LEAP-RE

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

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Presentation of a more detailed Plan of Activities for the whole 15

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Summary

The EU-funded (H2020) project ?EURICA?, within the LEAP-RE program, focuses on technological factor to leverage the availability of digital techniques and sociological and competency factor to reach a better electrification strategy. Two pilot sites will demonstrate this through two different approaches. The first one called ?bottom-up approach? will achieve interconnection of several Nanogrids (i.e. small collective solar systems connecting 4 to 6 neighbouring domestic users) within a village-wide balancing Microgrid. The field test will allow upgrading the electric service delivered to them and connecting higher Tier users for productive use of energy. The second one called ?top-down approach? will carry out an optimization solution for existing urban low voltage networks in Ouagadougou, Burkina Faso. This solution will be based on smart meters. It will prevent power cuts due to local overloads by sharing the power the grid can really supply throughout the day and among the consumers accordingly to their needs and means. In both cases, a holistic method including study of energy human behaviours, sociologic & competency studies and the design of a capacity building plan at different level of electrification will be put in place to assess them and make them sustainable.

Approval

Date	By
2021-08-02 15:20:27	Mrs. Richaud LUC (Odit-E)
2021-08-02 16:04:02	Mr. Léonard LéVêQUE (LGI)

Detailed Work Plan WP15
EURICA

Deliverable D15.1

Table of Content

Acronym

DoA	Description of Action
GA	Grant Agreement
MS	Milestone
M&E	Monitoring & Evaluation
O&F	Organisational & Funding
tbd	to be determined
WP	Work Package

1.1 Description of WP15 - EURICA

Start date: M7; End date: M30

Work Package Leader: Luc Richaud & Odit-e

1.1.1 Task 15.1.: Project Management

Start date: M7 End date: M30

Task Leaders: Luc Richaud & Odit-e (14,7 PMs)

Contributors: INEA DOO (1 PM), SONABEL (1 PM), ISDK (1 PM), Nanoé (1 PM)

The management activity is developed in accordance and coordination with the WP3 Leaders (Pillar 2 coordinators) and in synergy with other WPs constituting the Pillar 2.

Action 1: *Project coordination – Odit-e*

> Sub-action 1: *Definition of the detailed work plan (Odit-e, All)*
> Sub-action 2: *Organization of an WP15's internal Kick-off meeting (Odit-e, All)*
> Sub-action 3: *Definition of the general organization of the WP (Odit-e, All)*

Action 2: *Project Monitoring to meet time and budget constraints – Odit-e*

> Sub-action 1: *Coordination with WP3 Leaders for common practices and templates (Odit-e)*
> Sub-action 2: *Realization of WP15's internal reviews for sharing progress and task status (Odit-e, All)*

Action 3: *Project reporting to LEAP-RE program – Odit-e*

> *Project reporting accordingly to LEAP-RE requirements*

1.1.2 Task 15.2.: Sociology, Organisation and capacity building

Start date: M7 End date: M30

Task Leaders: Michel Clemence & Odit-e (7 PMs)

Contributors: INEA (6 PMs), ISDK (11 PMs), Nanoé (4 PMs)

Action 1: *Analysis of the specific socio-economic contexts*

> Sub-action 1: *Definition of the scope of the analysis (Odit-e, All)*
> Sub-action 2: *Identification of population's needs in term of energy services, mapping through Multi-Tier Framework (Odit-e with Next Energy Consumer, ISDK)*

Action 2: *Visits, interviews and meetings with local stakeholders*

> Sub-action 1: *Interview guideline definition (Odit-e, All)*
>
> Sub-action 2: *Identification of local contacts (Odit-e with Next Energy Consumer, ISDK, INEA, Nanoé, SONABEL)*
>
> Sub-action 3: *Interviews and meetings (Odit-e with Next Energy Consumer, ISDK)*

Action 3: *Local flexibility market assessment and capacity building*

> Sub-action 1: *Identification of training needs and preparation of an integrated training program (Odit-e with Next Energy Consumer, ISDK)*
>
> Sub-action 2: *Design of the technicalities behind the local flexibility market exchanges and the involved stakeholders (INEA, Odit-e with Next Energy Consumer, ISDK, SONABEL)*

1.1.3 Task 15.3.: Grid digitization

Start date: M7 End date: M30

Task Leaders: Luc Richaud & Odit-e (33 PMs)

Contributors: INEA (37 PMs)

Action 1: *District grid (top down) and microgrid interconnection (bottom up) planification too – Odit-e*
> Sub-action 1: *Specifications for data driven methodology for top-down approach*
> Sub-action 2: *Development of a small-scale demonstration tool*
> Sub-action 3: *Specifications for data driven methodology for bottom-up approach*
> Sub-action 4: *Development of a small-scale demonstration tool*

Action 2: *Real time, day ahead grid management – Odit-e*
> Sub-action 1: *Specifications for data driven methodology for top-down approach*
> Sub-action 2: *Development of a small-scale demonstration tool*
> Sub-action 3: *Specifications for data driven methodology for bottom-up approach*
> Sub-action 4: *Development of a small-scale demonstration tool*

Action 3: *Market place of local flexibilities – INEA*
> Sub-action 1: *Specification of market matching processes*
> Sub-action 2: *Development of the flexibility marketplace*

1.1.4 *Task 15.4.: Pilot Bottom-up*

Start date: <u>M7</u> End date: <u>M30</u>
Task Leaders: Nicolas Saincy & Nanoé (25 PMs)
Contributors: Odit-e (4 PMs), INEA (4 PMs), Nanoé M (42 PMs)

Action 1: *Technology development and adaptation to demonstration environment – Nanoé*
> Sub-action 1: *Prototyping of nanogrid clustering module*
> Sub-action 2: *Lab testing of nanogrid clustering module*

Action 2: *Pilot implementation: installations, integration, testing, validation – Nanoé*
> Sub-action 1: *Field testing at different scale*
> Sub-action 2: *Technical validation*

Action 3: *Lessons learned and measured results – Nanoé*
> Sub-action 1: *Benefits validation*
> Sub-action 2: *Validation of the integration into the digitization tool*

1.1.5 *Task 15.5.: Pilot Top-down*

Start date: <u>M7</u> End date: <u>M30</u>
Task Leaders: Sebastijan Uršič & INEA DOO (19 PMs)
Contributors: Odit-e (6 PMs), SONABEL (25 PMs)

Action 1: *Technology development and adaptation to demonstration environment – INEA*
> Sub-action 1: *Development of an adapted flexibility solutions for load management*
> Sub-action 2: *Interfacing with existing systems*

Action 2: *Pilot implementation: installations, integration, testing, validation – INEA*
> Sub-action 1: *Flexibility recruitment*
> Sub-action 2: *Field testing*
> Sub-action 2: *Technical validation*

Action 3: *Lessons learned and measured results – INEA*

Sub-action 1: *Cost benefit analysis*
Sub-action 2: *Identification of required follow-up step for further exploitation*

1.1.6 *Task 15.6.: Replication board*

Start date: <u>M18</u> End date: <u>M30</u>

Task Leaders: Sebastijan Uršič & INEA DOO (3 PMs)

Contributors: Odit-e (2 PMs), SONABEL (2 PMs), ISDK (2 PMs), Nanoé (3 PMs)

Action 1: *KPIs to monitor the technical, economic and sociologic performances – INEA*
    Sub-action 1: *Definition of the KPIs*
    Sub-action 2: *Monitoring of the KPIs values and identification of lever for improvements*
Action 2: *Solution (top-down and bottom-up) with associated business model deployment plan – INEA*
    Sub-action 1: *Business model definition*
    Sub-action 2: *Identification of relevant stakeholders in Africa for potential synergies or replicability*
    Sub-action 2: *Dissemination and communication strategy of the project's results*
Action 3: *Regulatory issues and existing gap for capacity building - INEA*

1.2 Deliverables

Number	Title	Due Date	Responsible
D15.1	Presentation of a more detailed Plan of Activities for the whole WP 15	7	Odit-e
D15.2	Capacity building plan and Local flexibility market specification	18	INEA DOO
D15.3	Grid digitization tool specification and mock-up	18	Odit-e
D15.4	Report of Bottom-up pilot	30	Nanoé
D15.5	Report of Top-down pilot	30	SONABEL
D15.6	Replication board feedback	30	INEA DOO
D15.7	Report about the outcome on scientific collaboration including sociology and organization analysis	32	Odit-e

1.3 Milestones

Number	Title	Verification mean	Due Date	Responsible
MS1	Sociological and technical outcome	Submission of D15.2 and D15.3	M18	Odit-e
MS2	Report on pilot sites and replicability	Submission of D15.4 and D15.5 and D15.6	M30	Odit-e

1.4 Interaction/synergies with other WPs

WP15 via the Project Leader, will participate to WP3 Activities as part of the Scientific Board of Pillar 2 and will work with the Pillar Coordinators to maximise synergies across the WPs in Pillar 2, either in terms of R&I and capacity building.

Number	Interaction description	Responsible
1	**Project Management** will be carried out in synergy with WP3 and the Pillar 2 Board Governance indications	Odit-e
2	Information on the current **capacity building /training activities** within each WP9-WP16 will be valorized to increase the "impact" of each capacity building activity back to WP9-WP16	Odit-e
3	Based on the sharing during the first months of LEAP-RE, a constant link on cross-cutting interests relative to **Technological development, methodological approach, Modelling tools** and other R&I related topics that will take place into WP9, WP10, WP11, WP12, WP13, WP14, WP15, WP16 is promoted in Task 3.1	Odit-e
4	**Scientific Dissemination** will be carried out in agreement with the Scientific Dissemination Strategy defined in WP3	Odit-e
5	**Other dissemination** activities will follow the guidelines provided by WP4 in the LEAP-RE Communication and Awareness Raising strategy	Odit-e
6	**Monitoring and Evaluation** will be carried out receiving input from the M&E plan for Pillar 2 developed in WP3 and coordinated by WP5	Odit-e
7	**Financial Reporting** will be managed in coordination with WP1 and supported by WP3	Odit-e

1.5 Risks

Probability (1=low; 5=high) that the risk occurs and impact (1=low; 5=high) if the risk occurs.
Risk mitigation: P=preventive actions / C=contingency actions.

Number	Risk description	Risk mitigation	Proba	Impact
1	Unforeseen extra costs	(C). Apply the rules set in the Consortium agreement for possible budget reshuffling	2	4
2	Difficulties with deployment, data acquisition	(P). Involve local partners early. Coordinate the deployment.	2	3

		(C). Deploy additional sensors if existing equipment doesn't exist or is unsuitable. Use simulated data.		
3	Difficulties with acquisition of prosumers	(P). Start the acquisition process at the beginning of the project. Inform potential stakeholders. (C). Scale the pilot.	3	2
4	Technical problems to obtain relevant technical and economical results	(C). Possible redefinition of the expected results to conduct the cost benefit analysis	2	2
5	Lack of DSO engagement in the testing of the solution	(P). Apply appropriate customer engagement measures – recruitment campaign	3	2
6	Travel restriction due to the COVID pandemic	(P). Most meetings performed online. (C). Delay of field work and modification of the planning	4	2
7	Travel restriction due to the security situation	(P). Most meetings performed online. (C). Delay of field work and modification of the planning	3	3

Annex 1: WP15 Gantt Chart
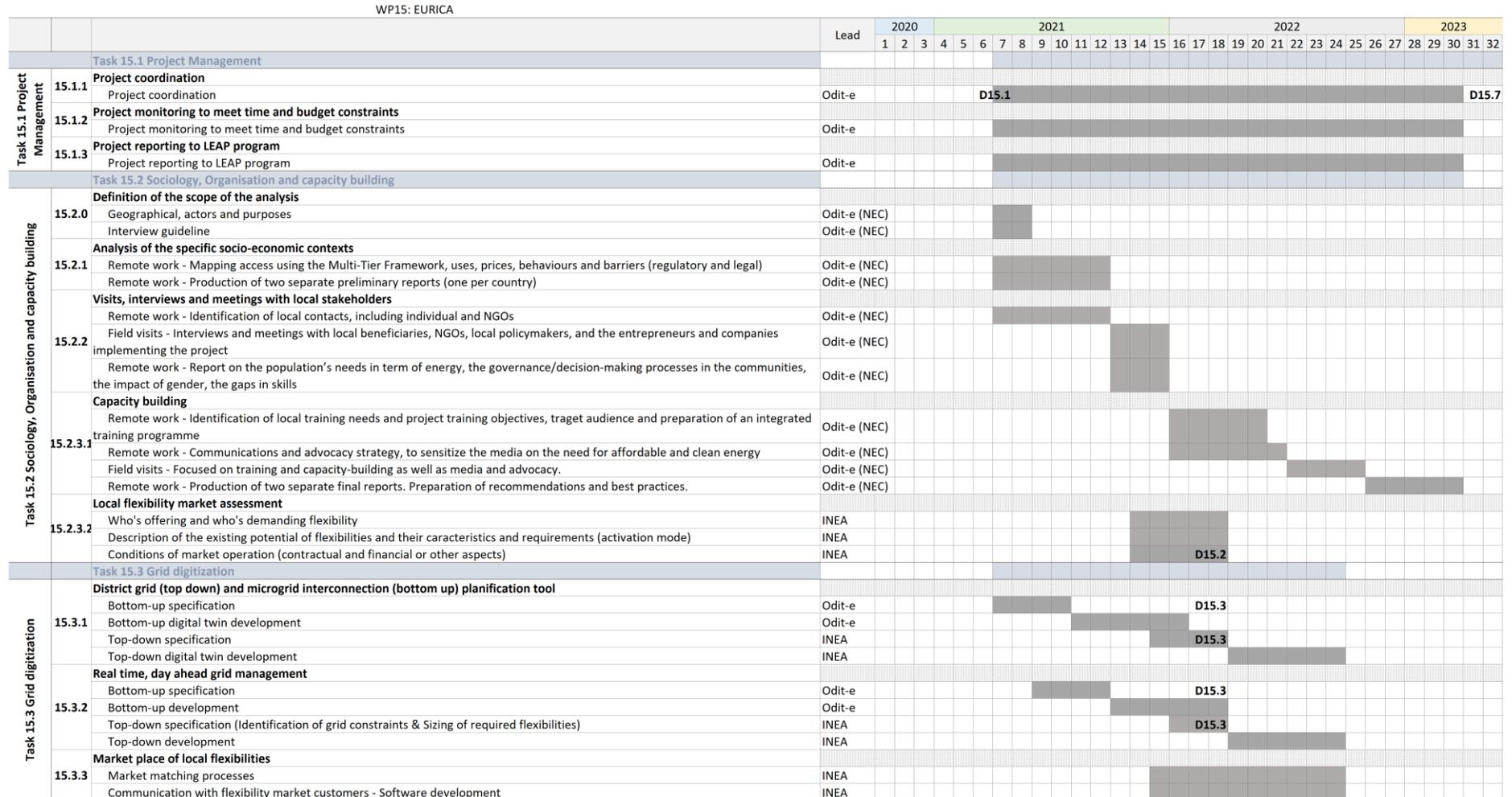
WP15: EURICA

			Lead	2020			2021														2022											2023		
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

Task 15.1 Project Management

Task 15.1 Project Management	15.1.1	**Project coordination**																																
		Project coordination	Odit-e						D15.1																										D15.7
	15.1.2	**Project monitoring to meet time and budget constraints**																																
		Project monitoring to meet time and budget constraints	Odit-e																																
	15.1.3	**Project reporting to LEAP program**																																
		Project reporting to LEAP program	Odit-e																																

Task 15.2 Sociology, Organisation and capacity building

	15.2.0	**Definition of the scope of the analysis**																																
		Geographical, actors and purposes	Odit-e (NEC)																																
		Interview guideline	Odit-e (NEC)																																
	15.2.1	**Analysis of the specific socio-economic contexts**																																
		Remote work - Mapping access using the Multi-Tier Framework, uses, prices, behaviours and barriers (regulatory and legal)	Odit-e (NEC)																																
		Remote work - Production of two separate preliminary reports (one per country)	Odit-e (NEC)																																
	15.2.2	**Visits, interviews and meetings with local stakeholders**																																
		Remote work - Identification of local contacts, including individual and NGOs	Odit-e (NEC)																																
		Field visits - Interviews and meetings with local beneficiaries, NGOs, local policymakers, and the entrepreneurs and companies implementing the project	Odit-e (NEC)																																
		Remote work - Report on the population's needs in term of energy, the governance/decision-making processes in the communities, the impact of gender, the gaps in skills	Odit-e (NEC)																																
	15.2.3.1	**Capacity building**																																
		Remote work - Identification of local training needs and project training objectives, traget audience and preparation of an integrated training programme	Odit-e (NEC)																																
		Remote work - Communications and advocacy strategy, to sensitize the media on the need for affordable and clean energy	Odit-e (NEC)																																
		Field visits - Focused on training and capacity-building as well as media and advocacy.	Odit-e (NEC)																																
		Remote work - Production of two separate final reports. Preparation of recommendations and best practices.	Odit-e (NEC)																																
	15.2.3.2	**Local flexibility market assessment**																																
		Who's offering and who's demanding flexibility	INEA																																
		Description of the existing potential of flexibilities and their caracteristics and requirements (activation mode)	INEA																																
		Conditions of market operation (contractual and financial or other aspects)	INEA															D15.2																		

Task 15.3 Grid digitization

	15.3.1	**District grid (top down) and microgrid interconnection (bottom up) planification tool**																																
		Bottom-up specification	Odit-e														D15.3																			
		Bottom-up digital twin development	Odit-e																																
		Top-down specification	INEA														D15.3																			
		Top-down digital twin development	INEA																																
	15.3.2	**Real time, day ahead grid management**																																
		Bottom-up specification	Odit-e														D15.3																			
		Bottom-up development	Odit-e																																
		Top-down specification (Identification of grid constraints & Sizing of required flexibilities)	INEA														D15.3																			
		Top-down development	INEA																																
	15.3.3	**Market place of local flexibilities**																																
		Market matching processes	INEA																																
		Communication with flexibility market customers - Software development	INEA																																

			Lead	2020			2021											2022											2023			
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
		Task 15.4 Pilot bottom up																																
Task 15.4 Pilot bottom up	15.4.1	**Technology development and adaptation to demonstration environment**																																
		Prototyping and lab testing of nanogrid clustering module - Iteration 1	Nanoé F																																
		Prototyping and lab testing of nanogrid clustering module - Iteration 2	Nanoé F																																
		Prototyping and lab testing of nanogrid clustering module - Iteration 3	Nanoé F																																
	15.4.2	**Pilot implementation: installations, integration, testing, validation**																																
		Field testing n°1 : Clustering of 5 nanogrids within a neighborhood-wide balancing DC microgrid	Nanoé F																																
		Field testing n°2 : Clustering of 20 nanogrids within a village-wide balancing DC microgrid	Nanoé F																																
		Field testing n°3 : Connection of energy-intensive productive users to a village-wide balancing DC microgrid	Nanoé F																																
	15.4.3	**Lessons learned and measured results**																																
		Technical analysis of technlogy behavior and performance during each field test	Nanoé F																																
		Economical analysis of technlogy cost and profitability during each field test	Nanoé F																																
		Social analysis of users behavior and satisfaction during each field test	Nanoé F																															D15.4	
		Task 15.5 Pilot top down																																
Task 15.5 Pilot top down	3.3.1	**Technology development and adaptation to demonstration environment**																																
		Development of an adapted flexibility solutions for load management - Hardware specification and development	INEA																																
		Interfacing with existing systems	INEA																																
	3.3.2	**Pilot implementation: installations, integration, testing, validation**																																
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		Task 15.6 Replication board																																
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		KPIs to monitor the technical pilots, economic and sociologic performances	INEA																																
	15.6.2	**Solution (top-down and bottom-up) with associated business model deployment plan**																																
		Solution (top-down and bottom-up) with associated business model deployment plan	INEA																																
	15.6.3	**Regulatory issues and existing gap for capacity building**																																
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