



**Providing grant support** for transformational demonstration projects with strong scalability potential.

Creating and **disseminating knowledge and experiences** to foster collaboration, learning and scalability.







# **Supporting Catalytic Projects to Transform Sectors**

- **"Lighthouse" demonstration projects** in critical minerals, clean hydrogen, industrial decarbonization and smart energy.
- Impacts on SDGs 13 (climate action), 1 (no poverty) and 9 (industry, innovation and infrastructure) in supportive enabling environments that foster scalability.
- Projects at the demonstration phase and at the implementation and operation stages of project development (earlier-stage pilot-testing or planning-related activities are out-of-scope).
- Strong focus on sharing lessons-learned, dissemination and monitoring (supported projects facilitating training and capacity building, regular high-quality monitoring and reporting, risk management, hosting study tours, and presenting in international events and workshops, alongside the construction and equipment implementation activities).







# A2D Facility Year 1 and 2 Key Milestones





Indonesia, Jakarta. South Africa, Johannesburg.









# **A2D Facility Year 2 Annual Report**



Download the annual report on the A2D Facility website

a2dfacility.unido.org

or scan the QR Code









## Published Market Assessments on Innovation in Developing Countries

- x3 market assessments commissioned and completed in 2024 and published at COP29: Clean Hydrogen, Critical Minerals, and Smart Energy and Industrial Decarbonization.
- Focused on the landscape of technologies, stakeholders, innovators, initiatives, existing projects and delivery mechanisms in developing countries.



A2D Facility Market Assessments: <u>Access the reports here</u>







# **Current A2D Facility-Supported Demonstration Projects (First Call-for-Proposals in 2024)**

Smart Energy	<u>Industrial</u>	Biomass gasification plant to power a Kenyan tea factory using local agricultural waste and biomass		
Smart solar and storage microgrid for industrial-scale deployment at Laxmi Steel factory in Sunwal	<u>Decarbonizati</u> <u>on</u>	Location: <b>Kenya</b>		
Location: <b>Nepal</b>	<u>Clean</u> <u>Hydrogen</u>	Ammonium sulphate fertilizer production facility powered by solar and clean hydrogen Location: Namibia		
Peer-to-peer energy-sharing system to convert wasted renewables into community power	<u>Critical</u> <u>Minerals</u>	Local manufacturing of lithium-ion batteries for electric two-/three-wheeler motorcycles, and installation of charging infrastructure in urban and rural areas.		
Location: <b>Nigeria</b>		Location: <b>Tanzania</b>		







# Second Call-for-Proposals (2025)

- Published at first annual event of the A2D Facility in Nairobi, Kenya, on 20 May 2025 and call closes on 7 July 2025.
- Implementation of catalytic and scalable demonstration projects of USD 1-5m and 3-year timescales (ending by mid-December 2025).
- Three possible submission windows for proposals: global (from any ODA-eligible country), thematic (countries of the market assessments' deep dives), geographic (Brazil) and larger-scale demonstration projects (USD 15-20m).
- UNIDO Procurement Portal for detailed information on the second call. Proposals can be submitted up until 16:00h CET on Monday 7 July 2025.
- All enquiries on the call must only be sent to: C.ZINIEL@unido.org, E.DORNER@unido.org, and M.HEMETSBERGER@unido.org







#### PROJECT KEY INFORMATION

# **Smart Energy: Grid Resilience through Intelligent PV and Storage in Nepal**

### Objective

The project will support Nepal's clean energy goals by providing a concrete demonstration of the cost-effectiveness and reliability of smart solar and storage systems, paving the way for larger-scale deployments.

#### **Transformational Project**

Deployment of Nepal's largest battery-based microgrid (2 MW / 4 MWh battery, 1 MWp solar PV) provides 100% generator-free backup for critical systems. The Microgrid Management System (MMS) will optimize battery and solar performance, ensuring reliable power without diesel and preparing the site for future grid services.

#### **Expected Impacts**

- Environmental: Cuts industrial emissions by displacing diesel, reducing CO<sub>2</sub>, and improving local air quality.
- Social: Improves workplace safety and community health & ensures active community participation, especially for women and marginalised groups.
- Economic: Lowers operational costs and stabilises energy supply.

LEAD ORGANIZATION Practical Action

CONSORTIUM PARTNERS

- Gham Power Private Limited Nepal
- Swanbarton Private Limited UK

**DURATION** 01 Feb 2025 - 01 Mar 2028

LOCATION Nepal









## **Critical Minerals: Lithium-Ion Transport Solutions in Tanzania**

#### Objective

To accelerate the commercialization of innovative clean energy technology in the transportation sector using locally manufactured Electric Charged Lithium-Ion Batteries in Tanzania.

#### **Transformational Project**

The project's business model is based on three main pillars: Local lithium battery manufacturing, chassis production and assembly, & charging and battery swapping infrastructure.

#### **Expected Impacts**

- Environmental: Lowers CO<sub>2</sub> emissions from each bike & reduces 65,000 tons of fossil fuel use annually.
- Social: 50% savings on fuel costs, reduces maintenance needs & job creation for skilled and unskilled workers.
- Economic: Increases government revenue, reduces fuel and equipment imports & lowers transport and logistics costs.

#### PROJECT KEY INFORMATION

#### LEAD ORGANIZATION Oasis Financial Services Limited

#### **CONSORTIUM PARTNERS**

• Payless Energy Limited

**DURATION** 01 Feb 2025 - 29 Feb 2028

LOCATION Tanzania









## **Clean Hydrogen: Ammonium Sulfate Fertilizers from Renewable Hydrogen in Namibia**

### Objective

To produce green fertilizers, hydrogen, and ammonia to support carbon-free agriculture and reduce GHG emissions by enhancing local agriculture and empowering communities.

#### **Transformational Project**

At the core is the use of green hydrogen, generated via electrolysis powered by solar energy. This clean hydrogen is used to synthesize ammonia, a key component of ammonium sulfate fertilizer.

#### **Expected Impacts**

- Environmental: Decreases dependence on carbon-intensive fertilizer imports, improving soil health and boosting biodiversity.
- Social: Improves food security and strengthens local livelihoods.
- Economic: Creates jobs, lowers fertilizer costs & stimulates growth in the agricultural sector.

**PROJECT KEY INFORMATION** 

LEAD ORGANIZATION The Daures Green Hydrogen Village

#### **CONSORTIUM PARTNERS**

- Enersense Energy Namibia
- Mondjila Project Advisory and Management
- Windhoek Consulting Engineers (WCE)
- Fichtner GmbH

**DURATION** 01 Feb 2025 - 31 Dec 2027

LOCATION Namibia









## Industrial Decarbonization: "Green" Tea: Clean Heat and Power with Biomass Residues in Kenya

#### Objective

To operate a 500kW gasifier using waste biomass to reduce emissions from tea production by 30%, linking energy use to climate and community results to create a pipeline for scaling to other factories and industries.

### **Transformational Project**

The MicroHub gasifier converts local biomass into power and heat, reducing fuel use and enabling use of 20% energy from prunings, crop residues, and bamboo. Production of biochar improves soil fertility, increases tea yields, and sequesters carbon.

#### **Expected Impacts**

- Environmental: Improves soil health and clean energy expanding biodiversity and aiding carbon sequestration.
- Social: Supports green jobs and empowers local communities, particularly women
- Economic: Reduces reliance on fossil fuels, lowers energy and fertilizer costs, improves factory margins & reduces vulnerability to price fluctuations.

#### PROJECT KEY INFORMATION

#### LEAD ORGANIZATION

**Compact Syngas Solutions** 

#### CONSORTIUM PARTNERS

- Supivaa
- IITA

DURATION 01 Feb 2025 - 01 Mar 2028

#### LOCATION Kenya









## Smart Energy: Smart Grid Scale-Up in Nigeria

### Objective

The project will distribute power from an anchor site, electrifying homes and businesses, especially in underserved rural and urban areas while reducing diesel consumption and transforming solar PV owners into prosumers.

### **Transformational Project**

Energy distribution is automated to enable remote monitoring and control, allowing independent solar PV owners to trade energy with their communities and attracting private investment in solar energy.

### **Expected Impacts**

- Environmental: Diesel generators will be replaced, and emissions reduced, by scaling solar PV utilization across Nigeria's expansive population and energy demand.
- Social: Allows for small businesses to acquire reliable energy & improved electricity access supports information sharing and education.
- Economic: Direct cost savings by replacing diesel & reduced energy costs for underserved communities.

#### PROJECT KEY INFORMATION

LEAD ORGANIZATION Greenage Technologies Power Systems Ltd.

### CONSORTIUM PARTNERS Nithio Inc

- SolarGis
- Eauxwell Nigeria Ltd

**DURATION** 01 Feb 2025 - 01 Mar 2028

LOCATION Nigeria



Consumers





## **Key Points on GESI in Projects**

- GESI Mainstreaming makes projects more inclusive, effective, and impactful. UNIDO provides tools and guidance to help project developers integrate gender and social inclusion considerations.
- Apply gender and inclusion lens at all project phases.
- Monitoring and Reporting: Ensure gender-disaggregated data collection.
- Partner with gender-social focused organizations to enhance impact.







# **GESI: Monitoring and Reporting**

A2D Facility: gender output indicator focused on compliance with <u>OECD-DAC gender equality policy marker</u> score 1 throughout the project cycle.

Code	Value	Explanation	Minimum Criteria (should be met in full)
2A	Significant expected contribution to gender equality	Gender issues are not the main objective of the project or programme but are significantly reflected and integrated (mainstreamed) in all relevant dimensions: results, activities, M&E framework.	There is at least one explicit gender equality related output backed by at least one gender-specific indicator. A gender analysis of the project has been conducted and the findings inform project design. Data and indicators are disaggregated by gender, where applicable. The M&E component of the project is designed to report on the expected gender equality results. The logframe/results framework measures progress towards the project's gender-related output(s) through gender-specific indicators to track outcomes/impact.
3.3	A2D Project Monitoring Tool: Output Indicator 3.3	Demonstration project meets the criteria in the OECD DAC Gender Marker	A positive impact on advancing gender equality and/or the empowerment of women and girls, reducing gender discrimination or inequalities, or meeting gender-specific needs (OECD marker 1)







# **Environmental and Social Safeguards (ESS)**

### **UNIDO Environmental and Social Safeguards Policies and Procedures** (ESSPP)

- Defines UNIDO's commitment to responsible project implementation.
- Ensures compliance with International Laws and Best Practices.
- Provides guidelines for assessing environmental and social risks.
- Ensures projects contribute to Inclusive and Sustainable Development (ISID).







## **UNIDO ESSPP**



The Integrated Safeguard Policy Statement

The Operational Safeguards

- UNIDO's Operational Safeguards
- OS 1: Environmental and Social Assessment
- OS 2: Protection of Natural Habitats and Biodiversity
- OS 3: Involuntary Resettlement and Land Acquisition
- OS 4: Indigenous People
- **OS 5: Pest Management**
- OS 6: Cultural Heritage
- OS 7: Safety of Dams
- OS 8: Labor and Working Conditions
- OS 9: Resource Efficiency and Pollution Prevent and Control
- OS 10: Community, Health, Safety and Security
- OS 11: Information Disclosure and Stakeholder Engagement
- OS12: Accountability and Grievance System

#### Additional relevant safeguards

- •Gender Equality and Prevention of Gender-Based Violence
- •Children and People with Disabilities
- •Youth groups and constituencies of MEAs/Conventions
- •Fragile and Conflict-Affected Situations







## **ESS Monitoring and Reporting**

All supported projects report against an ESS output indicator in the project's Logframe, which complies with UNIDO'S Environmental and Social Safeguards Policies and Procedures throughout the project cycle

Code	Value	Explanation	Minimum Criteria (should be met in full)
3.4	A2D Project Monitoring	Demonstration project aligns with UNIDO's ESSPP	A positive impact on environmental sustainability and social inclusion, including the protection of biodiversity, sustainable land and water management, climate change mitigation and pollution reduction:
	Tool:	and its	Programmatic OS
	Output	Operational	OS 1: Environmental and Social Assessment
		Safeguards (9)	OS2: Protection of Natural Habitats
	3.4	criteria outline in	OS3: Involuntary Resettlement OS4: Indigenous People
		GEF-GCF	OS5: Pest Management
		ESS Indicators	0S6: Physical Cultural Resources
			OS7: Safety of Dams
			Framework Operational Safeguards
			OS8: Information Disclosure
			OS9: Accountability and Grievance Systems
			The project ensures equitable benefits, particularly for marginalized groups such as women and indigenous peoples and local communities (ILPs), and adheres to the criteria outlined in both UNIDO's Operational Safeguards in addition to GCF and GEF's Environmental and Social Indicators (particularly on social inclusion <u>68th GEF Council Meeting</u> )









## **Further Information**

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# A2D Facility-Supported Project Case Study: Showcasing Safeguards in Nepal



# Ms. Moon Pradhan

GRIPS 2 Project Member, Practical Action Nepal, A2D Facility Supported Project





# **Powering an Inclusive Future**

Grid Resilience through Intelligent Photovoltaic and Storage Phase 2 (GRIPS 2)





# Climate Change is affecting Nepal, the heart of Himalayas



Nepal is exposed to and defenseless against the above risks



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# This makes access to electricity unreliable....



99.8% 3-5 hr

\$3.7**B** 

**Electricity Depends** On Hydro

Power Cut In A Day For Industries

Worth Fuel Imports

- There is a discrepancy between energy supply and demand
- Overdependence on hydro affects quality and reliability of energy
- Climate change puts energy security at risk





# **PV in Nepal**





- Solar Deployment on the rise
- Gham Power owns and operates > 10 MW solar across 25 industries
- Significant Impact: Reduced Fossil Fuel Imports **O** Financial Savings

 Minimal GESI considerations



- Minimal Environmental considerations
- No circularity plans





# Project Overview (GRIPS 2)

Demonstration of industrial scale smart grid technology for generator displacement

Industrial scale-up of GRIPS

- 2 MW / 4 MWh BESS
- 1 MWp PV
- Laxmi Steel Factory, Sunwal, Nepal





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# **Beneficiary**



## **Steel Industry: Laxmi Steels**











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# The 'Why': GESI in GRIPS2 & Clean Energy

Practical Action's Commitment to Equality

**UNIDO's Inclusive Expectations** 

**Better Outcomes Through Participation** 

Addressing Industrial Needs Equitably

Lighthouse' Effect – Setting a Precedent



# **Current Situation**

- The industry is GESI blind
- No GESI or ESS guidelines
- No Female staff at the factory/technical roles
- Factory currently provides employment, but many jobs linked to traditional practices, limiting modern skill development.



# The Plan

GRIPS2 will create inclusive job opportunities (installation, operation, maintenance) and enhance skills in renewable energy.

We aim to transform Laxmi Steel to be Gender Sensitive through different milestones and activities.

Proactively ensure equitable access to new skills and opportunities created by GRIPS2.



# How We Will Get There

Key Planned Activities			
Establish GESI Steering Committee at Laxmi Steel: To oversee GESI initiatives	<b>Develop GRIPS2 Project GESI Action Plan</b> Based on GESI Audit findings, detailing specific interventions.		
<b>Develop GESI Policy Framework for</b> <b>Laxmi Steel :</b> Integrating GESI into company policies, grievance redressal, safeguarding, anti-discrimination.	<b>Targeted Technical Training :</b> "50% of the trainers [trainees] will be selected to represent women and individuals from marginalised communities" for high-level technical training (10 engineers, 50 solar technicians).		
<b>Capacity Building at Laxmi Steel</b> Empowerment training, skill upgradation programs for factory staff to enhance leadership/decision-making.	<b>GESI-Sensitive Dissemination :</b> Including GESI aspects in knowledge products, promoting 50% female participation in stakeholder events		
<ul> <li>Systematic GESI Monitoring &amp; Reporting: <ul> <li>Gender-disaggregated data collection.</li> <li>Monitoring gender impacts.</li> <li>Quarterly GESI reporting.</li> <li>Annual review against OECD DAC Gender Marker 1.</li> </ul> </li> </ul>			



## What We Will Achieve

#### **GESI Frameworks in Place:**

- GESI Steering Committee established and operational.
- GRIPS2 Project GESI Action Plan developed and implemented.
- o GESI Policy Framework adopted by Laxmi Steel.

#### Increased Capacity & Representation:

- At least 50% women/marginalized individuals trained in advanced solar/AI installation and design
- Enhanced GESI awareness and capacity among Laxmi Steel staff.

Improved Workplace Conditions (SIA Insights:		Data-Driven Accountability:	
0	Safer working conditions at Laxmi Steel due to reliable	0	Baseline GESI data established for Laxmi Steel.
	clean power.		Regular gender-disaggregated reporting on GRIPS2
0	Improved air quality benefiting health of all workers.		indicators.
0	Potential for new, skilled job roles related to the microgrid being equitably accessed.	0	Final GESI Report for GRIPS2 submitted.

#### Enhanced Stakeholder Engagement:

Aim for 50% female participation in GRIPS2 stakeholder engagements.

# ESS & GESI

Work with the private sector to develop and implement:

GESI action planESS action plan

#### Steering Steering

- Local government, diverse industry partners, NGOs, etc.







# **Opportunities highlighted by GRIPS2**

**Demonstrating GESI in Technical Projects** 



## **Catalytic Potential**

Successful GESI integration in a "lighthouse" project can set a precedent for the sector.

## **Building the Business Case**

Showing how an inclusive approach can lead to better project outcomes (e.g., wider talent pool, better community relations for future projects).





# Grid Resilience through Intelligent Photovoltaic Storage

# THANK YOU!

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## **Panel Discussion**



Moderator: Ms. Lorena Alberte, Project Administrator, A2D Facility, UNIDO



Emma Frances Marsden, Principal Safeguards Specialist, Office of Safeguards, ADB



Moon Pradhan GRIPS2 Project Member, Practical Action Nepal







Bruce Dunn Director, Office of Safeguards ADB



Anna Lobanova Energy Connectivity Expert, UN ESCAP





# **Q&A** Session







# **Closing Reflections and Feedback Form**

 $\bigotimes$  Please take a few minutes to fill out the Feedback Form (<u>Here</u>). Your input will help us improve future activities.

Time to complete: ~5- minutes (responses remain confidential). Thank you for your valuable feedback.

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ACEF 2025 Pre-Forum Event A2D Facility - Participant Feedback Form

