SUNGARI

LEAP-RE

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

The LEAP-RE project has received funding from the European Union's Horizon 2020 Research and Innovation Program under Grant Agreement 963530.

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Consortium

Project coordinator:

- Parmar, Natural Resources Institute, University of Greenwich, **UK**

Project partners:

- University of Kassel, and Simply Solar Technology Consulting GbR (**Germany**),
- University of Pretoria, and University of Limpopo (**South Africa**),
- University of Lome (**Togo**),
- University of Greenwich (**UK**)

Aim of the project

The SunGari project aims to **develop Modern Energy Cooking Service (MECS) based on solar cooking** (PV and CSP) for **Gari processing** in West Africa.

The technological approach will be **highly scalable and transferable** to other countries in the region to process different staple food based on maize, yam, plantain, and sweet potato.

Relevance vs MARs

MAR 5: Pocesses and appliances for productive uses (agriculture and industry). **Rural industries' productivity** and **socio-economic development of communities** that live in off or poor grid connectivity.

MAR 6: Innovative solutions for priority domestic uses. The project will provide safe and efficient cooking services at the domestic and SME level.

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Key challenges addressed by the project

1. *More than **700 million people in Africa** do not have access to modern energy cooking services.*
2. *Almost **all the Gari produced in West Africa relies on** firewood or fossil fuels at the household and small enterprise level.*
3. *The project will help reduce the **drudgery** for girls and women and improve their opportunities, social-economic power, and health outcome.*
4. *Reduction in GHGs, deforestation and land degradation.*
5. *Affordable and Clean Energy for all.*

Expected results :

- ***Mid-term expected results (end 2023)***
  - *Three (3) test units (Solar-powered gari roasting set up constructed and installed at demo sites in Togo.*
  - *Local gari processors and the cassava processing equipment manufacturer capacity building workshop completed.*
  - *SunGari startup established at the business incubation center at the University of Lome, Togo*
- ***End of project expected results (2025)***
  - *Individual and public health improved. Improved health and wellbeing (respiratory illness)*
  - *New employment creation and increased productivity of rural industries*
  - *Local capacity building (in Africa) and awareness of clean energy.*

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Expected outcomes in case of success of the project (2030)

What could be the impact of the project at 2030 on the economy and/or society in case of scaling up the results of the project ?

1. **Increased productivity in the informal sector.**
2. **Food preservation and reduced post-harvest losses.**
3. **GHG emission, local pollution, and deforestation reduced.**
4. **Drudgery of girls and women reduced.**
5. **Individual and public health improved.**
6. **Employment creation. Income generation**

Which main risks of failure during project implementation ?

Describe the main risks identified for project implementation

1. ***Resource Risk: Financial (reduced budget, increase in material costs etc).***
2. ***Resource Risk: Human resource risk, for example, one of the partners not cooperating or leaving the consortium.***
3. ***Managerial risk: Lack of communication, émergence of conficts among the design and development team and other stakeholders.***

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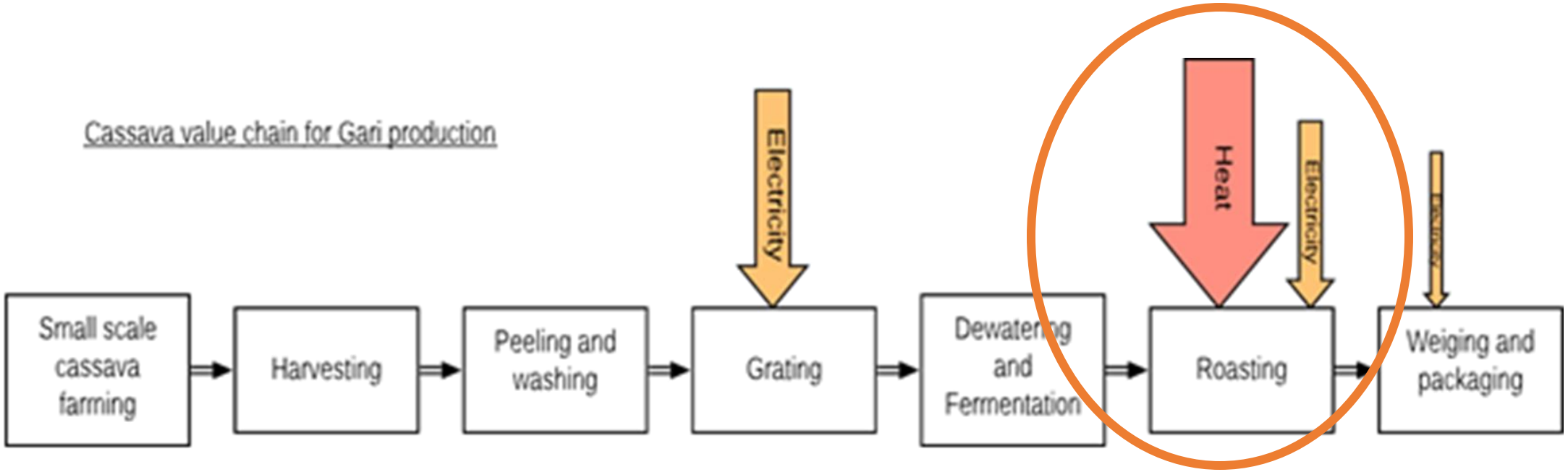
Contribution of the project to AU – EU R&D cooperation

- *Introducing an efficient, scalable, and transferrable solar device for Gari making and **supporting the transition of African economies to be low carbon and climate resilient**. Leapfrogging the use of fossil fuel in the industry concerned.*
- ***Renewable energy systems to support economic growth** and development in Africa.*
- *The **collaboration between African and European scientific communities**.*
- ***South- South cooperation**, via technical contribution and exchange of expertise among African partners (South Africa and Togo).*
- ***SDG (Sustainable Development Goal) 7**.a - enhances international cooperation to facilitate clean energy research and technology access, including renewable energy.*

Interest of Consortium members in participating in LEAP-RE clustering activities

- **MAR 5**: which relates to processes and appliances for productive uses (agriculture and industry).
- **Rural industries' productivity** and help improve the **socio-economic development of communities** that live in off or poor grid connectivity (as SunGari devices will have a total off-grid operation).
- **MAR 6**: which is related to Innovative solutions for priority domestic uses.
- Safe and efficient solar cooking at the domestic and small, and medium enterprise (SME) level for Gari roasting.

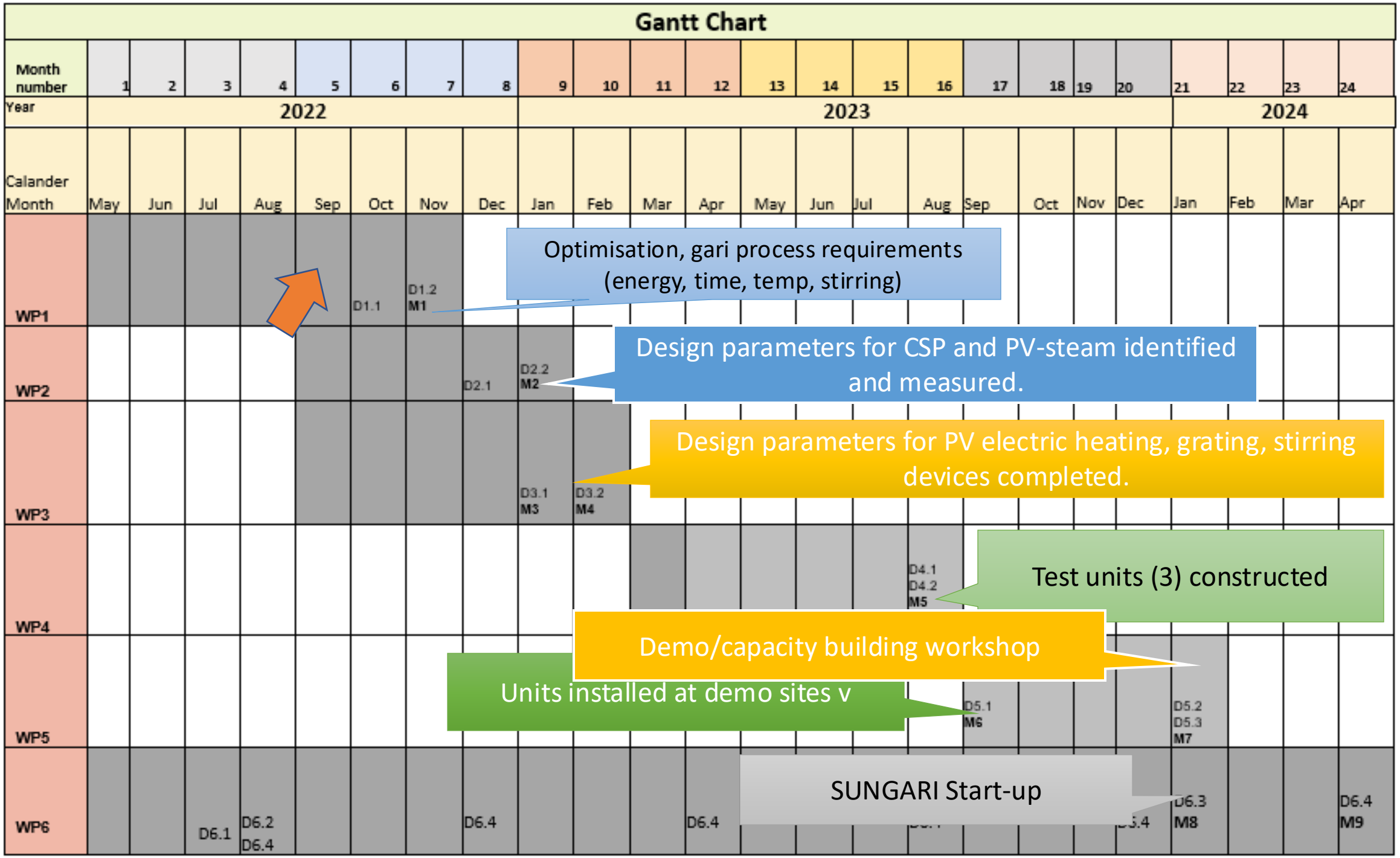
Intervention points



Gari Processing in Togo

Work Packages

Work package Nr.	Work package title	WP Leader
WP1	**Optimisation of the process requirements** and analysis of key technical performance parameters (including Gari quality) of SunGari devices.	UniKassel
WP2	**Solar and PV Thermal:** Technical analysis of CSP, and PV-steam (PV thermal) for heat generation for Gari roasting.	SST
WP3	**PV Electric**: Technical analysis of PV electric for direct heating of Gari processing vessel, and electric motor for cassava size reduction, and stirring device.	UP, ULi
WP4	**Design and construction** of test units for domestic and small and medium enterprise (SME) level.	SST
WP5	**Demonstration and piloting** at the demo sites and capacity building of local manufacturers/fabricators.	ULo
WP6	**Project coordination and dissemination strategy (including socio-economic and cultural factors, and marketing strategy).**	NRI


Gantt Chart
Month number
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Year
2022
2023
2024
Calander Month
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
WP1
D1.1
D1.2
M1
WP2
D2.1
D2.2
M2
WP3
D3.1
M3
D3.2
M4
WP4
D4.1
D4.2
M5
WP5
D5.1
M6
D5.2
D5.3
M7
WP6
D6.1
D6.2
D6.4
D6.4
D6.4
D6.3
M8
D6.4
M9
Optimisation, gari process requirements (energy, time, temp, stirring)
Design parameters for CSP and PV-steam identified and measured.
Design parameters for PV electric heating, grating, stirring devices completed.
Test units (3) constructed
Demo/capacity building workshop
Units installed at demo sites v
SUNGARI Start-up