# Energy System Modelling for Green Development of Africa

Grant Agreement N° 101118278

## EMERGE – Co-Design Workshops

Funded by the European Union

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme, under Grant Agreement n° 101118278. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

# Table of Contents

1. Co-Design Workshops ..... 3
1.1. Stakeholder Feedback on ODK ..... 3
1.2. Stakeholder Feedback on Mentimeter ..... 4
1.3. Overall Conclusions ..... 4
ANNEX ..... 5

Funded by the European Union

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme, under Grant Agreement n° 101118278. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

# 1. Co-Design Workshops

The co-design workshops aim to present EMERGE tools to local stakeholders, gather structured feedback from diverse groups, and co-create solutions that enhance and optimise the toolbox. The process ensures that the tools are both usable and contextually relevant, fostering stronger ownership among local partners.

| Event | Location and date | Tools Presented | Evaluation Instruments | Stakeholder Groups |
|---|---|---|---|---|
| 1st co-design workshop | Oujda, MA<br><br>27/11/2024 | CEPIA, Hosting Capacity, GREENADVISE | 3 ODK forms per tool; 1 Mentimeter survey for the workshop | Academia, government bodies, research institutes |
| 2nd Co-design workshop | Praia, CV<br><br>17/10/2025 | EMERGE Toolbox | 1 ODK form | Academia, government bodies, research institutes |

These sessions were designed to reach different categories of stakeholders identified in the engagement strategy developed, including consortium members directly involved in the project, expert stakeholders with technical and policy expertise in the energy sector, and other local actors such as representatives from institutions, utilities, and relevant organisations. By involving this mix of participants, the project aimed to collect both highly technical feedback and practical insights on usability and local applicability. During these sessions, participants were invited to share their feedback through ODK forms and Mentimeter surveys.

## 1.1. Stakeholder Feedback on ODK

A criteria-based evaluation framework was developed to systematically collect and compare stakeholder feedback on different software tools across regions and contexts. Establishing clear and standardised criteria enables a consistent assessment of software quality, encompassing multiple dimensions such as usability, functionality, maintainability, and long-term sustainability.

Software quality was understood both in terms of design soundness and conformity to standards or functional requirements. The framework drew on internationally recognised references, including ISO/IEC 9126 and established methodologies for software evaluation, which define measurable dimensions such as sustainability, maintainability, and usability.

Each criterion represents a specific aspect influencing the adoption and long-term viability of the software. These include user-oriented features like understandability, learnability, and documentation quality, as well as technical and organisational aspects such as testability, portability, governance, community support, and evolvability. Additional dimensions, such as licensing, accessibility, supportability, and interoperability, capture practical and structural elements that determine how effectively software can be used, maintained, and integrated in different environments.

To operationalise the evaluation, a structured survey was conducted using the ODK platform, available in multiple languages and designed to accommodate both expert and non-expert respondents (An example of ODK survey is included in the annex). Participants rated each of the

Funded by the European Union

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme, under Grant Agreement n° 101118278. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

18 criteria using a 5-level Likert scale, with short explanatory descriptions to ensure consistency and clarity. One criterion, Evolvability, was explored through open-ended questions to allow qualitative suggestions for improvement.

Overall, the framework provided a structured and comparable approach for assessing software tools, enabling the identification of strengths, weaknesses, and priorities for future development and sustainability.

### 1.2. Stakeholder Feedback on Mentimeter

Mentimeter is an interactive digital platform that enables participants to provide real-time responses to predefined questions using their personal devices. The tool facilitates rapid collection of quantitative and qualitative inputs, allowing a structured aggregation of stakeholder perceptions.

The feedback covers all five EMERGE tools — CEPIA, GREENADVISE, Hosting Capacity, Optimal Storage Placement, and PowSyBl-METRIX — and provides valuable insights into their perceived relevance, applicability, and usability within the pilot contexts. The analysis summarises both the main strengths recognised by respondents and the key challenges that may affect their effective deployment and integration into operational settings.

### 1.3. Overall Conclusions

Across all five tools evaluated, stakeholders expressed a consistently positive perception of their relevance and applicability in supporting energy transition planning and decision-making processes. Respondents recognised the tools' potential to address local challenges and to contribute to evidence-based strategies, noting that, with appropriate contextual adjustments, they are well suited to professional use and adaptable to African contexts.

However, a recurring and critical barrier emerged: the difficulty of collecting and preparing input data necessary for effective use. Participants repeatedly highlighted issues related to data readiness, which often constrain practical implementation. This persistent "data readiness gap" remains one of the main obstacles to broader adoption, particularly in regions where local datasets are fragmented, incomplete, or misaligned with the input structures required by the tools.

Another key insight concerns the need for adaptability to local contexts. Without sufficient flexibility to reflect national policies, institutional frameworks, and operational realities, the tools risk being perceived as too generic and less applicable in practice.

These findings provide essential guidance for the ongoing refinement of the EMERGE toolbox and the formulation of recommendations to enhance its deployment across diverse regional settings. For further details, please see Section 5.2 of Deliverable 5.2.

Funded by the European Union

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme, under Grant Agreement n° 101118278. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

ANNEX

# EMERGE METRIX Test Survey

## Expertise

**Would you describe yourself as a software expert?**

- ◯ Yes
- ◯ No

**Would you describe yourself as an energy expert?**

- ◯ Yes
- ◯ No

## Understandability

**How easy was it to understand the main purpose of METRIX?**

- ◯ Very easy
- ◯ Somewhat easy
- ◯ Neutral
- ◯ Somewhat difficult
- ◯ Very difficult

**Were METRIX's primary functions and features clear to you?**

- ◯ Yes, very clear
- ◯ Mostly clear
- ◯ Neutral
- ◯ Somewhat unclear
- ◯ Not clear at all

## Documentation

**Did the documentation provide clear and structured guidance for using METRIX?**

- ◯ Very clear and well-structured
- ◯ Mostly clear
- ◯ Neutral
- ◯ Somewhat unclear or disorganized
- ◯ Very unclear and disorganized

Funded by the European Union

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme, under Grant Agreement n° 101118278. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

## Buildability

**How easy was it to follow the instructions to build METRIX on your system?**

- ◯ Very easy
- ◯ Somewhat easy
- ◯ Neutral
- ◯ Somewhat difficult
- ◯ Very difficult

**Did you encounter any issues with third-party dependencies or prerequisites during the build process?**

- ◯ No issues
- ◯ Minor issues but manageable
- ◯ Significant issues

## Installability

**How straightforward was it to install METRIX on your system?**

- ◯ Very easy
- ◯ Somewhat easy
- ◯ Neutral
- ◯ Somewhat difficult
- ◯ Very difficult

**Was the installation process well-documented and easy to follow?**

- ◯ Very well-documented
- ◯ Mostly well-documented
- ◯ Neutral
- ◯ Somewhat lacking
- ◯ Very poorly documented

## Learnability

**How easy was it to learn how to use the basic functions of METRIX?**

- ◯ Very easy
- ◯ Somewhat easy
- ◯ Neutral
- ◯ Somewhat difficult
- ◯ Very difficult

Funded by the European Union

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme, under Grant Agreement n° 101118278. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

**Did you find METRIX intuitive to use for more advanced tasks?**

- ◯ Very intuitive
- ◯ Somewhat intuitive
- ◯ Neutral
- ◯ Somewhat unintuitive
- ◯ Not intuitive at all

## Identity

**Based on the name and the logo, how clear is METRIX's identity and aim?**

- ◯ Very clear and well-structured
- ◯ Mostly clear
- ◯ Neutral
- ◯ Somewhat unclear or disorganized
- ◯ Very unclear and disorganized

## Copyright

**Is it clear who owns METRIX and its copyright information?**

- ◯ Very clear and well-structured
- ◯ Mostly clear
- ◯ Neutral
- ◯ Somewhat unclear or disorganized
- ◯ Very unclear and disorganized

## Licensing

**How well is METRIX's licensing information communicated?**

- ◯ Very well communicated
- ◯ Mostly communicated
- ◯ Neutral
- ◯ Somewhat lacking
- ◯ Very poorly communicated

Funded by the European Union

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme, under Grant Agreement n° 101118278. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

**Does METRIX's license align with your expectations for open-source or proprietary software?**

- ◯ Yes, aligns very well
- ◯ Somewhat aligns
- ◯ Neutral
- ◯ Somewhat misaligned
- ◯ Very misaligned

## Governance

**How transparent is METRIX's governance structure (e.g. how development decisions are made)?**

- ◯ Very transparent
- ◯ Somewhat transparent
- ◯ Neutral
- ◯ Somewhat opaque
- ◯ Very opaque

## Community

**Is there an active community of users or developers for this tool?**

- ◯ Very active
- ◯ Somewhat active
- ◯ Neutral
- ◯ Somewhat inactive
- ◯ No community presence

**How likely are you to engage with the community (e.g. forums discussions)?**

- ◯ Very likely
- ◯ Somewhat likely
- ◯ Neutral
- ◯ Somewhat unlikely
- ◯ Very unlikely

Funded by the European Union

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme, under Grant Agreement n° 101118278. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

## Accessibility

**How easy was it to download and access METRIX?**

- ◯ Very easy
- ◯ Somewhat easy
- ◯ Neutral
- ◯ Somewhat difficult
- ◯ Very difficult

**Were all necessary resources and files quickly available?**

- ◯ Yes, completely available
- ◯ Mostly available
- ◯ Neutral
- ◯ Somewhat lacking
- ◯ Very lacking

## Testability

**How easy was it to verify that METRIX works correctly after setup (i.e. that the results from METRIX are correct)?**

- ◯ Very easy
- ◯ Somewhat easy
- ◯ Neutral
- ◯ Somewhat difficult
- ◯ Very difficult

## Portability

**Was METRIX usable across different platforms (e.g. Windows, MacOS, Linux, Android, IOS,...)?**

- ◯ Yes, very usable on all platforms
- ◯ Mostly usable
- ◯ Neutral
- ◯ Somewhat limited
- ◯ Very limited

**Did you encounter any issues with compatibility across platforms?**

- ◯ No issues
- ◯ Minor issues but manageable
- ◯ Significant issues

Funded by the European Union

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme, under Grant Agreement n° 101118278. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

## Supportability

**Is there sufficient support available for this tool (e.g. documentation forums direct support)?**

- ◯ Very sufficient
- ◯ Somewhat sufficient
- ◯ Neutral
- ◯ Somewhat insufficient
- ◯ Very insufficient

## Analyzability

**How easy is it to understand METRIX's source code and architecture?**

- ◯ Very easy
- ◯ Somewhat easy
- ◯ Neutral
- ◯ Somewhat difficult
- ◯ Very difficult

## Changeability

**How easy is it to modify METRIX for customization or additional features?**

- ◯ Very easy
- ◯ Somewhat easy
- ◯ Neutral
- ◯ Somewhat difficult
- ◯ Very difficult

**Are there clear guidelines for contributing changes or updates to METRIX?**

- ◯ Very clear
- ◯ Somewhat clear
- ◯ Neutral
- ◯ Somewhat unclear
- ◯ Very unclear

Funded by the European Union

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme, under Grant Agreement n° 101118278. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

## Interoperability

**How well does METRIX work with other related software or systems?**

- ◯ Very well
- ◯ Somewhat well
- ◯ Neutral
- ◯ Somewhat poorly
- ◯ Very poorly

**Are there clear guidelines for integrating METRIX with third-party systems or tools?**

- ◯ Very clear
- ◯ Somewhat clear
- ◯ Neutral
- ◯ Somewhat unclear
- ◯ Very unclear

## Evolvability

**In which of these areas above do you think METRIX should be developed and updated the most in the future? (Just use one word)**

_____

**What would you suggest to improve? (Optional)**

_____

Funded by the European Union

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme, under Grant Agreement n° 101118278. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.