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LEAP-RE
Long-Term Joint EU-AU Research and Innovation Partnership on Renewable Energy

Monitoring and Evaluation (M&E) system report of 8 WPs of Pillar 2

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LEAP-RE

Long-Term Joint EU-AU Research and Innovation Partnership on Renewable Energy

Research & Innovation Action

October 2025

D1.17- Monitoring and Evaluation (M&E) System Report of 8 Work Packages of Pillar 2

Version N°3

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Abbreviations and Acronyms

Acronym	Description
LEAP-RE	Long-Term Joint EU-AU Research and Innovation Partnership on Renewable Energy
LEAP-SE	Long-Term Joint EU-AU Research and Innovation Partnership on Sustainable Energy
MEL	Monitoring, Evaluation and Learning
WP	Work Package
M&E	Monitoring and Evaluation
MEL Plan	Monitoring, Evaluation and Learning Plan
AU	African Union
EU	European Union
CCSE	Climate Change and Sustainable Energy
HLPD	High Level Policy Dialogue
STI	Science, Technology and Innovation
EPC	Electric Pressure Cooker
NCAE	Net Carbon Assessment and Evaluation
REREC	Rural Electrification and Renewable Energy Corporation
EMPA	Swiss Federal Laboratories for Materials Science and Technology
PMB	Programme Management Board
KPI	Key Performance Indicators

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Summary

The Monitoring and Evaluation (M&E) System Report is the final assessment of the eight Research and Innovation (R&I) projects within the LEAP-RE Pillar 2 portfolio. The deliverable is situated within the overall project context of demonstrating the efficiency and impact of the AU-EU High-Level Policy Dialogue (HLPD) on Science, Technology and Innovation (STI) partnership. The key objective of this M&E exercise is to provide exhaustive evaluation of project progress, achievements, and lessons learned to inform future Africa-Europe R&I collaborations.

The methodology employed a mixed-methods approach, combining qualitative evaluation (structured interviews and thematic analysis) with a quantitative Key Performance Indicator (KPI) assessment. Crucially, the KPI scoring was refined to align with the combined assessment criteria of the CCSE Partnership and the HLPD's three Impact Pathways (Tangible Outputs, Stakeholder Capacities, and Partnerships). This alignment ensures the assessment directly measures contribution to the program's strategic goals.

The results confirm the strong overall performance of the Pillar 2 portfolio. Key findings include exceptional performance in Access to energy, and knowledge and capacity building. The report highlights persistent challenges, such as equipment customs delays and administrative burden, and provides insights for the design of future R&I programs.

Keywords

LEAP-RE, Pillar 2, Monitoring and Evaluation (M&E), High-Level Policy Dialogue (HLPD), Key Performance Indicators (KPI), Sustainable Energy, Africa-Europe Partnership, CCSE, Impact Pathways, Portfolio Assessment.

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1. Context and Introduction

The Long-Term Joint EU-AU Research and Innovation Partnership on Renewable Energy (LEAP-RE) is a five-year collaborative initiative that has brought together 83 partners committed to implementing an Africa-Europe joint research and innovation program addressing key renewable energy challenges. As this program approaches its conclusion in 2026, it is essential to assess the progress, achievements, and lessons learned from its constituent projects.

LEAP-RE is structured around three strategic pillars, with Pillar 2 serving as a critical component focused on Research and Innovation projects and capacity building activities of the internal consortium. It brings together European and African researchers and innovators through eight selected research and innovation projects, chosen in early 2020 by the consortium before submission to the European Commission. These projects represent the collaborative heart of the LEAP-RE initiative, demonstrating practical applications of Africa-Europe cooperation in renewable energy development.

1.1 The Eight Pillar 2 Projects

The Pillar 2 portfolio encompasses a diverse range of renewable energy initiatives, each addressing specific challenges and opportunities across the African continent. A table of the participating project's focus is marked ***Annex 1***.

PROJECT NAME	DESCRIPTION
EURICA	Europe & Africa cooperation, from grid digitization to sustainable energy for all
Energy Village	Long-term program for achieving renewable energy self-sufficiency at the local level
Geothermal Atlas for Africa	Mapping geothermal resources for the development of African electricity production and water use applications
Geothermal Village	Smart/off-grid geothermal stand-alone, cascade-use systems
LEOPARD	Micro-grid technology for widespread use of renewable energy sources in Africa
PURAMS	Productive Use in Rural African Markets using Standalone Solar
SETaDISMA	Sustainable Energy Transition and Digitalization of Smart Mini-Grids for Africa
RE4AFAGRI	Renewable Energy for African Agriculture: Modelling Excellence and Robust Business Models

Table 1: The 8 pillar 2 projects

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1.2 Program Significance and Scope

LEAP-RE operates within the framework of science diplomacy, bringing African and European governments together around shared objectives in science and technology. The partnership has fostered a cooperative ecosystem through joint funding calls, institutional twinning, peer-to-peer exchange, capacity-building activities, stakeholder forums, and an online knowledge- sharing platform.

The program aligns with the specific objectives of the roadmap for a jointly funded AU-EU research & innovation partnership on climate change and sustainable energy (CCSE) adopted by the AU-EU High-Level Policy Dialogue (HLPD) on Science, Technology and Innovation (STI). LEAP-RE has aimed to demonstrate the efficiency of joint programming and contribute to the production of new knowledge, innovations, technology, products, and services in renewable energy topics of strategic relevance to AU-EU collaboration.

1.3 Assessment Rationale

As the LEAP-RE program reaches its conclusion, conducting an exhaustive assessment of the Pillar 2 projects becomes crucial for several reasons:

- **Knowledge Capture:** Documenting the experiences, challenges, and successes of projects leads towards preserving institutional knowledge.
- **Impact Evaluation:** Assessing the real-world impact and effectiveness of the implemented projects through knowledge sharing.
- **Lesson Learning:** Identifying best practices and areas for improvement to inform future Africa-Europe renewable energy collaborations.
- **Stakeholder Accountability:** Providing transparency to funders, partners, and beneficiary communities about project outcomes.
- **Future Planning:** Informing the development of post-2025 collaboration frameworks, specifically in relation to the Long-Term Joint EU-AU Research and Innovation Partnership on Sustainable Energy (LEAP-SE) call and long-term partnership strategies.

2. Scope and Methodology

2.1 Assessment Methodology and Objectives

The assessment employed a mixed-methods research methodology that integrated multiple data collection and analysis approaches to evaluate the LEAP-RE Pillar 2 portfolio. This methodology was designed to capture both the quantitative performance outcomes and the qualitative experiences of project implementation, ensuring a balanced and thorough assessment of the eight strategic projects.

The KPI assessment aligns with the MEL Framework of the AU-EU HLPD on STI, particularly within the CCSE Partnership. This alignment ensures that the performance and impact of the Pillar 2 projects contribute directly to the HLPD's "meta theory of change" and its three core Impact Pathways:

1. **Impact Pathway 1**: Generation of tangible research outputs to allow dissemination and uptake and generate real impact.
2. **Impact Pathway 2**: Design projects to strengthen stakeholder capacities and create an environment conducive to innovations that have a lasting impact.

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3. **Impact Pathway 3**: Improve and extend partnerships by enhancing co-ordination and develop shared projects.

By structuring the assessment around the HLPD's strategic objectives, this report provides a direct link between the project-level outcomes and the high-level policy goals of the AU-EU partnership.

The assessment also references the standardized CCSE evaluation framework, funded by the European Commission, which provides a scoring system across three critical dimensions. The assessment focuses on interview findings from the Pillar 2 project leaders, documented achievements and outcomes, geographic scope and implementation context, and technical innovation and implementation readiness. A table summarizing the overall portfolio performance for the projects is marked **Annex 2.**

The primary objectives of this assessment are to:
1. Capture authentic experiences of project leaders who have implemented transformative renewable energy projects.
2. Document challenges encountered and solutions developed during project implementation.
3. Identify patterns and themes across different project contexts and technical domains.
4. Extract actionable lessons learned for future Africa-Europe renewable energy partnerships.
5. Provide recommendations for improving collaborative research and innovation programs.

2.2 Methodology Components

2.2.1 Qualitative Research Framework

The assessment employed a qualitative research methodology centered on semi-structured interviews with project leads based on existing project reports as the primary qualitative data collection method. Eight project leads participated in 60-90 minute virtual interviews conducted between 4th April and 5th November 2025, using open-ended questions to explore experiences, challenges, and solutions. Project leads were contacted as representatives of diverse technical domains and implementation contexts within the portfolio. The drawn-out interview period was due to scheduling conflicts with project leads, while others had left the projects at the time of our request for interviews.

The qualitative approach employed narrative analysis, allowing participants to share stories, cultural adaptations, and implementation strategies in their own words. This methodology prioritized understanding the "how" and "why" behind project outcomes, capturing tacit knowledge, interpersonal dynamics, and adaptive management practices that cannot be measured quantitatively. The interview participant schedule is marked as **Annex 3**.

2.2.2 Quantitative Performance Analysis

A systematic Key Performance Indicator (KPI) assessment framework was implemented using standardized metrics and numerical scoring. Each project was evaluated against 15 specific KPIs using a 0-3 scale, with scores aggregated across three weighted dimensions: Business/Economic indicators (50% weighting), Social indicators (25% weighting), and Environmental indicators (25% weighting). This quantitative analysis employed statistical methods including mean calculations, standard deviation analysis, and performance ranking to enable objective comparison across projects and identification of portfolio-level performance patterns.

To ensure alignment with the AU-EU HLPD MEL Framework, the three CCSE dimensions are further mapped to the HLPD's three impact pathways. This approach allows the report to present project performance both in terms of the original CCSE objectives and the high-level policy goals of the HLPD. The scores for the three HLPD Impact Pathways are calculated by aggregating the weighted scores of the corresponding CCSE dimensions.

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2.2.3 Document Review and Analysis

Review of project documentation, reports, deliverables, and outputs was conducted to triangulate interview findings with documented evidence. This included analysis of technical reports to validate qualitative insights with concrete project outcomes.

2.2.4 Cross- Project Comparative Analysis

A comparative methodology was employed to identify patterns, themes, and variations across the eight projects. This approach enabled the extraction of relevant insights while recognizing the unique contexts and challenges faced by individual projects. The methodology employed triangulation across multiple data sources to enhance validity and reliability. Qualitative interview data was cross-referenced with quantitative KPI scores, document analysis findings, and assessments to ensure understanding of project performance and impact.

2.2.5 Temporal Perspective and Stakeholder- Centered Approach

The assessment incorporated both retrospective and forward analysis of project achievements as well as lessons learned for future initiatives for better understanding of project lifecycles and long-term impact potential. It also prioritized stakeholder perspectives, particularly from project leads who possessed direct implementation experience. This approach ensured that the assessment captured authentic experiences and practical insights that might not be evident through purely quantitative or external evaluation methods.

2.3 Interview Framework

The interviews were structured around five key thematic areas:

Project Management and Coordination	**Exploring consortium management, partner coordination, and administrative challenges**
Technical Implementation	**Assessing technical achievements, innovation outcomes, and implementation challenges**
Stakeholder Engagement	**Evaluating community involvement, private sector engagement, and policy interface**
Capacity Building	**Documenting knowledge transfer, skills development, and institutional strengthening**
Impact Sustainability	**Assessing project outcomes, long-term impact, and continuation prospects**

Figure 1: Interview thematic areas

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3. Project Assessment Framework

3.1 Evaluation Dimensions

The assessment framework is built around five key dimensions that reflect the complex nature of international renewable energy research and innovation partnerships

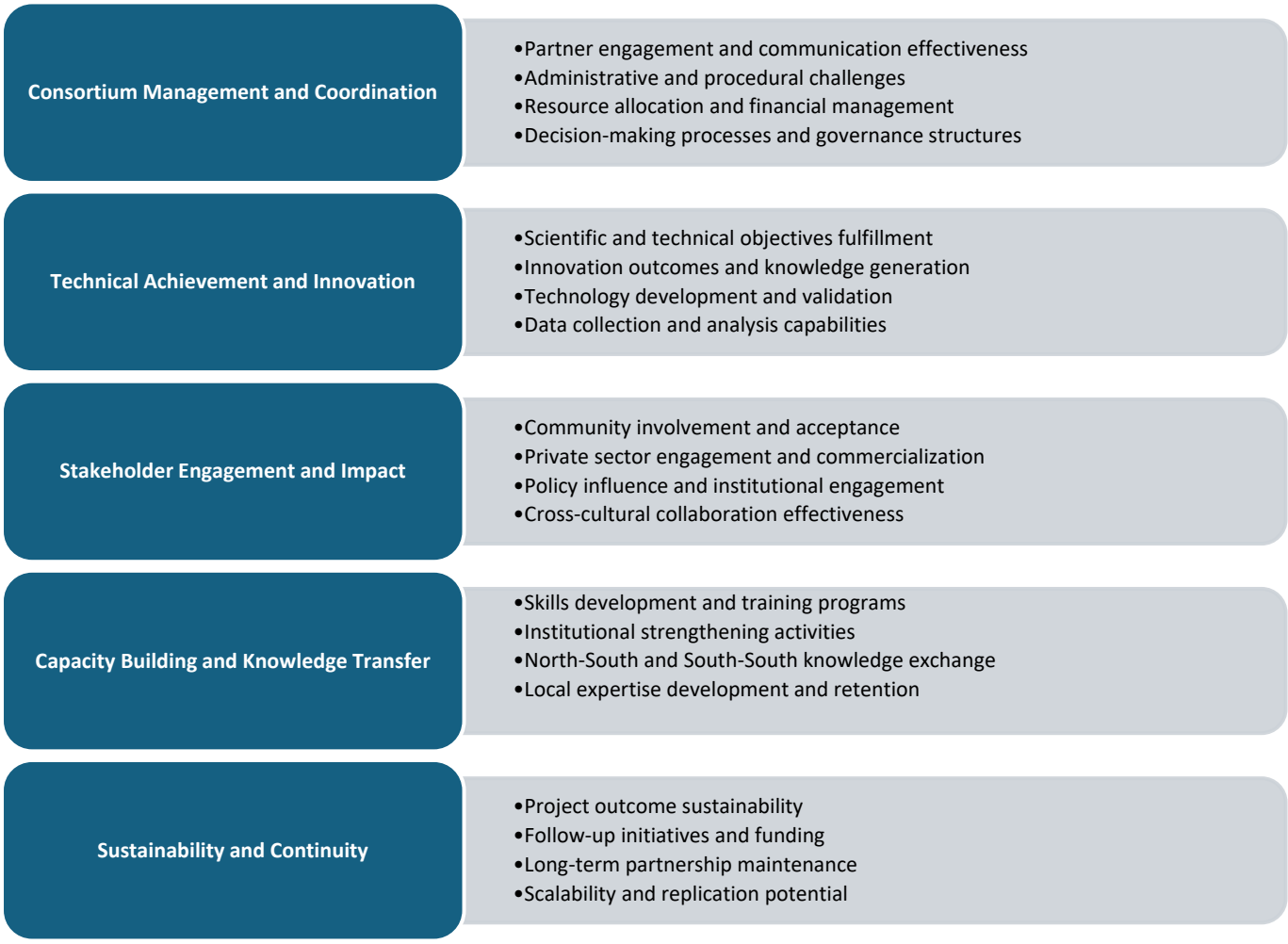

Figure 2: Evaluation dimensions

3.2 Assessment Criteria

KPI Scoring Framework (0-3 scale):

- **Business/Economic Indicators (50% weighting):** Market readiness, commercial viability, technology transfer
- **Social Indicators (25% weighting):** Community engagement, gender inclusion, capacity building
- **Environmental Indicators (25% weighting):** Environmental benefits, climate resilience, sustainability.

KPI Dimension	Weighting	Key Focus Areas (Indicators)	Aligned HLPD Impact Pathways

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Business/ Economic Indicators	50%	Market readiness, commercial viability, technology transfer	Pathway 1 (Tangible Outputs & Real Impact) & Pathway 2 (Conducive Environment for Innovation)
Social Indicators	25%	Community engagement, gender inclusion, capacity building	Pathway 2 (Strengthen Stakeholder Capacities) & Pathway 3 (Improve and Extend Partnerships)
Environmental Indicators	25%	Environmental benefits, climate resilience, sustainability	Pathway 1 (Tangible Outputs & Real Impact) & Pathway 2 (Conducive Environment for Innovation)

Table 2:KPI scoring framework

This mapping ensures that the project-level performance measured by LEAP-RE directly feeds into the HLPD's strategic monitoring and evaluation goals for the CCSE Partnership.

3.3 Cross-Cutting Themes

The assessment also examines cross-cutting themes that emerged across multiple projects as further shown in the figure below.

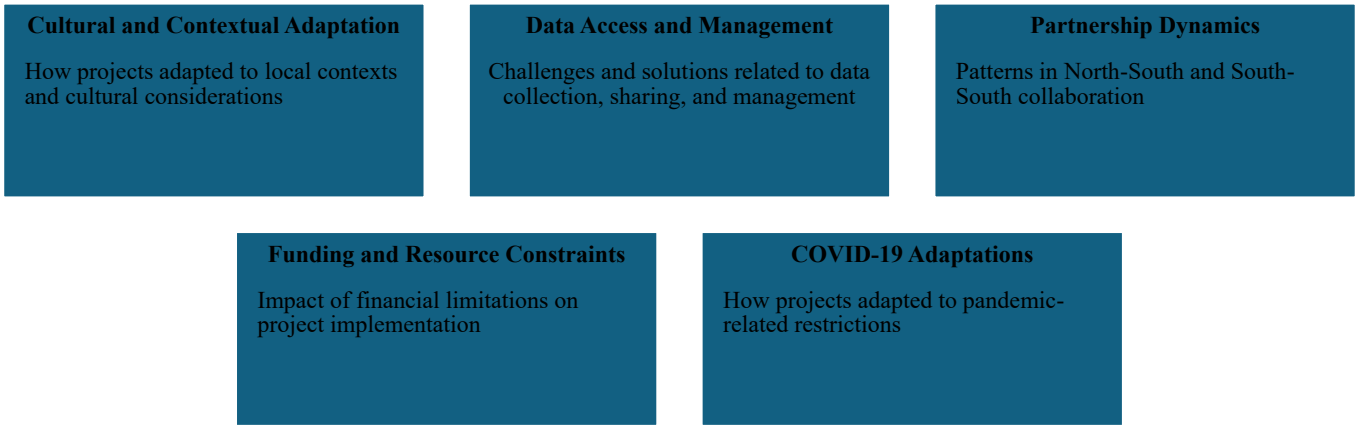

Figure 3: Cross cutting themes in Pillar 2 projects

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4. Individual Project Review

4.1 Geothermal Atlas for Africa

4.1.1 Project Overview

The Geothermal Atlas for Africa project focused on mapping of geothermal potential across the African continent, exploring applications for both power generation and cooling and heating systems. The project employed standardized Net Carbon Assessment and Evaluation (NCAE) methodology to assess cost and environmental impacts, particularly carbon (CO2) emissions and global warming potential.

4.1.2 HLPD Impact Pathway Analysis

Impact Pathway	Key Achievements	Major Challenges	Solutions Implemented	Lessons Learned
Pathway 1: Tangible Outputs & Real Impact (Business/Economic & Environmental)	Successfully completed a geothermal atlas (technical output). Applied NCAE methodology (methodological innovation). Proposed a new project under the LEAP-SE call, focusing on solar and geothermal-based cooling in North Africa.	Struggled with data management and inconsistent data sharing, hindering output generation. Funding limitations due to budget/ resource allocation constraints	Maintained momentum through conferences and publications to ensure dissemination.	Large consortiums require dedicated coordination resources and clear communication protocols. Partner pre-qualification should include assessment of administrative capacity and EU procedure familiarity. Backup strategies are essential when key partners face internal disruptions. Standardized data sharing protocols should be established early in project
Pathway 2: Strengthen Stakeholder Capacities (Social & Environmental)	Conducted valuable stakeholder forums (capacity building). Applied NCAE methodology	African partners lacked familiarity with EU administrative requirements (capacity gap).	Used institutional collaboration (e.g., Strathmore University) to re-include partners and address capacity gaps.	

	(environmental assessment capacity).	Documentation gaps with achievement tracking documents having incomplete contributions.		implementation. Partial funding models require careful resource planning and partner commitment assessment.
Pathway 3: Improve and Extend Partnerships (Social & Economic)	Built relationships with partners from other work packages (partnership extension).	Coordinating 20 partners proved extremely challenging (co-ordination gap). A key partner (UNEP) could not participate meaningfully due to staff relocation	Implemented a core partner strategy and multi-channel communication to drive progress. Downsized with a smaller follow-up project to improve manageability and impact (partnership	

Table 3: HLPD Impact pathway Analysis- Geothermal Atlas

4.2 RE4AFAGRI - Renewable Energy for African Agriculture

4.2.1 Project Overview

The RE4AFAGRI project explored how renewable energy can support agriculture in sub- Saharan Africa, combining scientific research with strong capacity-building components. The project developed tools and models while targeting both technical experts and decision-makers across five African countries through workshops and bilateral exchanges.

4.2.2 HLPD Impact Pathway Analysis

Impact Pathway	Key Achievements	Major Challenges	Solutions Implemented	Lessons Learned
Pathway 1: Tangible Outputs & Real Impact (Business/Economic & Environmental)	Created models and tools for renewable energy in agriculture (technical output). Strong academic publication outcomes (dissemination).	Struggled with engaging private companies in knowledge uptake and lacked technology developers in the consortium, hindering commercial impact.	Integrated consultancy firms to bridge science and commercial practice. Directly involved technology developers for better implementation alignment.	Private sector engagement requires trusted intermediaries and clear value propositions. Technology developers should be included from project inception for better commercial
Pathway 2:	Delivered targeted capacity	Lacked proper	Included dedicated	

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Strengthen Stakeholder Capacities (Social & Environmental)	building programs for technical experts and decision-makers.	dissemination to non-scientific/public audiences, limiting broader capacity building.	communication partners for public-facing dissemination. Scaling existing tools to new institutions and geographies.	alignment. Dedicated communication resources are essential for public outreach and impact. Cross-project collaboration requires structured mechanisms and incentives. Institutional sustainability planning should begin early in project implementation.
Pathway 3: Improve and Extend Partnerships (Social & Economic)	Successfully engaged stakeholders from five African countries. Maintained informal scientific collaborations and developed follow-up proposals.	Lack of formal/trusted institutional framework for company engagement. Lacked sustained institutional collaboration post-project implementation.	Engaged private companies through trusted networks (e.g., AfriLabs). Established regular inter-project forums to foster cross-project collaboration.	

Table 4: HLPD Impact pathway analysis- RE4AFAGRI

4.3 Energy Village

4.3.1 Project Overview

The Energy Village was a project led by the University of Bath and implemented the Energy Village Concept across four African countries; Ethiopia, Kenya, Botswana, and Rwanda. The concept involved analyzing local renewable energy potential and replacing fossil fuel usage with sustainable sources based on locally available materials, particularly biogas from agricultural waste.

4.3.2 HLPD Impact Pathways Analysis

Impact Pathway	Key Achievements	Major Challenges	Solutions Implemented	Lessons Learned
Pathway 1: Tangible Outputs & Real Impact (Business/Economic	Contributed to policy through recommendations based on field experience.	Local resistance to providing data and cultural attachment to traditional energy sources affected adoption and data	Conducted targeted capacity building sessions and implemented compensation mechanisms	Community engagement requires clear benefit demonstration and cultural sensitivity.

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& Environmental)	(technical output). Demonstrated effective use of locally available materials (environmental benefit). Developed tools and frameworks for independent scaling (future impact).	collection. Reluctance by private companies to share energy data.	for data participation. Developed standardized household data templates and village level toolkits for easier collection	Compensation mechanisms can improve data collection participation. Cultural protocols and local leadership engagement are essential for project success. Security assessment should be integral to site selection processes. Financial oversight structures must be established early with clear accountability. Local capacity building is crucial for project sustainability and continuation.
Pathway 2: Strengthen Stakeholder Capacities (Social & Environmental)	Delivered effective local capacity building and training programs. Developed strong community involvement and local data collection methodologies.	Difficulty identifying competent local technology installers (capacity gap). Safety risks in some villages making data collection unsafe or impossible.	Built local installer capacity and established partnerships with regional energy companies. Pre-screened villages for security and data feasibility before selection.	
Pathway 3: Improve and Extend Partnerships (Social & Economic)	Successfully implemented concepts across four African countries (partnership extension). Achieved overall smooth execution and coordination.	Financial management issues with some partners caused reporting delays (co-ordination challenge). LEAP mechanism excluded a fundamental partner (partnership disruption). Limits to engagement due to varying socio-cultural dynamics High travel burden with complex logistics across	Established clear financial accountability structures with African partners. Engaged local chiefs/officials using culturally appropriate protocols (local partnership). Lobbied for broader inclusion of Global North partners. Staggered, less intensive	

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		multiple countries	travel schedules with regional coordination established.	

Table 5: HLPD Impact pathway analysis- Energy Village

4.4 SETaDISMA - Sustainable Energy Transition and Digitalization

4.4.1 Project Overview

The SETaDISMA project, completed in October 2024, brought together 14 partners from Africa and 7 from Europe, focusing on three main pillars: data collection and energy modeling, smart integration into mini-grids, and business model development. The project emphasized capacity building and policy-relevant tool development.

4.4.2 HLPD Impact Pathway Analysis

Impact Pathway	Key Achievements	Major Challenges	Solutions Implemented	Lessons Learned
Pathway 1: Tangible Outputs & Real Impact (Business/Economic & Environmental)	Integration of data collection, smart grid technology, and business model development. Created an easily accessible open-source tool. Generated materials relevant for policy development and implementation.	External data dependencies and lack of local data limited the scope of the models. Internal disruptions with Nigerian partner due to management changes affected timelines Unfamiliarity among partners affecting coordination.	Developed robust backup strategies for external data dependencies. Translation of technical outputs into accessible formats for policy impact. Development of standardized templates with clearer protocols for data collection.	External data dependencies require robust backup strategies and agile methodologies. Partner redundancy in technical competencies provides important risk mitigation. Early
Pathway 2: Strengthen Stakeholder Capacities (Social & Environmental)	Online capacity-building materials were developed. Successful stakeholder forums and training sessions (with EMPA).	Complexity of the technical outputs made it difficult for non-technical stakeholders to utilize the tools effectively. COVID-19 pandemic	Creation of overlapping competencies that included multiple partners with similar technical capabilities. Enhanced onboarding with dedicated partner	

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		restrictions and resource constraints limited in-person interaction and slowed collaboration. Stakeholder response variations with different institutional landscapes caused varying response times. Limited follow-up consortium formation due to national funding constraints.	familiarization workshops. Hybrid collaboration models balanced efficiency with relationship building needs. Development of institutional capacity pre-assessment protocols for stakeholder engagement.	coordination investment pays dividends throughout project implementation. Hybrid collaboration models balance efficiency with relationship building needs.
Pathway 3: Improve and Extend Partnerships (Social & Economic)	Achieved balanced partnership (14 African, 7 European partners). Demonstrated flexibility, allowing partners to step in when issues arose. Availed outputs through LEAP-RE	Initial coordination challenges due to the large number of partners. Lack of direct policymaker engagement limited immediate policy influence.	Early coordination investment paid dividends throughout project implementation. Proposed smaller, task-specific consortiums for future initiatives.	Policy impact requires dedicated translation of technical outputs into accessible formats.

Table 6: HLPD Impact pathway analysis- SETaDISMA

4.5 PURAMS - Productive Use in Rural African Markets

4.5.1 Project Overview

The PURAMS project, led by Strathmore University, focused on developing a standalone electric pressure cooker (EPC) powered by solar panels for rural African communities. The project included field testing, appliance prototyping, and policy/business research across Kenya, Rwanda, Mozambique, Spain, and Portugal.

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4.5.2 HLPD Impact Pathways Analysis

Impact Pathway	Key Achievements	Major Challenges	Solutions Implemented	Lessons Learned
Pathway 1: Tangible Outputs & Real Impact (Business/Economic & Environmental)	Developed a standalone solar EPC prototype with positive feedback on portability features (technical output). Conducted thorough policy and business model research through context-specific solutions by identifying a technical pathway to reduce energy demand and improve affordability. Influenced the Kenya National e-Cooking Strategy (policy impact).	Mass prototyping limitations and high costs affected extended field testing (commercial viability). Policy gaps and lack of subsidies hindered market adoption (real impact). Extreme weather (e.g., Mozambique) affecting data collection Funding ecosystem challenges with the African ecosystem less tolerant of long research and development cycles. Data collection delays due to COVID-19 Customs and logistical delays affecting prototype development.	Prioritized design for affordability. Explored carbon credit frameworks to subsidize initial appliance costs. Developed business models acknowledging Africa's venture capital climate. Advocated for utility-linked subsidies and time-of-use cooking tariffs. Partners from Kenya contributed to the electric cooking demonstrations organized by the Kenya Power and Lighting Company (KPLC) and MECS to create awareness on electric cooking solutions for both on-grid and off-grid.	Hardware innovation requires substantial prototyping resources and extended testing periods. Logistical constraints have to be taken into account for projects where a prototype relies on imported parts. For projects that involve prototype development, a technology provider should be amongst the partners.
Pathway 2: Strengthen Stakeholder Capacities (Social & Environmental)	Delivered training on data collection methodologies at LEAP-RE summer schools (capacity building). Conducted analysis of	Limited public awareness and need for substantial user training created adoption barriers (capacity gap). Limited practical implementation of carbon credit schemes for electric cooking.	Expanded community-based demonstrations and developed standardized training protocols for rollout with local NGOs/agencies.	User education and demonstration is critical for technology adoption. Policy frameworks

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	user behavior using cooking diaries (knowledge generation). Published an academic paper on solar cooking Contributed to congresses/webinars organized within the LEAP-RE framework on clean cooking.			must specifically address electric cooking rather than treating it as subset of biomass solutions. Carbon credit mechanisms need practical implementation pathways to support technology adoption. Business partnerships are essential for scaling beyond research and development phases.
Pathway 3: Improve and Extend Partnerships (Social & Economic)	Effective collaboration across five countries. Strong collaboration with national energy agencies (REREC) and international initiatives (MECS).	Difficult project coordination amongst partner countries. Market support gaps with few large manufacturers actively supporting EPC distribution (partnership gap). Competing policy agendas with conflicting priorities (LPG vs e-cooking) created confusion and diluted support.	Organized monthly virtual meetings for effective communication. Deepened stakeholder engagement with retailers and appliance manufacturers. Organized webinars where African and European researchers on solar cooking shared experiences, challenges and lessons.	

Table 7: HLPD Impact pathways analysis- PURAMS

4.6 Geothermal Village

4.6.1 Project Overview

The Geothermal Village project, led by the University of Lorraine, aimed to create a new geothermal prospect model and engage both technical and socio-economic dimensions across Kenya, Ethiopia, and Djibouti. The project focused on developing geothermal prospection guidelines and understanding local energy needs and expectations regarding geothermal resources.

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4.6.2 HLPD Impact Pathway Analysis

Impact Pathway	Key Achievements	Major Challenges	Solutions Implemented	Lessons Learned
Pathway 1: Tangible Outputs & Real Impact (Business/Economic & Environmental)	Developed models for geothermal prospection (technical output). Produced 3-4 academic papers combining geological/technical aspects with socioeconomic perspectives (dissemination). Successfully identified that local priorities often focus on water production rather than just electricity or heat generation.	Geothermal development timelines (10 years) misaligned with short-term funding cycles (impact realization). Academic partners focused on research and knowledge-building while African public/industrial partners wanted immediate, site-specific results. Ethiopian partners faced additional challenges due to civil war and internal university constraints.	Focused on developing general guidelines while accommodating partners' site-specific interests.	Long-term projects (5-10 years) are needed to match geothermal development timelines with appropriate funding mechanisms. Academic and industrial/public partners require different approaches and have fundamentally different objectives. Cross-country collaboration requires structured incentives and clear value propositions for all partners.
Pathway 2: Strengthen Stakeholder Capacities (Social & Environmental)	Successfully held a summer school in Kenya with 20-40 participants (capacity building). Socioeconomic interviews revealed important mismatches between European assumptions and local priorities (knowledge generation). Over 20-25 contributions to both European and African	Fear and mistrust of drilling in some communities (capacity/trust gap). Institutional constraints where university staff lacked support and time to participate (capacity gap). Difficulty communicating project's value to local partners, especially importance of joint prospecting and discussion.	Explored the added value of cross-country collaboration and knowledge sharing. Kenya summer school was organized as a capacity-building initiative despite limited cross-country participation. Continued academic dissemination through	Community engagement and trust-building are essential before drilling or exploration activities. Institutional support from partner universities and departments is crucial for meaningful participation. Student and university exchange networks could provide continuity for long-

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	congresses within the LEAP-RE framework produced. Plans for a synthesis paper combining geology, technology, and socioeconomic data were developed		papers and conference presentations. Synthesis publications plans combining multiple disciplinary perspectives were developed.	term projects.
Pathway 3: Improve and Extend Partnerships (Social & Economic)	Engaged both technical and socio-economic dimensions across Kenya, Ethiopia, and Djibouti (partnership extension).	Difficult coordination among countries and different types of partners (co-ordination challenge). Low cross-country collaboration (partnership gap). Poor participation in joint events (partnership gap).	Focused on developing general guidelines while accommodating partners' site-specific interests. Synthesis publications plans combining multiple disciplinary perspectives were developed.	

Table 8: HLPD Impact pathways analysis- Geothermal Village

4.7 EURICA - Europe & Africa Cooperation from Grid Digitalization to Sustainable Energy for All

4.7.1 Project Overview

The EURICA Work Package 15 (2021-2023) was a collaborative Africa-Europe initiative focusing on energy access through small-scale, mixed- discipline consortia. It brought together European and African partners including Auding (France), Sonabel (Burkina Faso), Institut Supérieur de l'Altémité (Cameroon), and Nanoé (Madagascar) to work on demand-side flexibility and nano-grid integration.

4.7.2 HLPD Impact Pathway Analysis

Impact Pathway	Key Achievements	Major Challenges	Solutions Implemented	Lessons Learned

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Pathway 1: Tangible Outputs & Real Impact (Business/Economic & Environmental)	Auding refined its grid software by testing in real African environments (technical output). Nanoé's nano-grid infrastructure successfully piloted local entrepreneurship in energy delivery (commercial viability). Nanoé's PhD student won the prestigious IEEE Empower a Billion Lives global award, demonstrating international recognition. Monthly project reviews fostered strong team cohesion and maintained regular communication throughout the project.	Grid software refinement was a European-centric output, requiring further African adaptation for full impact. Connectivity issues and IT system integration constraints limiting consistent participation in project activities. Regulatory misalignment in multiple contexts: (Burkina Faso): Lack of net-metering framework caused issues for users with smart meters. (Madagascar): Nanoé's "energy-as-a-service" model conflicted with traditional tariff structures. Cultural and organizational mismatches creating difficulties in scheduling due to differing work styles (field-based vs. office-based roles). Customs and logistics challenges for importing technical equipment	Auding refined its software based on African field experience, demonstrating adaptability. Regular monthly project reviews to ensure consistent communication. Flexible communication approaches to accommodate different partner working styles and availability.	Small consortium size (4-5 partners) enables more effective relationship building compared to larger partnerships. Including social sciences and humanities perspectives enriches technical projects and provides user-centered insights. Regular communication through monthly reviews is essential for maintaining project cohesion. Cultural bridging through internships and exchange programs effectively addresses coordination challenges. Local entrepreneurship training and capacity building are crucial for sustainable technology deployment. Regulatory frameworks must be considered early

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		COVID-related supply chain issues causing shortages in components like chipsets. Over-ambition in project design with unrealistic initial goals given cross-continental coordination constraints. Environmental concerns regarding travel where in-person consortium meetings offered limited return on carbon-intensive travel.		in project design to avoid implementation conflicts. Mixed-discipline approaches combining technical and social perspectives yield richer project outcomes.
Pathway 2: Strengthen Stakeholder Capacities (Social & Environmental)	Sonabel (Burkina Faso) staff gained capacity through testing and refinement of Auding's software (capacity building). Six-month internship program conducted at Auding, bridging cultural gaps between partners. Productive roundtable organized in Ouagadougou on gender in energy, solar integration, and digitization with near gender parity in participation. Nanoé successfully trained local entrepreneurs to run nano-grids, addressing local skill shortages and building local	The small-scale nature of the project limited the reach of capacity building efforts.	Internships were offered to African students to build local expertise. Organized capacity-building activities including a successful internship program. Localized training programs were developed to address skill gaps and build local entrepreneurship capacity. Innovative roundtable discussions that successfully addressed gender inclusion and	

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	capacity. Strong academic output with 7 publications and 1 book chapter. Conducted a successful webinar that reached 360 participants from institutions, private sector, and academia.		technical topics.	
Pathway 3: Improve and Extend Partnerships (Social & Economic)	Brought together a small, mixed-discipline consortium (partnership extension). Demonstrated successful collaboration between a European tech company (Auding) and African utilities/researchers (partnership model).	The small scale of the consortium limited the overall impact on the wider LEAP-RE network.	The project's success in piloting local entrepreneurship serves as a model for future partnerships.	

Table 9: HLPD Impact pathways analysis- EURICA

4.8 LEOPARD - Micro-grid Technology for Widespread Use of Renewable Energy Sources in Africa

4.8.1 Project Overview

The LEOPARD project focused on developing and demonstrating containerized micro-grid solutions for widespread deployment across Africa. The project implementation covered the entire micro-grid lifecycle from need analysis through installation, quality control, replication planning, and training. LEOPARD's core innovation centered on modular 20-foot container systems integrating photovoltaic panels, smart inverters, and lithium battery storage to provide reliable renewable energy access to rural and peri-urban communities.

The project was implemented through a consortium led by UPJV (Université de Picardie Jules Verne) whose technical approach emphasized scalability, standardization, and local adaptation, with demonstration sites established in Benin and Senegal to validate the technology

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under different geographic and climatic conditions.

4.8.2 HLPD Impact Pathway Analysis

Impact Pathway	Key Achievements	Major Challenges	Solutions Implemented	Lessons Learned
Pathway 1: Tangible Outputs & Real Impact (Business/Economic & Environmental)	Developed a tool for optimal energy planning (technical output). The tool's emphasis on local resources and community needs ensures environmental and social relevance (real impact). Integrated design approach centered on the integration of multiple renewable energy technologies within standardized container platforms. Detailed energy demand profiling at the Songhai pilot site, implementing a data collection protocol using network analyzers to capture real-time energy consumption at 1-minute intervals. Successful installation and commissioning of containerized systems in two different geographic locations	The complexity of the tool required significant training for local adoption, potentially limiting its scalability. Technical integration complexity due to limited space within 20-foot containers required careful optimization of component placement while ensuring adequate thermal management in tropical climates. Complications due to site-specific adaptation requirements to meet standardized container solutions to diverse local conditions across different African contexts. Performance optimization and maintenance with multiple operational challenges affecting system performance.	Conducted extensive field testing and user feedback sessions to simplify the tool's interface and functionality Enhanced ventilation systems designed for tropical climates, ensuring optimal operating temperatures for all components Implemented modular design approaches that allowed for standardization while enabling local adaptation. Developed maintenance protocols addressing identified operational challenges like anti-dust measures and cleaning procedures.	Energy planning tools must be highly localized and user-friendly for effective adoption in rural African contexts. Community involvement in the design phase is critical for ensuring the tool addresses real-world needs. The integration of local knowledge with technical expertise is essential for optimal energy planning solutions. Detailed energy demand profiling and site assessment before system design and installation is crucial. The project's

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	(southern and central regions).			systematic quality control framework, covering all system components and performance parameters, proved essential for ensuring system reliability and identifying optimization opportunities. Through its containerized approach, the project demonstrates the potential for standardized, scalable renewable energy solutions that can be adapted to diverse local contexts while maintaining technical and economic viability.
Pathway 2: Strengthen Stakeholder Capacities (Social & Environmental)	Conducted training sessions for local planners and community leaders on using the energy planning tool (capacity building) Innovative container design and technical solutions based on centralized architecture that featured removable frames for PV panel deployment.	Data collection for the tool was challenging, requiring significant local effort and expertise. Regulatory and standards compliance issues with varying national electrical standards and safety regulations across different implementation countries. Local capacity and skills gaps challenges in system installation, operation, and maintenance.	Developed standardized data collection protocols and provided on-site support to local teams. Developed technical documentation and operational procedures to support local capacity building.	
Pathway 3: Improve and Extend Partnerships (Social & Economic)	Successfully engaged local communities and planning authorities in the tool's development and testing (partnership extension). Replication analysis and scalability assessment using advanced GIS tools (LENI) and optimization software (Memogrid), identifying 196 economically viable replication sites in Benin and 321 sites in Senegal.	Coordination across the consortium was challenging due to the highly localized nature of the project's work.	Established a dedicated project manager to oversee cross-country coordination and communication.	

Table 10: HLPD Impact pathway analysis- LEOPARD

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5 Cross-Cutting Assessment and Analysis

5.1 KPI Assessment Methodology

5.1.1 Assessment Framework

The KPI assessment aligns with the MEL Framework of the AU-EU HLPD on Science, Technology and Innovation, particularly within the CCSE Partnership. This alignment ensures that the performance and impact of the Pillar 2 projects contribute directly to HLPD's "meta theory of change" and its three core Impact Pathways. By structuring the assessment around the HLPD's strategic objectives, this report provides a direct link between the project-level outcomes and the high-level policy goals of the EU-AU partnership.

The assessment also references the standardized CCSE evaluation framework, funded by the European Commission, which provides a scoring system across three critical dimensions. The assessment focuses on interview findings from the Pillar 2 project leaders, documented achievements and outcomes, geographic scope and implementation context, and technical innovation and implementation readiness.

5.1.2 Scoring Methodology

Each KPI is scored on a scale of 0-3:

- ✓ **0:** No impact or negative impact
- ✓ **1:** Low positive impact
- ✓ **2:** Medium positive impact
- ✓ **3:** High positive impact

Scores are weighted according to category importance and aggregated to provide overall project performance metrics. A series of diagrams referencing the KPI results is marked ***Annex 4.***

5.1.3 Overall Project Performance

The KPI assessment reveals significant variation in project performance across the three assessment dimensions:

1. **PURAMS – 93.1%**
2. **RE4AFAGRI – 80.6%**
3. **Energy Village – 76.4%**
4. **LEOPARD – 76.4%**
5. **Geothermal Village- 75.0%**
6. **Geothermal Atlas – 70.8%**
7. **SETaDISMA – 68.1%**
8. **EURICA – 68.1%**

A Graph showing the overall performance and ranking of the projects is marked as ***Annex 5A*** and a detailed KPI score matrix is marked ***Annex 5B.***

5.1.4 Statistical Overview

- Mean Score: **2.281/3.0 (76.0%)**
- Median Score: **2.271/3.0 (75.7%)**
- Standard Deviation: **0.229**
- Performance Range: **2.042 - 2.792 (0.750 point spread)**

The relatively low standard deviation (0.23) indicates consistent performance across the portfolio, with all projects achieving solid impact across multiple dimensions.

5.1.5 Performance Distribution Analysis

The score distribution further reveals the following performance distribution:

- **High Performers (>2.3):** PURAMS (2.79), Energy Village (2.30), RE4AFAGRI (2.42)
- **Medium-High Performers (2.0-2.2):** LEOPARD (2.29), Geothermal Village (2.25), Geothermal Atlas (2.13), SETaDISMA (2.04), EURICA (2.04)

This distribution indicates that the LEAP-RE Pillar 2 portfolio has achieved consistently strong performance, with no projects falling below acceptable impact thresholds. The assessment confirms the portfolio's overall strength, with 75% of projects achieving medium-high to high performance levels. A table showing the performance drivers analysis and a graph showing performance analysis for the business, social and environmental categories are marked ***Annex 6A*** and ***6B*** respectively***.***

5.1.6 Strategic Implications

The dual-framework KPI analysis reveals that LEAP-RE Pillar 2 projects excel in all three HLPD Impact Pathways, directly supported by the strong performance in the CCSE-aligned dimensions:

- **Impact Pathway 1 (Tangible Outputs & Real Impact):** Strong performance in the combined Business/Economic and Environmental indicators confirms the successful generation of tangible research outputs, technical innovation, and meaningful real-world impact.
- **Impact Pathway 2 (Strengthen Stakeholder Capacities):** High scores in social indicators and the qualitative assessment confirm the successful strengthening of stakeholder capacities, community engagement, and the creation of an environment conducive to lasting innovation.
- **Impact Pathway 3 (Improve and Extend Partnerships):** The qualitative findings and strong performance in the Social and partnership-focused Business/Economic indicators demonstrate the success in improving and extending partnerships and co-ordination across the African and European consortia.

6 Conclusion and Next Steps

6.1 Overall Assessment

The LEAP-RE Pillar 2 projects have demonstrated remarkable success in advancing Africa-Europe renewable energy cooperation despite facing significant challenges. By assessing project performance against both the CCSE-aligned KPIs and the overarching AU-EU HLPD MEL Framework Impact Pathways, this report confirms the projects' contribution to high-level policy goals. Through interviews with project leads representing diverse technical domains and implementation contexts, this assessment reveals both the transformative potential and practical complexities of international renewable energy partnerships. Key insights and recommendations for the KPI assessment categories for the project (Business and Economic performance, Social Impact performance and Environmental performance) are broken down under **Annexes 7, 8 and 9** respectively. An overall analysis of the project's KPI performance based on the 15 KPI categories is detailed under **Annex 10**.

6.2 Key Achievements

The assessment reveals that successful Africa-Europe renewable energy partnerships require evolution beyond traditional North-South cooperation models. Effective partnerships demonstrate genuine bidirectionality where successful projects recognize and leverage expertise

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from both African and European partners; technical excellence must be combined with deep cultural understanding and adaptation; sustainable impact requires investment in African institutional capacity rather than dependence on external coordination; and projects succeed when they develop local leadership capacity that can continue independently.

The projects further demonstrate that successful renewable energy innovation in African contexts requires context-specific design where technologies must be adapted to local resources, capabilities, and cultural practices; an integrated approach where technical innovation must be combined with business model development, policy engagement, and capacity building; sustainability planning where innovation sustainability requires early planning for local manufacturing, maintenance, and scaling; and market ecosystem development where technical innovation alone is insufficient without supporting market ecosystem development.

The Pillar 2 projects collectively succeeded in the following areas:

1. **Technical Innovation**
   All projects successfully developed innovative solutions addressing specific renewable energy challenges, from geothermal mapping to solar-powered cooking appliances and nano-grid systems. These innovations demonstrate the value of combining European technical expertise with African local knowledge and implementation experience.

2. **Capacity Building**
   Projects consistently achieved their capacity building objectives, creating lasting skills and knowledge in partner institutions. The bidirectional nature of this knowledge transfer has strengthened both African and European partner capabilities, with examples like EURICA's internship program demonstrating effective cultural and technical exchange.

3. **Network Development**
   Beyond technical outputs, projects have created valuable professional networks and institutional relationships that continue to generate collaboration opportunities and knowledge exchange, forming the foundation for future partnerships.

4. **Methodological Advancement**
   Projects have developed and validated methodologies for international renewable energy cooperation that provide templates for future initiatives, from consortium management strategies to stakeholder engagement approaches.

A table reflecting successful strategies employed by the different projects is marked as **Annex 11**.

6.3 Persistent Challenges

While the Pillar 2 portfolio demonstrated great performance and achieved a high baseline of success, the implementation of complex, multi-country R&I projects in the African context is inherently challenging. These challenges are critical for informing the design and risk mitigation strategies of future Africa-Europe R&I partnerships.

1. Large, diverse consortiums consistently created coordination challenges that strained project management capacity and communication effectiveness across multiple projects.
2. Reliance on external data sources, particularly from government agencies and utilities, created significant project risks and delays across multiple initiatives.
3. Cultural differences, private sector engagement difficulties, and policy interface challenges required substantial adaptation and innovation.
4. Funding limitations and sustainability planning challenges affected project implementation

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and long-term impact potential.

Annex 12 provides detailed insight into the common challenges that affected the Pillar 2 projects.

6.4 Implications for Future Initiatives

The M&E process and the documented lessons learned from the Pillar 2 portfolio provide a unique and valuable evidence base for designing and implementing future Africa-Europe R&I partnerships. By translating the persistent challenges and successful strategies into actionable lessons, the table below outlines implications and recommendations towards enhancing efficiency, maximizing impact, and ensuring the long-term sustainability of the energy transition.

Design	Scope
Enhanced Selection Criteria	✔ Integration of qualitative assessment findings with quantitative KPI analysis provides understanding of project performance and impact. ✔ Balance portfolio across performance dimensions ✔ Prioritize projects with clear commercialization potential.
Improved Support Systems	✔ Develop refined partnership models incorporating lessons learned about consortium management, stakeholder engagement, and sustainability planning. ✔ Work with EU institutions to develop simplified administrative procedures and enhanced support systems for African partners. ✔ Create dedicated mechanisms for translating research outputs into policy-relevant formats and engaging with policymakers. ✔ Provide intellectual property support services. ✔ Provide scaling and replication guidance.
Monitoring	✔ Regular KPI assessments throughout the project life cycle ✔ Adaptive management based on performance data ✔ Continuous improvement mechanisms
Optimized Consortium Design	✔ 8-12 partner optimal size based on management feasibility ✔ Clear role definition and responsibility allocation ✔ Enhanced pre-project partner assessment and preparation
Long-term Impact Tracking	✔ Extended monitoring beyond project completion ✔ Assessment of sustainability and continuation outcomes ✔ Evaluation of scaling and replication success

Table 11:Future program design implications

6.5 Next Steps and Recommendations

The successful completion of the Pillar 2 M&E process is a clear starting point for future action. The recommendations provided below are based on the portfolio performance and designed to inform policy adjustments, guide the design of successor programs like LEAP-SE, and ensure the sustained impact of the AU-EU HLPD on STI. More detailed lessons learned, and recommendations are detailed under ***Annex 13***.

1. Establish dedicated business development support for high-potential projects to promote commercialization.
2. Implement systematic intellectual property assessment and development protocols.

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3. Develop standardized approaches for project scaling and replication.
4. Strengthen mechanisms for private sector involvement and investment.
5. Integrate lessons learned from this assessment into ongoing LEAP-RE/SE activities and future call development.
6. Develop best practice guides based on successful strategies identified across projects.
7. Implement mechanisms to maintain professional networks and relationships developed through Pillar 2 projects.
8. Build support systems for research-to-market transitions.
9. Begin planning for regional hub establishment to support future Africa-Europe renewable energy cooperation.
10. Develop innovative financing mechanisms for project continuation and scaling.
11. For high performing projects, prioritize for scaling and replication support and develop them as flagship examples for future initiatives while leveraging them for knowledge transfer and mentoring.
12. Focus on specific improvement areas for medium performers while providing targeted support for commercialization readiness.
13. For developing projects, provide intensive support for business model development, partnership and consortium management with focus on specific high impact outcomes.

7. Final Reflections

The LEAP-RE Pillar 2 projects represent a significant step forward in Africa-Europe renewable energy cooperation, demonstrating both the potential and challenges of international partnership in addressing global energy challenges. The experiences documented in this assessment provide valuable insights for future initiatives and highlight the importance of learning oriented approaches to international development cooperation.

The success of these projects in generating technical innovations, building capacity, and creating lasting partnerships, despite significant challenges, demonstrates the resilience and adaptability of international research and innovation partnerships. The lessons learned provide a foundation for more effective, sustainable, and impactful future initiatives.

As the global community faces increasing urgency in addressing climate change and energy access challenges, the experiences of LEAP-RE Pillar 2 projects offer valuable guidance for scaling up international cooperation in renewable energy. The combination of technical excellence, cultural sensitivity, institutional strengthening, and sustainability planning demonstrated by these projects provides a model for future initiatives seeking to create lasting impact in the global energy transition.

The commitment and innovation demonstrated by project leads and their teams, as documented in this assessment, exemplifies the potential for international cooperation to address complex global challenges.

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8. ANNEXES

8.1 ANNEX 1: Pillar 2 Participating Project Focus

Project Lead	Project	Technical Domain	Geographic Focus of Project Implementation
Danielle Fiaschi	Geothermal Atlas for Africa	Geothermal mapping and assessment	Continental Africa
Manfred Hafner	RE4AFAGRI	Agricultural renewable energy	Sub-Saharan Africa
Nebiyu Girgibo	Energy Village	Community energy systems	Ethiopia, Kenya, Botswana, Rwanda
Riccardo Mereu	SETaDISMA	Smart mini-grids	Multiple African countries
Vincent Muchiri	PURAMS	Solar-powered cooking appliances	Kenya, Rwanda, Mozambique
Yves Giraud	Geothermal Village	Geothermal mapping and assessment	Kenya, Ethiopia, Djibouti
Richaud Luc	EURICA	Nano grids	Burkina Faso, Cameroon, Madagascar
Rachid Ahmed	LEOPARD	Micro-grids	Benin, Senegal

Table 12: Pillar 2 participating project focus areas

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8.2 ANNEX 2: Overall Project Portfolio Performance

PROJECT	OVERALL KPI SCORE	BUSINESS/ ECONOMIC PERFORMANCE	SOCIAL IMPACT PERFORMANCE	ENVIRONMENTAL PERFORMANCE
PURAMS	2.792	2.83	2.83	2.67
RE4AFAGRI	2.417	2.17	2.33	3.00
Energy Village	2.292	2.00	2.83	2.33
LEOPARD	2.292	2.33	2.50	2.00
Geothermal Village	2.250	2.00	2.33	2.67
Geothermal Atlas	2.125	2.00	2.17	2.33
EURICA	2.042	2.00	2.17	2.00
SETaDISMA	2.042	2.00	2.17	2.00

Table 13: Overall project portfolio performance

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8.3 ANNEX 3: Interview Participant Schedule

Project Lead	Institution	Project	Interview Date	Duration
Danielle Fiaschi	University of Florence (UNIFI, Italy)	Geothermal Atlas for African	14th April, 2025	90 minutes
Manfred Hafner	ENI Foundation Enrico Mattei (HEAS)	RE4AFAGRI	15th April, 2025	70 minutes
Nebiyu Girgibo	University of Vaasa (UVA, Finland)	Energy Village	7th April, 2025	80 minutes
Riccardo Mereu	Politecnico di Milano (POLIMI, Italy)/ Panafrican University (PAUWES, Algeria)	Sustainable Energy Transition and Digitalization of Smart Mini-Grids for Africa (SETaDISMA)	12th June, 2025	70 minutes
Vincent Muchiri	Strathmore University (SU, Kenya)	Productive Use in Rural African Markets using Standalone Solar (PURAMS)	8th April, 2025	70 minutes
Yves Giraud	University of Lorraine (UL, France)	Geothermal Village	4th July, 2025	33 minutes
Richaud Luc	ODIT-E (France)	E&A Cooperation from Grid Digitalization to Sustainable Energy for All (EURICA)	4th July, 2025	44 minutes
Ahmed Rachid	University of Picardie Jules Verne (UPIV, France)	LEOPARD	5th November 2025	40 minutes

Table 14: Interview participant schedule

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8.4 ANNEX 4: KPI RESULTS

ANNEX 4A: Overall KPI Results

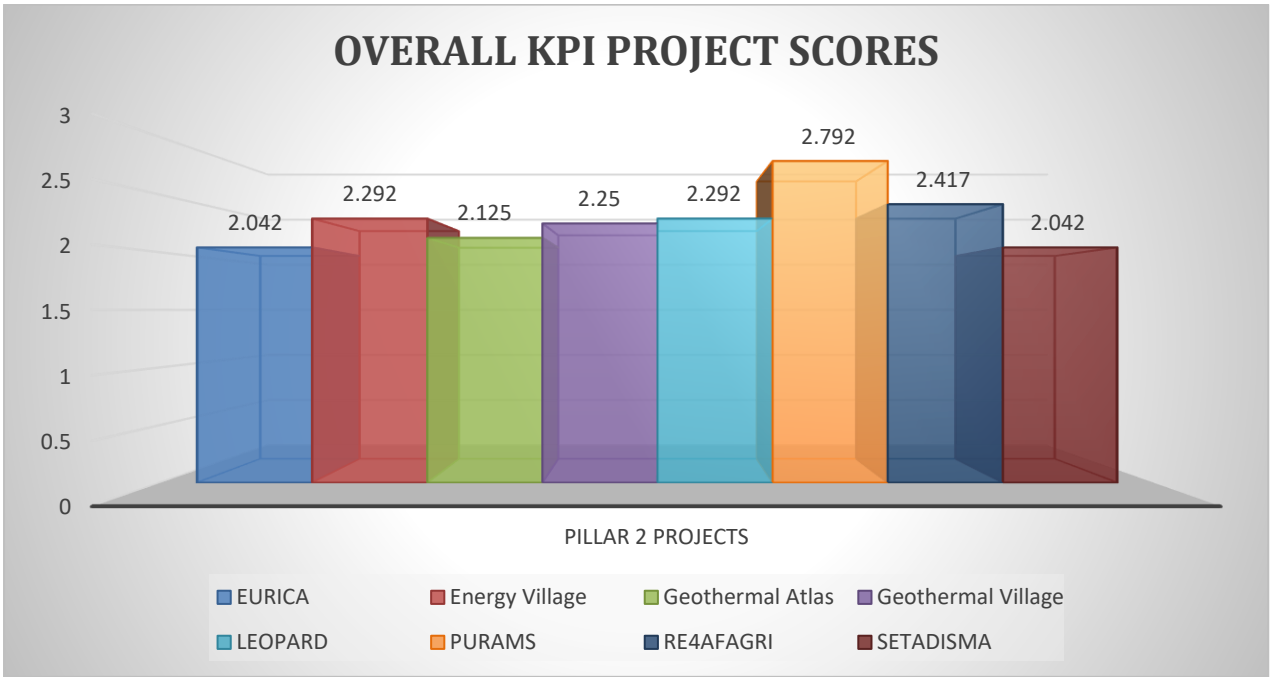

Figure 4: Overall KPI project scores

ANNEX 4B: Project Category performance

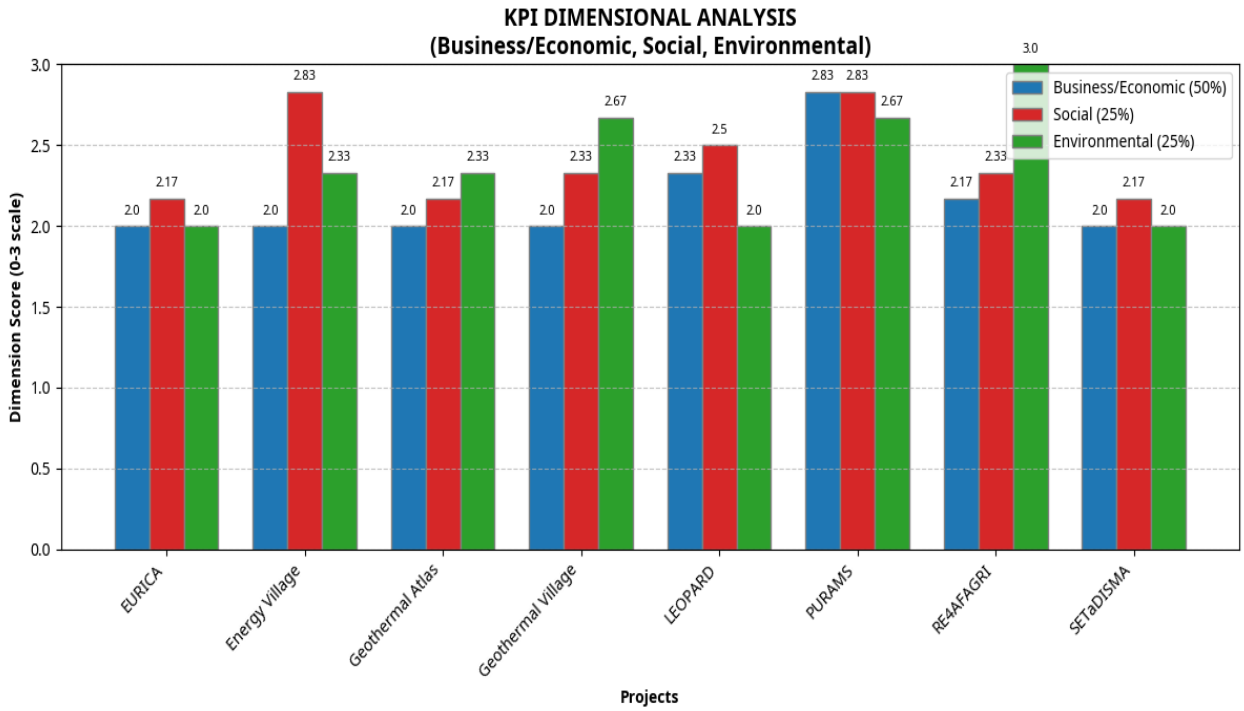

Figure 5: KPI scores by category

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8.5 ANNEX 5

ANNEX 5A: Overall Performance and Project Ranking

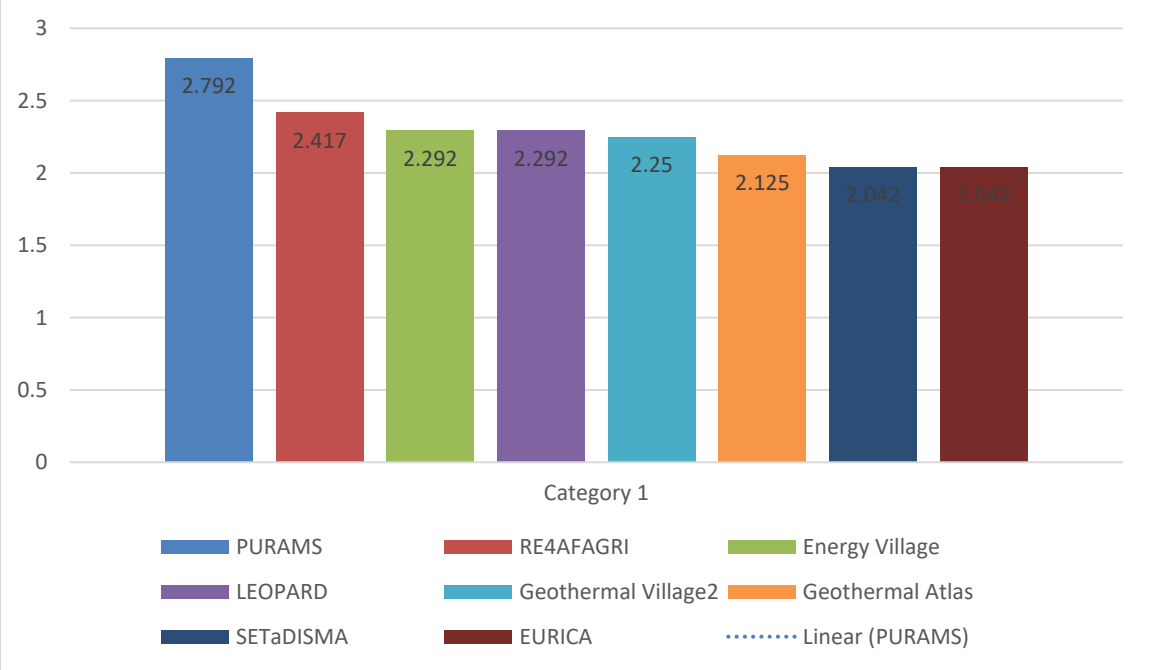

Figure 6: Overall project performance

Annex 5B: KPI SCORE MATRIX

LEAP-RE PILLAR 2: INDIVIDUAL PROJECT PERFORMANCE ACROSS ALL KPI CATEGORIES															
Category	Business & Economic						Social					Environmental			
Sub-Category	Revenue change	Change in operational cost	Change in productivity	New business opportunities	Patents	Commercial /replication readiness	Access to energy	Access to basic services	Knowledge and capacity building	Gender, youth and inclusivity	Opportunities for private sector involvement	Impact on climate change resilience	Resource efficiency	Value Chain Greening	Environmental integration
EURICA	2	2	2	2	2	2	3	2	3	2	2	3	2	2	2
Energy Village	2	2	2	2	2	2	3	3	3	3	2	3	2	2	3
Geothermal Atlas	2	2	2	2	3	2	2	2	3	2	2	2	3	2	2
Geothermal Village	2	2	2	2	2	2	3	2	2	2	2	3	3	2	3
LEOPARD	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2
PURAMS	3	3	3	3	2	3	3	3	3	3	3	2	3	3	2
RE4AFAGRI	2	2	3	2	2	2	2	2	3	2	2	3	3	3	3
SETaDISMA	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2
Portfolio Average	2.12	2.12	2.25	2.12	2.12	2.12	2.75	2.25	2.62	2.25	2.12	2.5	2.5	2.25	2.38

Figure 7: KPI Score matrix

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8.6 ANNEX 6

ANNEX 6A: Performance Drivers Analysis

PROJECT	KEY SUCCESS FACTORS
TOP PERFORMERS SUCCESS FACTORS	
PURAMS	• Strong business model with proven commercial viability • Exceptional market validation and customer adoption • Outstanding community engagement and social impact
ENERGY VILLAGE	• Exemplary community-centered approach • High replication potential and scalability • Strong local partnership development
RE4AFAGRI	• Multi-sector integration and stakeholder engagement • Strong environmental and productivity benefits
LEOPARD	• Advanced technical innovation and validation • Excellent system integration capabilities • Strong potential for commercial deployment
GOOD PERFORMERS SUCCESS FACTORS	
GEOTHERMAL VILLAGE	• Innovative technology application • Effective resource assessment capabilities
GEOTHERMAL ATLAS	• Continental mapping achievement • Strong technical methodology development • Valuable foundational research contribution
SETADISMA	• Advanced digitalization approaches • Multi-country implementation success
EURICA	• Excellent international collaboration model • Effective institutional partnerships • Strong capacity building achievements

Table 15: Project performance drivers analysis

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ANNEX 6B: Category Specific Performance Analysis

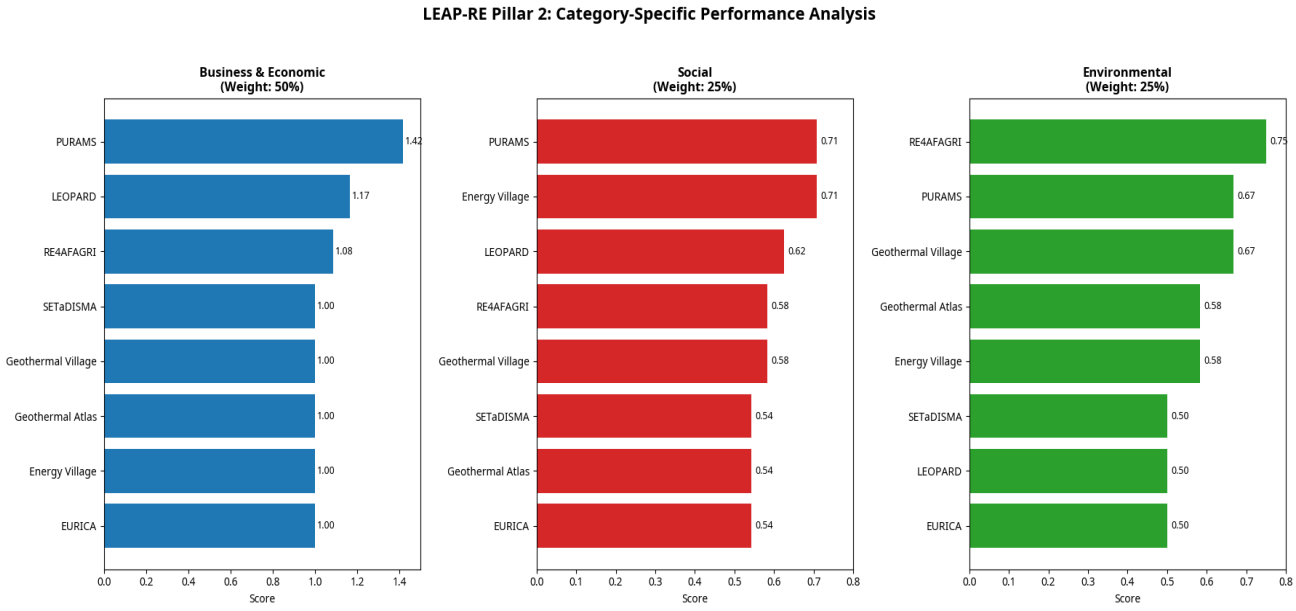

Figure 8: Project category specific performance analysis

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8.7 ANNEX 7: Business and Economic Performance (50% weight)

Category Leader: PURAMS (1.41/1.5)

TOP PERFORMERS	**PURAMS - 1.41/1.5 (94.0%)** **LEOPARD - 1.16/1.5 (77.3%)** **RE4AFAGRI – 1.08/1.5 (72.0%)**
KEY INSIGHTS	a. Strong performance in operational cost reduction and productivity improvements b. Moderate performance in revenue generation and new business opportunities c. Significant opportunity for improvement in patent development and commercial readiness
RECOMMENDATIONS	a. Enhance business model development support b. Strengthen intellectual property strategies c. Develop commercialization pathways

Table 16: Business and Economic performance analysis

8.8 ANNEX 8: Social Impact Performance (25% weight)

Category Leader: Energy Village (0.708/0.75)

TOP PERFORMERS	**Energy Village - 0.708/0.75 (94.4%)** **PURAMS- 0.708/0.75 (94.4%)** **LEOPARD - 0.625/0.75 (83.3%)**
KEY INSIGHTS	a. Exceptional performance in energy access and basic services b. Strong capacity building and knowledge transfer outcomes c. High levels of community and civil society engagement d. Notable impact on gender, youth, and inclusivity (particularly PURAMS)
RECOMMENDATIONS	a. Maintain focus on community-centered approaches b. Expand gender and youth inclusion strategies c. Develop scalable social impact models

Table 17: Social Impact performance analysis

8.9 ANNEX 9: Environmental Performance (25% weight)

Category Leader: RE4AFAGRI (0.75/0.75)

TOP PERFORMERS	**RE4AFAGRI - 0.75/0.75 (100.0%)** **Geothermal Village - 0.67/0.75 (89.3%)** **PURAMS- 0.66/0.75 (88.0%)**
KEY INSIGHTS	a. Outstanding performance in climate change resilience b. Strong resource efficiency improvements c. Effective environmental integration strategies d. Significant value chain greening potential

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RECOMMENDATIONS	a. Leverage environmental leadership for scaling b. Develop environmental impact measurement systems c. Strengthening circular economy approaches

Table 18: Environmental performance analysis

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8.10 ANNEX 10: Individual KPI Performance Analysis

The portfolio has achieved a "Medium Positive Impact" or higher across all 15 individual KPIs, demonstrating a strong, consistent baseline performance.

KPI	SCORE	COMMENT
Highest Performing KPIs (Portfolio Average >2.5)		
1. Impact on access to energy	(2.75/3.0)	Exceptional across all projects, reflecting the core mission of the LEAP-RE initiative
2. Knowledge and capacity building	(2.75/3.0)	Strong academic and training outcomes
3. Access to basic services	(2.5/3.0)	Consistent success in improving community access to essential services through energy solutions
4. Resource efficiency	(2.5/3.0)	High performance in optimizing resource use and minimizing waste across project implementation
Moderate Performing KPIs (Portfolio Average 2.0- 2.5)		
1. Impact on climate change resilience	(2.38/3.0)	Significant environmental benefits
2. Environmental integration	(2.38/3.0)	Integration of environmental considerations into project design and execution
3. Change in productivity	(2.25/3.0)	Efficiency improvements in project operations
4. New business opportunities	(2.23/3.0)	Solid foundation for market entry and creation of new commercial avenues
5. Gender, youth and inclusivity	(2.23/3.0)	Focus on social inclusion across portfolio
6. Opportunities for private sector involvement	(2.22/3.0)	Effective private sector engagement creating opportunities for future investment
7. Commercial readiness	(2.22/3.0)	Several projects reaching early stage readiness
8. Value chain greening	(2.22/3.0)	Successful efforts to integrate sustainable practices throughout the project value chains
9. Revenue change	(2.13/3.0)	Modest but positive direct revenue generation and economic impact observed.
10. Patents/ replication	(2.13/3.0)	Intellectual property development with clear replication pathways
11. Change in operational cost	(2.13/3.0)	Positive impact on reducing operational costs for end-users and project partners

Table 19: Individual KPI performance analysis

8.11 ANNEX 11: Successful Strategies and Solutions

CATEGORY	APPROACH	PROJECTS INVOLVED
Adaptive Management Approaches		
Core Partner Strategies	Projects successfully adapted by focusing on responsive "core" partners while maintaining broader consortium engagement	Geothermal Atlas project's "pillar partner" strategy, LEOPARD'S core partner coordination and similar approaches across other projects
Flexible Communication Methods	Successful projects employed multiple communication channels to accommodate different partner preferences and capabilities	Most projects had monthly review systems and multi-channel approaches
Agile Methodologies	Projects developed fallback scenarios and agile approaches to manage external dependencies and unexpected challenges	SETaDISMA's agile methodology adoption and LEOPARD's adaptive approaches in addressing site-specific challenges during installation and commissioning phases
Stakeholder Engagement Innovations		
Cultural Protocol Integration	Success with engaging local chiefs and using culturally appropriate protocols	Energy Village's community engagement model
Trusted Network Utilization	Engaging private companies through trusted networks	RE4AFAGRI's strategy through AfriLabs
Multi-Level Capacity Building	Combined technical training with community-level demonstrations	PURAMS, LEOPARD and EURICA's local entrepreneurship training
Knowledge Management and Dissemination		
Open-Source Tool Development	Creation of open-source tools and online capacity-building content	SETaDISMA's sustainable knowledge sharing mechanisms and LEOPARD's framework for containerized micro-grid deployment
Platform Integration	Integrated outputs into LEAP-RE platform for continued accessibility	Multiple projects ensuring lasting value
Academic-Policy Translation	Mechanisms to translate technical outputs into	Multiple projects with varying success

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	policy-relevant briefs	
Publications		Falchetta et al. (2022). A renewable-energy-centred agenda for rural Sub-Saharan Africa (Energy Strategy Reviews, 43) provides foundational insights into Nexus modelling via M-LED and OnSSET Kirli et al. (2021) and Parzen et al. (2022) present PyPSA and PyPSA-Earth as open-source tools for African energy system modelling at different scales Carabajal et al. (2024) quantify the socioeconomic impact of solar mini-grids in Kenya and Nigeria, demonstrating significant improvements in income, safety, and gender equity
Innovation and Technical Achievements		
Methodological Innovations		
Standardized Assessment Frameworks	Use of replicable frameworks for environmental impact assessment	Geothermal Atlas project's NCAE methodology
Context-Specific Adaptation	Development of adaptable toolkits accounting for local uniqueness	Energy Village's culturally sensitive technology deployment
Integrated Approach Models	Integration of multiple project dimensions simultaneously	SETaDISMA's multi-pillar project design
Technology Development		
Hardware Innovation	Development of context-specific technology addressing local needs	PURAMS' solar-powered electric pressure cookers
Digital Tool Creation	Creation of digital tools and models for continued use	Multiple projects contributing to renewable energy knowledge base
Capacity Building Integration	Integration of technology development with capacity building programs	Multiple projects ensuring skills for implementation and maintenance
Partnership Dynamics and Collaboration Patterns		

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North- South Collaboration		
Complementary Expertise	Combination of European technical expertise with African local knowledge	EURICA's software validation, Geothermal Village's geological-socioeconomic combination
Institutional Partnerships	Strong partnerships with national agencies for implementation and sustainability	PURAMS with REREC in Kenya LEOPARD's partnerships with local energy institutions in both Benin and Senegal
Knowledge Transfer Effectiveness	Bidirectional knowledge transfer between European and African partners	EURICA's internship program
South-South Collaboration		
Regional Learning	Facilitation of South-South learning through multi-country implementation	Energy Village's multi-country approach, Geothermal Village's structured incentives
Institutional Strengthening	African institutions leading complex international projects	PURAMS' leadership by SU
Local Expertise Development	Building local expertise that continues beyond project completion	Multiple projects creating lasting capacity
Impact and Sustainability Patterns		
Immediate Outcomes		
Tool and Framework Development	Creation of tools, frameworks, or technologies addressing renewable energy challenges	All projects from geothermal mapping tools to solar-powered appliances
Capacity Building	Achievement of capacity building objectives through training programs and knowledge exchange	All projects including summer school participation
Network Building	Building networks and relationships continuing beyond project completion	All projects creating lasting professional connections
Long-term Sustainability		
Follow-up Initiatives	Development of follow-up proposals and initiatives	Multiple projects transitioning to LEAP-SE
Institutional Continuity	Investment in institutional partnerships and local capacity building	Projects with strong local institutional partnerships
Knowledge Preservation	Creation of open-source tools and integration into accessible platforms	Projects ensuring knowledge preservation beyond completion

Table 20: Successful strategies and solutions

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8.12 ANNEX 12: Common Challenges Across Projects

THEMATIC AREA	KEY CHALLENGES	AFFECTED PROJECT
DATA ACCESS AND MANAGEMENT	External data dependencies particularly from government agencies and utilities	SETaDISMA's experience with Nigerian utilities Energy Village's municipal data challenges LEOPARD's excessive site assessment requirement
	Inconsistent data sharing among partners.	Geothermal Atlas suffered from use of different platforms like GitHub while others used relied on less efficient methods
	Local data infrastructure gaps across African countries requiring significant investment in primary data collection and standardized template development	ALL
SHAREHOLDER MANAGEMENT	Private sector engagement difficulties especially in demonstrating immediate value from research outcomes and securing commercial partnerships	RE4AFAGRI PURAMS LEOPARD
	Community resistance and cultural barriers to technology adoption based on traditional practices, limited awareness of RE benefits and fear of new technologies like drilling	Energy Village PURAMS
	Policy interface challenges affecting translation of technical outputs into policy-relevant formats and direct engagement with policy makers for immediate impact.	SETaDISMA PURAMS
RESOURCE AND FUNDING CONSTRAINTS	Partial funding impacts forcing heavy reliance on internal resources affecting full implementation of activities	GEOTHERMAL ATLAS Reported among other projects
	Hardware development costs and customs/ logistics challenges requiring substantial prototyping resources exceeding usual research project budgets	PURAMS EURICA
	Travel and logistics challenges among multi-country projects that strained project resources especially with cross country collaborations	Energy Village Geothermal Village LEOPARD

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CONSORTIUM MANAGEMENT AND COORDINATION	Large consortium management complexity suggesting that consortium size directly impacts management complexity and communication effectiveness	Geothermal Atlas (20 partners), SETaDISMA (14 partners), Geothermal Village (Multiple partners)
	Partner engagement disparities with some partners being highly responsive while others were difficult to reach or did not engage meaningfully	EURICA (Connectivity issues with burkina Faso) Geothermal Village (Ethiopian university constraints)
	Administrative and cultural barriers with several projects encountering challenges related to EU administrative requirements and cultural differences in working styles	EURICA

Table 21: Common challenges across projects

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8.13 ANNEX 13: Lessons Learned and Recommendations

KEY LESSONS	RECOMMENDATIONS
CHALLENGE: STAKEHOLDER ENGAGEMENT AND CULTURAL ADAPTATION	
Technology adoption requires deep understanding, sensitivity and respect for local cultural practices as demonstrated by Energy Village and Geothermal Village experiences	Cultural competency development through cultural competency training and local protocol education in project preparation
Private sector engagement succeeds through trusted networks rather than direct approaches, as shown by RE4AFAGRI's recommendation	Trusted network utilization by engaging the private sector through established networks like AfriLabs industry associations, and local chambers of commerce
Local communities require clear demonstration of direct benefits to support project participation	Establishing clear benefit sharing and compensation mechanisms for community participation in research activities
Technical outputs require dedicated translation into policy-relevant formats for effective policy influence	Include partners specifically responsible for policy translation and government engagement
CHALLENGE: CONSORTIUM DESIGN AND MANAGEMENT	
Optimal Consortium Size: Large consortiums (15+ partners) create exponential coordination challenges that can overwhelm project management capacity	Future initiatives should consider optional consortium sizes of 8-12 partners to balance expertise diversity with management feasibility.
Partner Pre- Qualification: Administrative capacity and EU procedure familiarity should be assessed during partner selection to avoid later complications and ensure effective participation	Implement onboarding programs that include EU administrative training, cultural orientation, and communication protocol establishment.
Core Partner Strategy: Identifying and focusing on highly responsive core partners while maintaining broader engagement proves effective across multiple project contexts.	Develop tiered engagement models with core partners driving implementation while associate partners contribute specialized expertise.
Communication Redundancy: Multiple communication channels accommodate different partner preferences and technical capabilities as demonstrated by successful projects like EURICA's monthly review system.	Allocate 15-20% of project budgets specifically for coordination and communication activities
TECHNICAL INNOVATION IMPLEMENTATION	
Successful technologies require adaptation to local contexts, resources, and user capabilities, as demonstrated by PURAMS' context-specific appliance development	Extended development timelines which allow 50-100% additional time for hardware development and field testing compared to software or analytical projects
Physical product development requires substantially more resources	Local resource integration by prioritizing technologies that utilize locally

and time than typical research projects	available materials and can be maintained with local expertise
Open-source tools and platforms provide better long-term sustainability than proprietary solutions	Design all technical outputs as open-source from project inception to ensure accessibility and sustainability
Multi-component technical solutions require careful integration planning and testing	Implement iterative testing and refinement protocols with regular user feedback integration.
CHALLENGE: CAPACITY BUILDING AND KNOWLEDGE TRANSFER	
Effective capacity building requires targeting multiple levels from technical experts to community members, as demonstrated across multiple projects	Design capacity building programs that address technical, administrative and cultural competencies
North-South partnerships benefit from explicit recognition and facilitation of bidirectional knowledge transfer, as shown by EURICA's internship program	Prioritize partnerships with strong local institutions that can sustain and scale capacity building efforts.
Sustainable capacity building focuses on institutional strengthening rather than individual training	Create structured mechanisms for bidirectional knowledge exchange between Northern and Southern partners.
Projects succeed when they develop local expertise that can continue independently	Invest in developing local project leadership capacity to reduce dependence on external coordination
CHALLENGE: PROGRAM LEVEL IMPROVEMENTS	
Intended clustering and cross-project collaboration requires structured mechanisms and incentives	Create formal inter-project collaboration requirements with dedicated resources and regular forums
EU administrative requirements create significant barriers for African partners	Develop simplified administrative procedures and enhanced support for African partners navigating EU requirements
Partial funding models strain project implementation and partner commitment	Move toward full funding models that enable proper resource allocation and partner commitment
Excluding Global North partners from follow-up initiatives disrupts continuity and relationship maintenance	Ensure follow-up initiatives can include Global North to maintain continuity and relationship sustainability
CHALLENGE: DATA MANAGEMENT AND ACCESS	
Dependence on external data sources, particularly government agencies, creates significant project risks as experienced by SETaDISMA and other projects	Develop agile methodologies with multiple data scenarios and fallback options for critical external dependencies
Standardized data collection templates and protocols improve efficiency and quality across different contexts	Create standardized data collection templates and sharing protocols as part of project initiation
African countries often lack structured municipal and regional data,	Budget for significant local data collection capacity building and

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requiring primary collection investment	infrastructure development
Early establishment of data sharing protocols prevents later coordination challenges	Establish formal partnerships with national statistical offices and utilities early in project planning
CHALLENGE: SUSTAINABILITY CONTINUITY	
Sustainability planning must begin during project design rather than near completion	Integrate sustainability planning into project design with dedicated resources and milestones
Projects with strong institutional partnerships show better long-term sustainability prospects	Invest heavily in building strong, lasting partnerships with key African institutions
Successful projects often generate follow-up funding opportunities and continued collaboration	Begin developing follow-up proposals 12-18 months before project completion
Maintaining professional networks and relationships proves as valuable as technical outputs	Allocate resources for maintaining professional networks and relationships beyond project completion

Table 22: Lessons learned and recommendations

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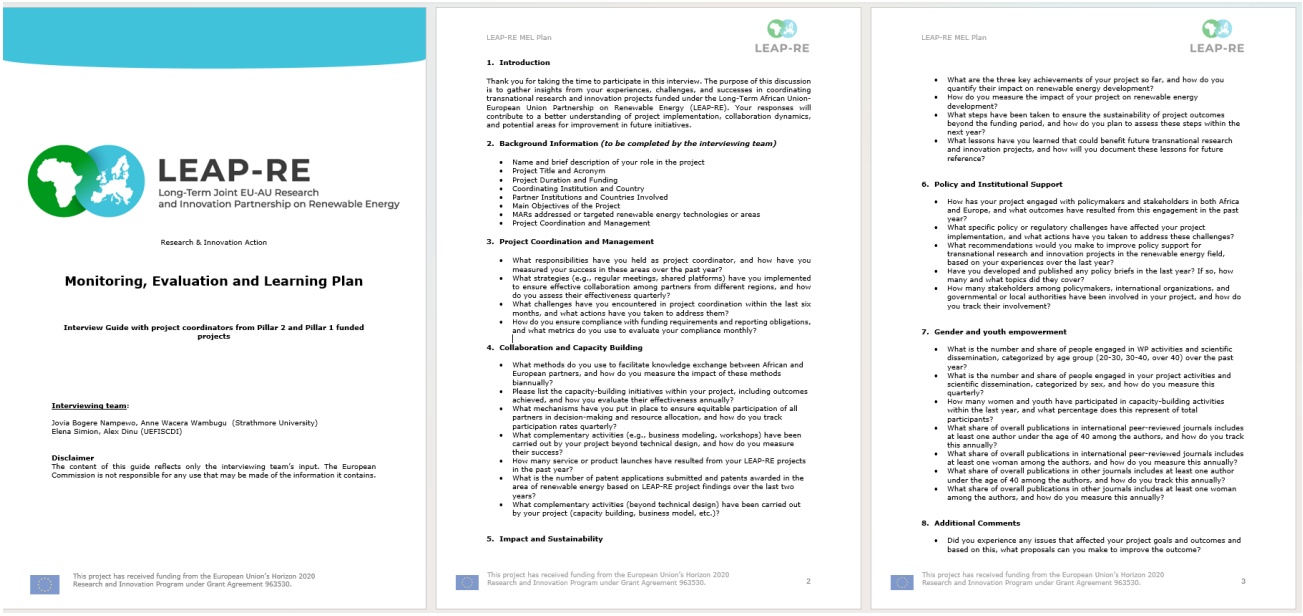
8.14 Annex 14: Data Collection Tool- Interviews



LEAP-RE

Long-Term Joint EU-AU Research and Innovation Partnership on Renewable Energy

Research & Innovation Action

Monitoring, Evaluation and Learning Plan

Interview Guide with project coordinators from Pillar 2 and Pillar 1 funded projects

Interviewing team:

Jovia Bogere Nampewo, Anne Wacera Wambugu (Strathmore University)
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Disclaimer
The content of this guide reflects only the interviewing team's input. The European Commission is not responsible for any use that may be made of the information it contains.

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LEAP-RE MEL Plan

1. Introduction

Thank you for taking the time to participate in this interview. The purpose of this discussion is to gather insights from your experiences, challenges, and successes in coordinating transnational research and innovation projects funded under the Long-Term African Union-European Union Partnership on Renewable Energy (LEAP-RE). Your responses will contribute to a better understanding of project implementation, collaboration dynamics, and potential areas for improvement in future initiatives.

2. Background Information *(to be completed by the interviewing team)*

- Name and brief description of your role in the project
- Project Title and Acronym
- Project Duration and Funding
- Coordinating Institution and Country
- Partner Institutions and Countries Involved
- Main Objectives of the Project
- MARs addressed or targeted renewable energy technologies or areas
- Project Coordination and Management

3. Project Coordination and Management

- What responsibilities have you held as project coordinator, and how have you measured your success in these areas over the past year?
- What strategies (e.g., regular meetings, shared platforms) have you implemented to ensure effective collaboration among partners from different regions, and how do you assess their effectiveness quarterly?
- What challenges have you encountered in project coordination within the last six months, and what actions have you taken to address them?
- How do you ensure compliance with funding requirements and reporting obligations, and what metrics do you use to evaluate your compliance monthly?

4. Collaboration and Capacity Building

- What methods do you use to facilitate knowledge exchange between African and European partners, and how do you measure the impact of these methods biannually?
- Please list the capacity-building initiatives within your project, including outcomes achieved, and how you evaluate their effectiveness annually?
- What mechanisms have you put in place to ensure equitable participation of all partners in decision-making and resource allocation, and how do you track participation rates quarterly?
- What complementary activities (e.g., business modeling, workshops) have been carried out by your project beyond technical design, and how do you measure their success?
- How many service or product launches have resulted from your LEAP-RE projects in the past year?
- What is the number of patent applications submitted and patents awarded in the area of renewable energy based on LEAP-RE project findings over the last two years?
- What complementary activities (beyond technical design) have been carried out by your project (capacity building, business model, etc.)?

5. Impact and Sustainability

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LEAP-RE MEL Plan

- What are the three key achievements of your project so far, and how do you quantify their impact on renewable energy development?
- How do you measure the impact of your project on renewable energy development?
- What steps have been taken to ensure the sustainability of project outcomes beyond the funding period, and how do you plan to assess these steps within the next year?
- What lessons have you learned that could benefit future transnational research and innovation projects, and how will you document these lessons for future reference?

6. Policy and Institutional Support

- How has your project engaged with policymakers and stakeholders in both Africa and Europe, and what outcomes have resulted from this engagement in the past year?
- What specific policy or regulatory challenges have affected your project implementation, and what actions have you taken to address these challenges?
- What recommendations would you make to improve policy support for transnational research and innovation projects in the renewable energy field, based on your experiences over the last year?
- Have you developed and published any policy briefs in the last year? If so, how many and what topics did they cover?
- How many stakeholders among policymakers, international organizations, and governmental or local authorities have been involved in your project, and how do you track their involvement?

7. Gender and youth empowerment

- What is the number and share of people engaged in WP activities and scientific dissemination, categorized by age group (20-30, 30-40, over 40) over the past year?
- What is the number and share of people engaged in your project activities and scientific dissemination, categorized by sex, and how do you measure this quarterly?
- How many women and youth have participated in capacity-building activities within the last year, and what percentage does this represent of total participants?
- What share of overall publications in international peer-reviewed journals includes at least one author under the age of 40 among the authors, and how do you track this annually?
- What share of overall publications in international peer-reviewed journals includes at least one woman among the authors, and how do you measure this annually?
- What share of overall publications in other journals includes at least one author under the age of 40 among the authors, and how do you track this annually?
- What share of overall publications in other journals includes at least one woman among the authors, and how do you measure this annually?

8. Additional Comments

- Did you experience any issues that affected your project goals and outcomes and based on this, what proposals can you make to improve the outcome?

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Figure 9: Interview guide

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8.15 Annex 15: Project Summary Matrix

Project	Technical Domain	Geographic Focus	Key Innovation	Main Challenge	Primary Solution
Geothermal Atlas	Geothermal Mapping	Continental Africa	NCAE Methodology Application	Large Consortium Management	Core Partner Strategy
RE4AFAGRI	Agricultural Energy	Sub-Saharan Africa	Integrated Modeling Tools	Private Sector Engagement	Trusted Network Utilization
Energy Village	Community Energy	4 African Countries	Local Resource Utilization	Cultural Adaptation	Community Protocol Engagement
SETaDISMA	Smart mini-grids	Multiple Countries	Integrated Capacity Building	External Data Dependency	Agile Methodologies
PURAMS	Solar Appliances	East/ Southern Africa	Solar-powered Cooking	Hardware Development Costs	Affordability Optimization
Geothermal Village	Geothermal Mapping	East Africa (Kenya, Ethiopia, Djibouti)	Socioeconomic Integration	Cross-country Collaboration	Academic-Local Partnership
EURICA	Nano Grids	Burkina Faso, Madagascar, Cameroon and France	Demand-side Flexibility	Connectivity and Cultural Issues	Monthly Reviews and Internship Programs
LEOPARD	Micro-grid Technology	Benin, Senegal, France and Germany	Renewable Energy Integration	Technology Scalability	Distributed Energy Solutions

Table 23: Overall project summary

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8.16 ANNEX 16: Contact Information

LEAP-RE Pillar 2 Coordination:
- Strathmore University
- UEFISCDI

For Additional Information:

- LEAP-RE Website: https://www.leap-re.eu/
- Pillar 2 Projects: https://www.leap-re.eu/pillar-2/

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