

Renewables for African Agriculture:
Integrating Modelling Excellence and Robust
Business Models

THE RE4AFAGRI DASHBOARDS

www.re4afagri.africa



LEAP-RE

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



RE4AFAGRI

Renewable Energy for African Agriculture



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

The RE4AFAGRI visualisation dashboards



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LEAP-RE - RE4AFAGRI Home User guide Scenarios Dashboards Business models Modelling platform Code, data, and docs Events Team & contacts



**Renewables for
African Agriculture**
*Integrating Modelling Excellence
and Robust Business Models*



Enter the dashboards

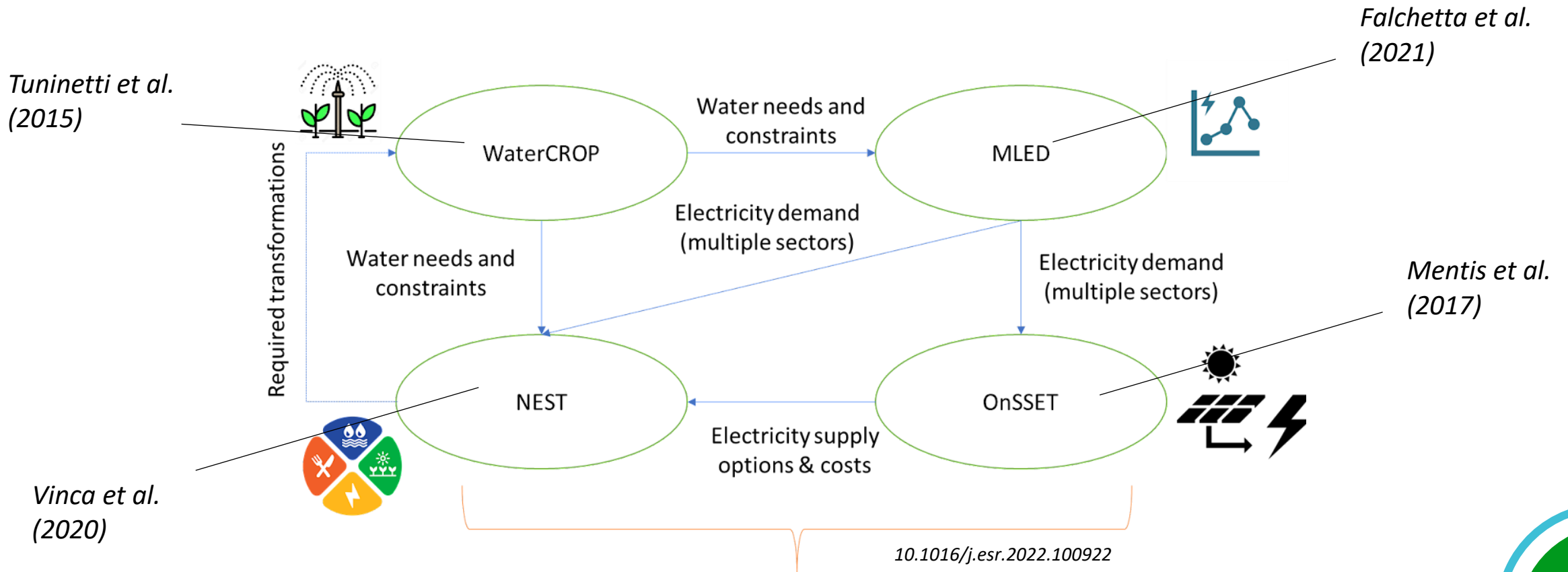
- A **powerful decision support tool with interactive dashboards**
- Support **private infrastructure developers** in site selection for maximising financial sustainability and development impact
- Support **policymaking** through sub-national gaps and needs assessment for tailored measures and investments
- Enriched with **direct access to download the raw output data**

THE RE4AFAGRI modelling platform



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The RE4AFAGRI platform is a multi-model framework to analyse deficits, requirements, and optimal solutions for integrated land-water-agriculture-energy-development nexus interlinkages in developing countries. **Four models** representing land-water-crop-food-energy requirements and dynamics (*WaterCROP*, *M-LED*, *OnSSET* and *MESSAGE-NEST*) are calibrated and soft-linked through the RE4AFAGRI platform.



Infrastructure and investment requirements estimated and impact analysis

The RE4AFAGRI visualisation dashboards



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Home User guide Scenarios **Dashboards** Business models Modelling platform Code, data, and docs

Dashboards: country selection



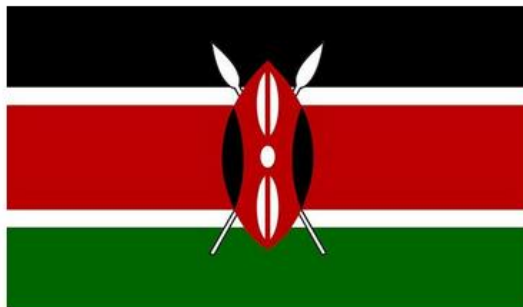
Zambia



Rwanda



Nigeria



Kenya



Zimbabwe



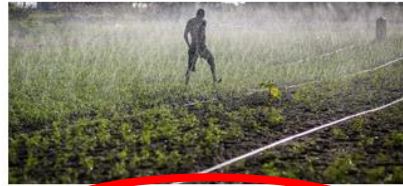
Other countries

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Dashboards - Zambia



Cropland and water requirements

Assess the current agricultural area, by crop and irrigation regime, and visualize water requirement estimates to close the irrigation gap



Multi-sectoral electricity demand

Browse local estimates of electricity demand from different sectors, including agricultural and other sources of demand.



Yield and yield growth potential

Navigate the current crop yields and estimates of productivity growth potential thanks to the input of irrigation



Crop processing

Navigate the crop throughput potential and corresponding energy requirement estimates for processing and storing crop yields in rural communities



Electricity access planning

Assess the cost-optimal technologies and related investment requirements for electrifying communities



Multi-sectoral insights

Draw policy-relevant insights on how electricity access, food security, water management and climate change objectives interact

The RE4AFAGRI visualisation dashboards

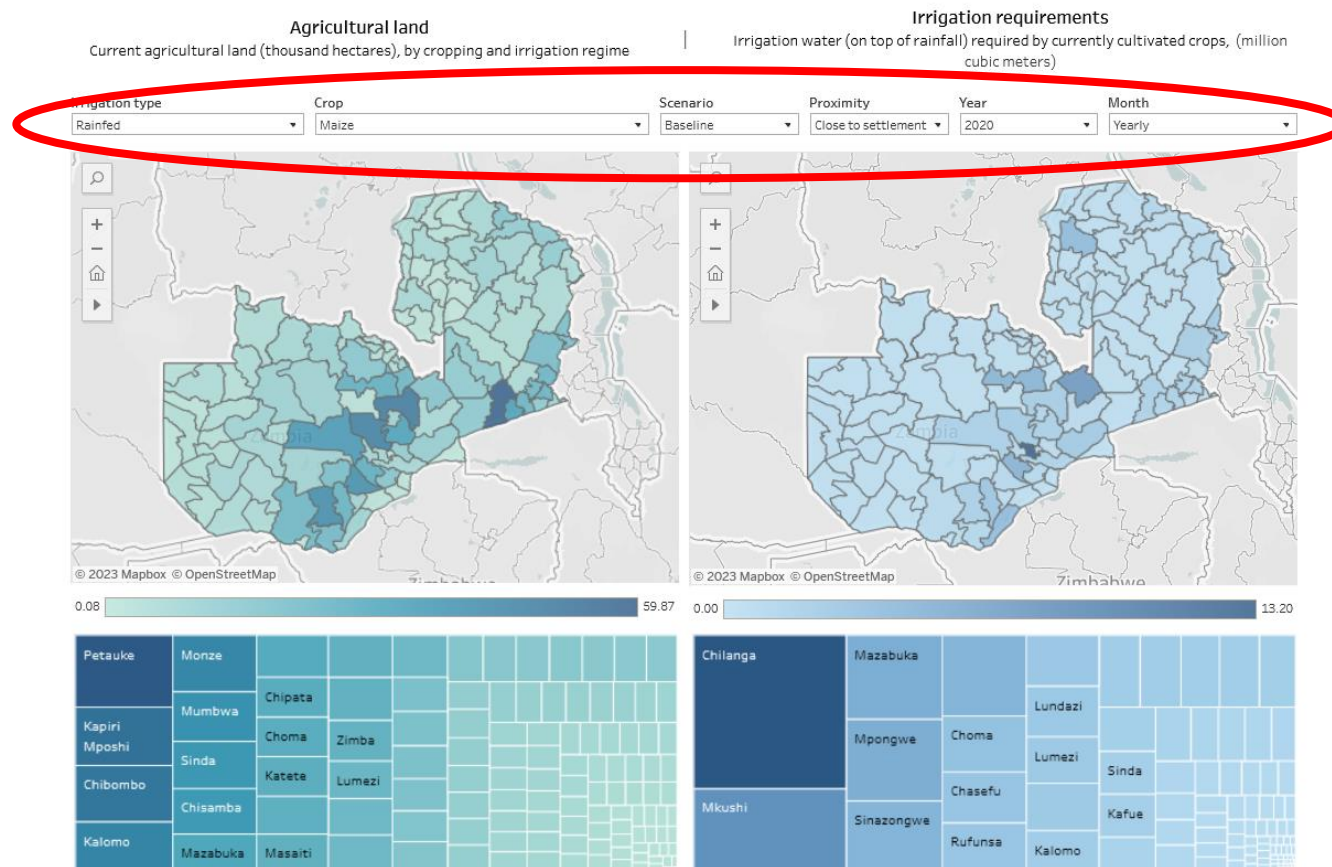


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Agriculture requirements

For each administrative unit: the **left** panel illustrates the **current agricultural area** (year 2017) by crop and irrigation regime; the **right** panel shows the **water requirements to expand irrigation** and meet the yield and food production objectives in each scenario, month and year (between 2020 and 2050). Refer to the [Scenarios](#) page for a detailed characterisation of each scenario's assumptions and objectives.

The **proximity** parameter allows distinguishing between agricultural land (and the relative water requirements) in proximity (<5 km) or remote (>5 km) from the closest human settlement. This has important implications for the selection of off-grid vs. on-grid electricity supply for on-the-field water pumping.



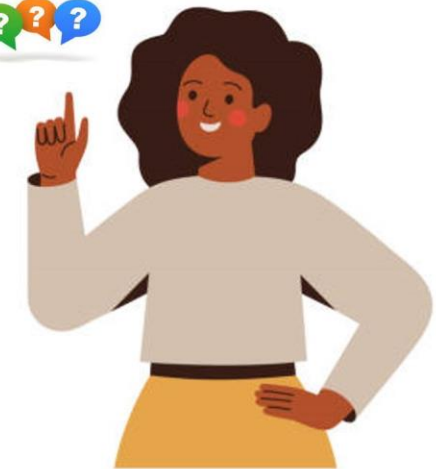
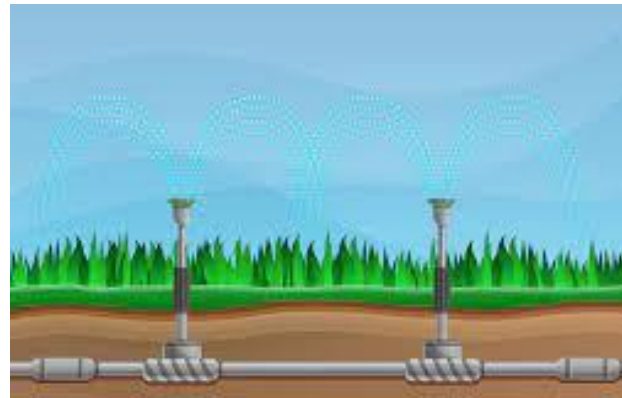
Selectors

- Scenarios
- Months
- Projection year
- Options (dashboard-specific)
 - Crops
 - Technologies
 - Sectors
 - ...

Use case example: agriculture and irrigation



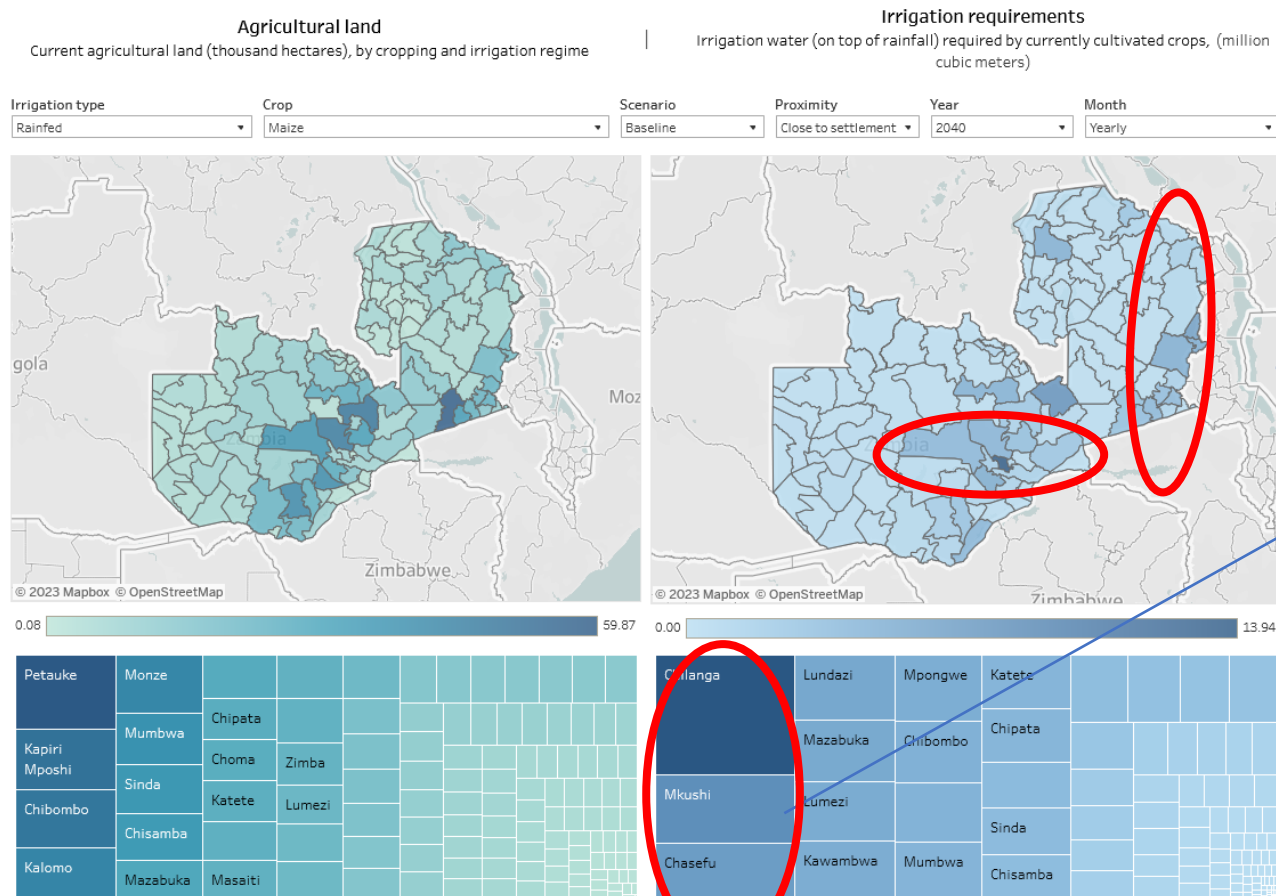
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Anne wishes to identify which regions have the **strongest need and potential for expanding maize irrigation**

*Anne, president of
smallholder farmers
association of
Zambia*

Use case example: agriculture and irrigation



Regions with the estimated largest irrigation water gap for rainfed maize fields **CLOSE TO SETTLEMENT**

Cropland that is close to settlement might be more suitable to be connected to centralised water infrastructure and electricity generation options

Use case example: agriculture and irrigation



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Sector: **Irrigation (off-gr)** Year: 2030 Month: Yearly Scenario: **Ambitious development**

Electricity demand
Estimated electricity demand (GWh/year), by sector and scenario



Mkushi	Chibombo	Chisamba	Kawambwa	Sinda	Kapiri
		Kabwe	Kafue	Mazabuka	Mushindano

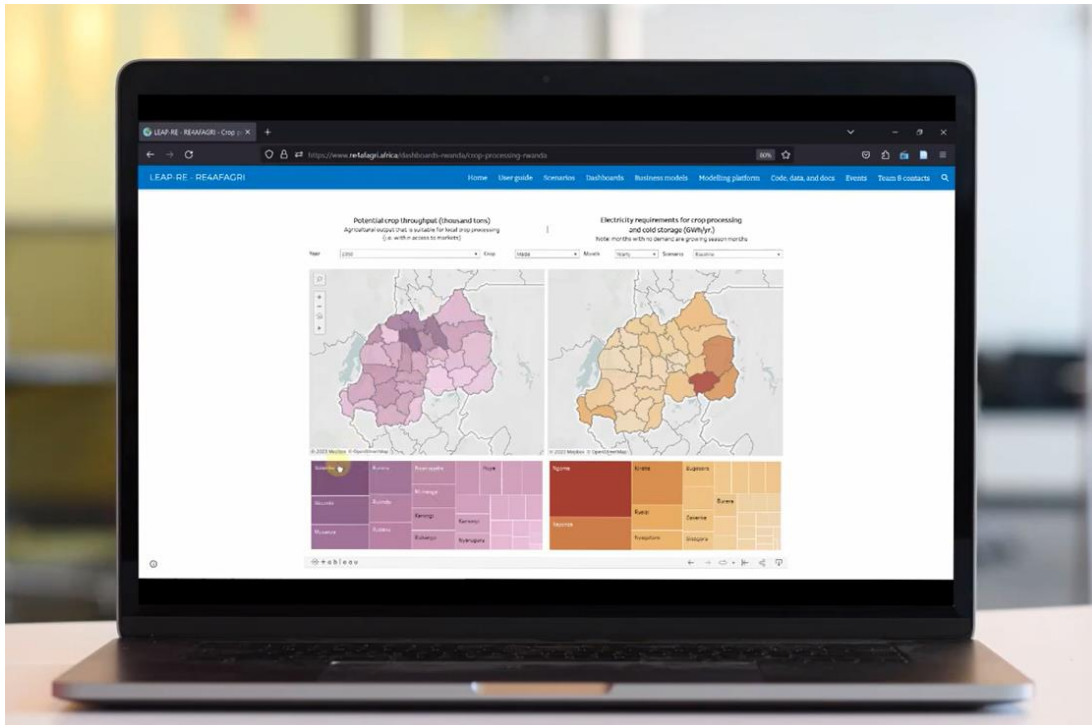
Check **seasonality of demand**

Compare the **three scenarios** to observe the difference of switching from base production to increased production to meet food and nutrition security goals

M-LED: extended training videos



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Check out the **extended training video**:

- RE4AFAGRI modeling platforms and dashboards training

Thank you



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