



# ENERGICA

**ENERGY ACCESS AND GREEN  
TRANSITION COLLABORATIVELY  
DEMONSTRATED IN URBAN AND  
RURAL AREAS IN AFRICA**

**DELIVERABLE 9.1**  
Report of related  
initiatives



## Deliverable Report

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### Nature of the Deliverable

R	Document, report (excluding the periodic and final reports)	X
DEM	Demonstrator, pilot, prototype, plan designs	
DEC	Websites, patents filing, press & media actions, videos, etc.	
OTHER	Software, technical diagram, etc.	

### Dissemination Level

PU	Public, fully open, e.g. web	X
CO	Confidential, restricted under conditions set out in Model Grant Agreement	
CI	Classified, information as referred to in Commission Decision 2001/844/EC	

### Quality procedure

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## PROJECT SUMMARY

Gathering 11 African-based partners and 17 Europeans with offices or subsidiaries in Africa, the ENERGICA project is ambitiously fostering the collaboration between partners of both continents on energy access and sustainable energy development. The main objective of the ENERGICA project is to demonstrate the efficient implementation of renewable energy technologies to match local contexts' needs. Three different demonstration sites will rely upon local Energy Transition Boards (ETBs) which will manage community-scale Integrated Community Energy Systems (ICESs). Based on these methodologies and respective innovative technologies, ENERGICA will demonstrate positive social, environmental, technical, and economic impacts from the high energy-efficiency and low carbon emission Renewable Energy Technologies (RETs). Specifically, the project will develop innovative nanogrids in rural Madagascar; low-tech efficient biogas systems in peri-urban Sierra Leone; and solar-powered e-mobility solutions in urban Kenya.

## OBJECTIVE AND EXECUTIVE SUMMARY

One essential activity of the ENERGICA project is the link to and exchange with other relevant initiatives. The bilateral exchange is sought to i) take benefit from the experience of other projects and organisations and ii) embed insights from the ENERGICA solutions into relevant discussions within the energy sector to widen the impact of the ENERGICA solutions. Thus, the target is to interact with all scales of initiatives, including up to international initiatives as well as local initiatives active at the demonstrator locations. This report establishes a strategy and basis to organize the continuous exchange of the ENERGICA project partners with relevant initiatives. The report focuses on two distinct scales of initiatives: a) regional up to international initiatives and b) local initiatives. To structure relevant a) regional/international initiatives, the report first develops a conceptual framework, which enables to categorize initiatives according to their relation to ENERGICA activities in three broad classifications, including i) relevance and proximity for the project, ii) suitable timing of interconnection, and iii) relevant dimension of sustainability. In collaborative action amongst all consortium partners, relevant over 30 initiatives from both the European Union and the African Union were identified as relevant to interconnect with. The initiatives and relevant characteristics are included in the results section of this report. Second, the report identifies a roadmap on how to integrate with b) emerging local initiatives active at the demonstration site, and relevant for retrieving, sharing, and disseminating results on a local level.

The report lays the foundation for a continuous exchange of the ENERGICA project with related initiatives to unlock synergies and deepen collaboration on relevant topics throughout the project activities and beyond.

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### 1. INTRODUCTION

The African energy sector must undergo a major transformation to meet the needs of a growing population in a socially equitable, economically viable, and environmentally sustainable manner [1]. The growing awareness and evidence on the multi-dimensional interlinkage of having reliable access to energy (see for example [2]) to other dimensions of human and social development, increase the pressure on the energy sector to overcome existing challenges rapidly. Out of many, a selection of the most pressing challenges in the sector includes the lack of access-to-electricity of over 250 million people on the African continent, increasing grid instabilities in national power grids leading to black-outs, a slow uptake of digitalization in the energy sector, lack of transparency in regulations, hard-to-access financial support and many more [1]. The challenges are complex, and mutually interlinked.

However, during the last decade, significant improvements in the energy sector have been made. The deployment of renewable energy technologies has progressed despite the discovery of new fossil fuel reserves. Electrification efforts have outpaced population growth in many African countries – and even in hard-to-electrify rural regions. Governments have adopted clear and promotive regulations to open the electricity sector for the private sector. Innovative start-ups and ideas emerged in the sector, offering sustainable solutions tailored to the local contexts. The energy sector has evolved in many facets, and learnings are available. In reflection of such learnings, and facing remaining challenges, knowledge sharing and an open dialogue amongst the entire energy sector is crucial to gain momentum in accelerating the green transition of the energy sector in Africa. Organized knowledge sharing, bridging individual and organizational knowledge, is essential to improving the innovation capacities of activities, whilst stimulating the effective embeddedness of the innovations in the sector's challenges. It therefore is a crucial component of innovative, spearheading energy projects, such as the ENERGICA project, to actively pursue sharing knowledge in close interaction with other stakeholders of the sector. A close interaction offers the opportunity to unlock synergies and create benefit for both parties involved. On the one hand, the ENERGICA project consortium may take benefit from the experience of others, facilitating the improvement of specific solutions or understanding of related contexts. On the other hand, other parties may take up the solutions developed in the ENERGICA project and embed the solutions in a relevant context. Finally, a bilateral transparent exchange increases the efficiency of transferring useful solutions across the entire sector.

To establish an efficient knowledge sharing and facilitate the discussion between the ENERGICA project consortium and other players active in the energy sector, this report sets an initial basis for an organized and structured mapping of relevant initiatives to interact with. Based on a theoretical framework, the report identifies relevant initiatives and touching points to tap into potential collaborations. The report follows first develops the theoretical foundation and framework to categorize initiatives before sorting relevant initiatives gathered by the ENERGICA consortium experts.

## 2. CONCEPTUAL FRAMEWORK

For this report and project activities, we apply a broad definition of the terminus “initiative”. In a very general sense, initiative may be defined as “*a new plan or action to improve something or solve a problem*” [3] or “*comprehensive plan for reaching strategic and long-term goals*” [4]. In contrast, projects may be understood as more “*temporary efforts to create value through unique products, services, and processes*” [3] of “*a temporary endeavour conducted to reach a unique goal*” [4]. Thus, initiatives may include projects, but not vice versa. However, our definition of initiative is not limited in the type of organization implementing the initiative (umbrella organization). Thus, we include any type of stakeholder as eligible to organize relevant initiatives.

To organize the planned interaction with initiatives, a structured mapping of relevant initiatives must be conducted. Therefore, this section presents the theoretical frameworks to organize, approach, and interact with relevant initiatives on regional/international scale (subsection 2.1) and local scale (subsection 2.2) respectively. While for regional/international initiatives the focus will be on how to structure and organize the available initiatives to identify relevant ones to interact with, the section on local initiatives rather focuses suitable stakeholder management principles to identify and approach stakeholders in energy projects.

### 2.1 Regional and up to international initiatives

We develop a theoretical framework to categorize initiatives according to essential characteristics that later facilitate effective elaboration of touching points and interactions. The framework aims to classify initiatives according to i) their relevance and proximity/overlap with the ENERGICA project solutions, ii) the most useful time of interaction related to the progress of the ENERGICA project, and iii) the dimension of sustainability relevant to discuss.

#### **i) Relevance and proximity to ENERGICA solutions**

The foundation of the framework is to categorize initiatives according to their relevance and proximity to ENERGICA solutions, see Figure 1.

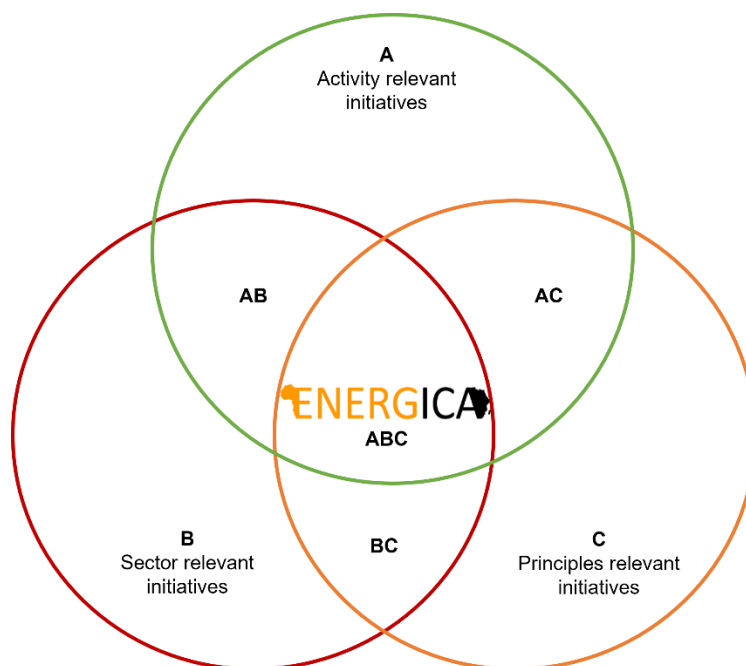


Figure 1: classification of initiatives according to their relevance and proximity to ENERGICA solutions.

- A. **Activity Relevant Initiatives: initiatives which are directly relevant for specific activities carried out within the implementation of the ENERGICA solutions.** These initiatives especially reflect the technical and non-technical solutions developed at the ENERGICA demonstrators, which essentially are:
- Productive uses of energy: Productive Use of Energy (PUE) may be defined as the utilization of energy (mostly electricity) to power solutions which support any economic activity and will leave the user with more income than the previous solution (if any). Several PUEs are being developed in the ENERGICA project at different scales, reaching from containerized solutions including an array of PUE equipment, to small-scale solutions for individual households (see D4.1 for a detailed description). The PUEs are integrated into photovoltaic (PV) powered nanogrids. The list of PUEs developed include direct current (DC) powered rice huller, solar freezer, water pumping and treatment, and cooling.
  - Biogas technology: biogas technology offers a huge untapped potential to provide both electricity and heat to the peri-urban populations, while efficiently using agricultural or food waste resources. The development of frugal biogas technologies is in focus of the ENERGICA demonstrator in Sierra Leone. Here, a turn-key solution currently used in the Netherlands is reduced in complexity and costs and optimized for a low-maintenance function building on the local value chain.
  - Retrofitting of electrically powered motorcycles: converting ICEVs into electric vehicles by replacing the original internal combustion engine and other related components by an electric engine and drivetrain can present an attractive, cheap alternative to manufacturing completely new EVs. In its demonstrator in Kenya, the ENERGICA project explores technical, economic, and regulatory aspects of such retrofits to accelerate the green transition of the African mobility sector.
  - Roll-out of electric charging stations: the integration of electric vehicle charging stations is a complex matter, involving multiple stakeholders. The location, the timing

and the technologies and charging modes used may have great impact on future power grid related challenges. In the Kenyan demonstrator of the ENERGICA project, PV supplied swappable battery stations will be integrated in the low voltage grid. While powering locally used electric motorcycles, the batteries deployed are also used to provide grid stability services.

- Renewable-based water purification: in many African regions, clean water is a scarce resource. The restorage of contaminated water or water produced as by-product can essentially contribute to reducing the water stress on communities and ecosystems. In the ENERGICA project, solar-based technologies for disinfecting and decontaminating water are developed to provide freshwater to local communities.
- Co-creation: The crucial outcome of co-creation is the inclusion and empowerment of all participants. To establish sustainable and long-term uptake of solutions by a community, it should be included in the development, testing and adaptation of solutions. Thus, the in-depth involvement of the community in all stages of ENERGICA solution development is sought. It essentially includes the development of Energy Transition Boards (ETBs), which includes stakeholders among a variety of sub-groups of a community that constitute a representative community sample for iterative dialogue with the project.
- Integrated Community Energy Systems (ICES): ICESs are complex systems that include multi-level stakeholders in the energy landscape. ICES can contribute to the active involvement and empowerment of the local population, and include various activities (generation, collective consumption, sharing etc.). Within the ENERGICA project, the development of ICESs is actively supported by providing support in technical, socio-economic, environmental, and institutional belongings towards the local community via ETBs – a medium of communication and dialog between the community, the project and various other related actors.

*Example:* African biogas partnership programme, explicitly relevant for exchanging on biogas related activities.

**B. Sector Relevant Initiatives: Initiatives relevant for the development of the energy sector.**

The ENERGICA project addresses current important challenges within the energy sector. While the ENERGICA activities address specific challenges within the sector, embedding the developed solutions within the global complex picture of the energy sector is crucial to ensure the fit into the sector, and finally the uptake of the solutions by the market and other stakeholders. Thus, linking with experienced initiatives within the sector to discuss the integration of ENERGICA solutions is a crucial requirement. Some global challenges within the African energy sector, for which the ENERGICA activities are relevant are:

- Rural electrification: In 2020, globally 733 million people lacked access to electricity [5]. Unproportionally underserved with electricity is the rural population. Around 80 percent of the world's people without access to electricity lived in rural areas in 2020 [5]. The rural population thereby is unproportionally limited in their opportunities to access quality public services (e.g., healthcare), rise out of poverty, and improve their livelihoods compared to its urban counterpart. The African continent is a global hotspot for lack of access to electricity. About 75 percent of the world's rural population without access lived in Sub-Saharan Africa [5]. The ENERGICA project tackles the challenges of rural electrification, improving both infrastructure costs and

widening the impact of rural nanogrids for supplying electricity to the rural population.

- Sustainable mobility and transport: the African urban centres are growing rapidly, and so does the demand in energy and transport. By 2017, vehicle emissions accounted for 90% of harmful emissions in urban centres, as transportation modes relied on fossil fuels almost exclusively [6]. In countries with a low share of fossil-based power supply to the national grid – such as Kenya (116g/kWh [7]), electrification of urban mobility options offers great potential in reducing the harmful emissions caused by mobility and transport. However, the transformation of the mobility sector towards electric mobility comes with complex challenges, including many different actors. Despite disruptions in the mobility sector itself, impacts on the electrical grid stability are to be expected when reaching high penetration levels of electrical vehicles. At the intersection, the ENERGICA project focuses on integrating battery charging stations in power grid bottlenecks and according to charging algorithms that improve the stability of the grids.
- Urban power grid stability: while global electrification efforts increase especially in rural areas, the stability of the national power grid and quality and reliability of electricity supply by the power grid continuously decreases. For example, the annual share of electricity outage in Nigeria was stated to be 40% in 2018 [8]. Unreliable energy supply hinders economic development of the affected communities and leads to an increased usage of expensive fossil-fuel powered back-up generators, which in turn cause negative impacts on health, climate, and economies. The poor availability of the electricity distribution grid also triggers a vicious cycle in which the low revenue collection rates of unsatisfied customers further weaken the utility’s financial viability. Hence, both the community and the local electricity utilities suffer from the current situation. Reasons behind the challenging situation for utilities in Africa vary, but include underinvestment in infrastructure to meet the demand, mismatch between cost of service and cash collected, financial pressures on utilities through regulated tariffs, and general mismanagement. The ENERGICA project actively supports the grid stability in urban centres by smart managing of electrical loads, preventing from exceeding physical power grid bottlenecks.
- Digitalization of the energy sector: in the role of becoming manager of energy supplied by various independent power producers rather than own capacities, the national utilities are confronted with the need to digitalize the energy infrastructure. Digitalization, including smart metering and control, enables to identify “who needs energy and deliver it at the right time, in the right place, and at the lowest costs” [9]. The chances of a successful digitalization of the energy system in Africa include i) reduction of required (network) capacity expansions, ii) reduction of electricity costs for consumers, and iii) managing uncertainties in supply [1]. At the front row, the ENERGICA project creates evidence for the success of digitalization measures by showcasing an efficient implementation at the mobility – electricity intersection in operating smart IT connected charging appliances in the electricity grid operation.

*Example:* African initiative for solar industry association; mini-grids partnership

- C. **Principles Relevant Initiatives: Initiatives that contribute to fundamental concepts of the ENERGICA projects.** The ENERGICA project builds on fundamental and overarching concepts and cornerstones, and in any activity follows the ambition to contribute to the establishment



of such concepts. For example, every demonstrator of the ENERGICA project specifically addresses fundamental challenges of our global society, for example comprised within the Sustainable Development Goals (SDGs) and other fundamental cornerstones of sustainable development. While the ENERGICA project and all partners involved continuously measure activities against such concepts, the limited scope of the project requires the link to initiatives dedicated to such underlying concepts. Examples of underlying principles incorporated in the ENERGICA project are:

- Sustainable Development Goals: The United Nation's (UN) Sustainable Development Goals (SDGs) provide clear guidance to global society on pressing challenges for sustainable development until 2030. Energy is recognized as one distinct challenge in SDG 7. However, SDG 7 is mutually interlinked with many other SDGs and bilateral impacts between SDG 7 and other SDGs are obvious. Following the guidance of the UN, ENERGICA adopts the principles of the SDGs and pays special attention to the interlinkage with other SDGs than SDG 7 in all activities. Relevant SDGs directly linked to the ENERGICA interventions include SDG 2 (Zero hunger), SDG 4 (Quality education), SDG 5 (Gender equality), SDG 6 (Clean water and sanitation), SDG 7 (Affordable and clean energy), SDG 8 (Decent work and economic growth), SDG 11 (Sustainable cities and communities), SDG 12 (responsible consumption and production), and SDG 13 (Climate action).
- Water-energy-food (WEF) nexus: the WEF nexus approach highlights the interdependence of water, energy and food security and ecosystems. By holistically addressing the three dimensions within combinatory approaches, synergies across the dimensions can be unlocked and additional momentum for development can be initiated. In the ENERGICA project, the WEF nexus is essential focus of both the Sierra Leone and the Malagasy demonstrator. In Sierra Leone, frugal biogas-water systems will be implemented close to farming areas to test the coupling of fertilizer and water solutions – in addition to electricity and heat - with local farmers. Coupling frugal biogas technology with a solar-powered water purification system specifically addresses the WEF nexus issues.
- Frugal technology development: to guarantee the sustainability and longevity of technologies and projects it is essential to utilize locally available resources. Further, energy technologies require continuous maintenance and operational support. Especially in rural areas and hard-to-access settings, reducing the operational and maintenance efforts are crucial to avoid longer disruption of supply and service. Thus, it is an essential principle of the ENERGICA activities to reduce the complexity of technologies and use as many local resources as possible.
- Circular economy: facing exhaustible resources and multidimensional impact of the use of resources, the efficient use of any material and non-material resource is vital for a sustainable future. Moreover, by using as many local resources as possible, the entire local value chain of communities adopting technologies is promoted, and a virtuous cycle of resilience building is triggered. ENERGICA develops and implements circular economy strategies included in its decision-making tools to help countries focus on creating a more sustainable development pathway that avoids resource-intensive economic practices of the dominant linear consumption and production system.

## ii) Time of Connection

Initiatives may be relevant at different stages of the ENERGICA project, depending on the purpose of connecting to and expertise of the initiative. Figure 2 illustrates the time of intervention with initiatives and given purpose.

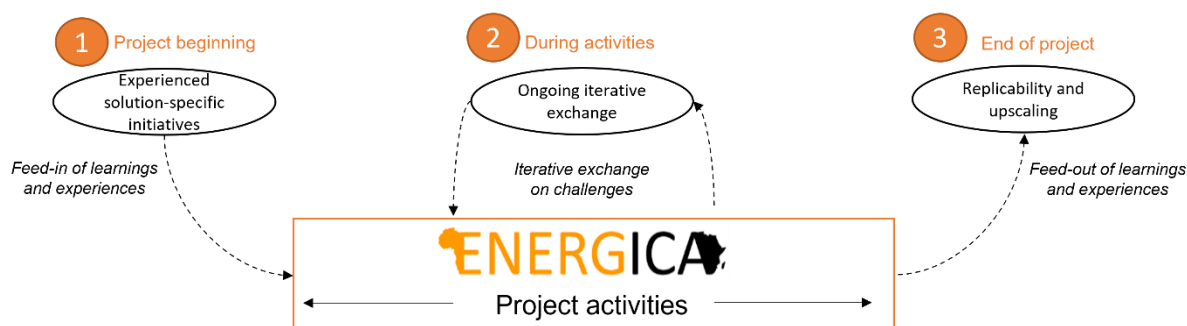


Figure 2: classification of initiatives according to the timing and purpose to connect with in regards to the progress of the ENERGICA project.

We broadly divide the timings of interaction with initiatives into three categories:

1. **Before the implementation of ENERGICA solutions:** the feed-in of experiences and information from experienced solution specific initiatives may be relevant before the actual implementation of specific solutions.
2. **During ENERGICA project:** during the implementation of the ENERGICA solutions, ongoing exchange for detailed challenges may facilitate efficient problem solving.
3. **After the implementation phase:** at the end of the ENERGICA project, reflecting on the implementation of ENERGICA solutions, and the dissemination of gained knowledge to related initiatives might increase the impact and facilitate upscaling of the solutions.

## iii) Dimension of Sustainability

With increasing knowledge about interlinkages between energy usage and other dimensions of development it becomes more and more visible that energy solutions must not only be evaluated by their technical capabilities or economic performance but rather their holistic fit into the economic, technical, environmental, and social system [2,10,11]. In the exchange on solutions under development, it therefore is important to include perspectives with different foci on sustainability dimensions. To later facilitate a cross-check of equal representation of the different dimensions of sustainability, we categorize initiatives according to their focus dimension in

1. **Technical dimension:** encompassing technical aspects and characteristics of solutions, especially technologies.
2. **Economical dimension:** concerns impact of solutions on the economic conditions of related stakeholders
3. **Environmental dimension:** focuses on the use of natural resources and environmentally friendly solutions
4. **Social dimension:** Works on the well-being and longevity of communities, including ethical aspects
5. **Policy and regulations:** Focuses on regulatory aspects and relevant policies

Gathering relevant initiatives was conducted in an iterative collaboration with the consortium partners. Aside the classification from above, an Excel template was used to collect a short description, indication of geographical region the initiative is active in, and potential connections.

Below, we summarize the initiatives detected as relevant to connect with for the ENERGICA project. Table 1 describes relevant initiatives operating on the African and European continent according to the theoretical framework applied.

Table 1: Categorization of regional and up to international relevant initiatives.

Name	Description	Geographical focus	Relevance		Dimension of sustainability	Time of exchange
			H M L	High Medium Low		
<a href="#">ABPP</a> African Biogas Partnership Program	The Africa Biogas Partnership Programme (ABPP) is a partnership between Hivos and SNV in supporting national programmes on domestic biogas in five African countries. The program ended in 2019 but is still open to share resources.	Africa (Burkina Faso, Ethiopia, Kenya, Tanzania, Uganda)	L ✓ ✓	<b>LOW</b> Activity – Biogas Sector Principles	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Social</li> <li>• Policy and Regulations</li> </ul>	① Project beginning
<a href="#">AFSIA</a> Africa Solar Industry Association	AFSIA is the reference association for solar professionals in Africa. AFSIA promotes solar power in the African region from large scale grid-connected projects to off-grid solar home systems, through hybrid systems including diesel and storage to solar water pumping, solar stoves or solar water heaters. AFSIA organizes networking opportunities for solar professionals and gives them access to the right information and the right network to expand their business and strengthen the solar industry across the continent.	Pan-African	L ✓	<b>LOW</b> Activity – PUE Sector – electrification Principles	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Economic</li> <li>• Policy and Regulations</li> </ul>	③ After implementation
<a href="#">ARE</a> Alliance for Rural Electrification	The international business association for the integration of decentralised renewables into rural electrification markets in developing and emerging countries.	Pan-African	M ✓ ✓	<b>MEDIUM</b> Activity – ICES Sector Principles	<ul style="list-style-type: none"> <li>• Economic</li> <li>• Policy and Regulations</li> </ul>	② During demonstration

<p><b>BGFA</b> <a href="#">Beyond the Grid Fund for Africa</a></p>	<p>BGFA provides results-based financing to de-risk the growth trajectory for distributed energy companies providing solar home systems and developing mini-grids, including those that incorporate PUE appliances and applications within their portfolios.</p>	<p>Africa (Burkina Faso, Liberia, Mozambique, Uganda and Zambia)</p>	<p><b>H</b> ✓ ✓ ✓ <b>HIGH</b> Activity – PUE Sector Principles</p>	<ul style="list-style-type: none"> <li>• Economic</li> <li>• Social</li> </ul>	<p>② During demonstration</p>
<p><b>BRIDGE</b></p>	<p>BRIDGE is a European Commission initiative which unites Horizon 2020 and Horizon Europe Smart Grid, Energy Storage, Islands, and Digitalisation Projects to create a structured view of cross-cutting issues which are encountered in the demonstration projects and may constitute an obstacle to innovation.</p>	<p>Europe</p>	<p><b>H</b> ✓ ✓ <b>HIGH</b> Activity Sector Principles</p>	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Social</li> </ul>	<p>② During demonstration</p>
<p><b>Digital Energy Challenge</b> (AFD)</p>	<p>The Digital Energy Facility launched the Digital Energy Challenge in 2021, for a duration of four years, with an annual Call for Projects. The objective of the Challenge is to support the development of innovative solutions for energy access, the integration of renewable energy and public utility performance improvement.</p>	<p>International</p>	<p><b>L</b> ✓ <b>LOW</b> Activity – PUE Sector – digitalization Principles</p>	<ul style="list-style-type: none"> <li>• Technical</li> </ul>	<p>③ After implementation</p>
<p><b>EELA</b> <a href="#">Energy Efficient Lighting and Appliances</a></p>	<p>The EELA project aims to create market and institutional conditions to enable a transformation of the sector to stimulate increased diffusion of efficient lighting products and appliances across .</p>	<p>East Africa (Kenya, Uganda, S. Sudan, Rwanda, Burundi) and SADC Region</p>	<p><b>M</b> ✓ ✓ <b>MEDIUM</b> Activity – PUE Sector Principles</p>	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Policy and Regulations</li> </ul>	<p>② During demonstration</p>
<p><b>ElectriFI</b></p>	<p>The Electrification Financing Initiative (ElectriFI) is a EUR 275+ million impact</p>	<p>Pan-Africa</p>	<p><b>M</b> ✓ <b>MEDIUM</b> Activity</p>	<ul style="list-style-type: none"> <li>• Economic</li> </ul>	<p>② During demonstration</p>

Electrification Financing Initiative	investment facility funded by the European Union and managed by European Development Finance Institutions, committed to increase access to clean energy in developing countries.		✓	Sector – Electrification Principles		③ After implementation
<a href="#">EnDev</a> Energising Development	EnDev is a strategic partnership of likeminded donors and partners to support access to modern energy. Access to modern energy is a prerequisite for social and economic development.	Pan-Africa	Ⓜ ✓ ✓	<b>HIGH</b> Activity – Co-creation Sector Principles	<ul style="list-style-type: none"> <li>• Economic</li> <li>• Environmental</li> </ul>	② During demonstration
<a href="#">ETIP SNET</a> European Technology Innovation Platform – Smart Networks for Energy Transition	European Technology & Innovation Platforms (ETIPs) have been created by the European Commission in the framework of the new Integrated Roadmap Strategic Energy Technology Plan (SET Plan) by bringing together a multitude of stakeholders and experts from the energy sector.	Europe	Ⓜ ü ✓	<b>HIGH</b> Activity Sector Principles	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Economic</li> </ul>	② During demonstration
<a href="#">FLONE Initiative</a>	Flone Initiative is a women-led organization working towards the creation of safe, sustainable and accessible public transportation spaces for women and vulnerable groups in Africa by influencing behavioural change, generating knowledge and movement-building.	Africa (Kenya)	Ⓜ ✓ ✓	<b>Medium</b> Activity Sector – E-mobility Principles – SDG5	<ul style="list-style-type: none"> <li>• Economic</li> <li>• Social</li> </ul>	① Project beginning
<a href="#">Global Electric Mobility Programme</a> (by UNEP)	Focus on electric 2- and 3-wheelers, light-weight vehicles and buses. The programme is active at the national, regional and global level. It supports 50	International	Ⓜ ✓	<b>Medium</b> Activity – EVs Sector – E-mobility Principles	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Economic</li> <li>• Policy and Regulations</li> </ul>	③ After implementation

	countries in the shift to electric mobility, established four investment platforms, and advocates for policy changes.					
<a href="#">GOGLA</a> Global Off-Grid_Lighting Association	GOGLA is the global association for the off-grid solar energy industry. GOGLA supports the industry in building sustainable markets and profitable businesses to deliver high-quality products and services – thus being relevant for scaling up ENERGICA solutions.	International	<p><b>H</b></p> <p>✓</p> <p>✓</p>	<p><b>HIGH</b></p> <p>Activity – PUE</p> <p>Sector – Electrification</p> <p>Principles</p>	<ul style="list-style-type: none"> <li>• Economic</li> <li>• Policy and Regulations</li> </ul>	<p>③</p> <p>After implementation</p>
<a href="#">Green People's Energy for Africa</a>	Green People's Energy for Africa works to improve economic and social benefits and sustainability of energy access through productive use of energy (PUE).	Africa (Benin, Côte d'Ivoire, Ethiopia, Ghana, Mozambique, Namibia, Senegal, Uganda and Zambia)	<p><b>H</b></p> <p>✓</p> <p>✓</p> <p>✓</p>	<p><b>HIGH</b></p> <p>Activity – PUE</p> <p>Sector</p> <p>Principles</p>	<ul style="list-style-type: none"> <li>• Economic</li> <li>• Social</li> </ul>	<p>②</p> <p>During demonstration</p>
<a href="#">Last mile connectivity programme</a>	A government of Kenya project whose aim was to ensure everyone has access to electricity by 2020.	Africa (Ghana, Kenya, Malawi, Morocco, Namibia, Nigeria, Rwanda, South Africa and Tanzania)	<p><b>H</b></p> <p>✓</p> <p>✓</p>	<p><b>HIGH</b></p> <p>Activity – E-charging station</p> <p>Sector</p> <p>Principles</p>	<ul style="list-style-type: none"> <li>• Economic</li> <li>• Technical</li> </ul>	<p>②</p> <p>During demonstration</p>
<a href="#">IEC SyC Smart Energy</a>	Provide a “GPS or Radar” to the TC/SCs and to other Standards Development Organizations (SDOs) and Consortia,	International	<p><b>H</b></p> <p>✓</p>	<p><b>HIGH</b></p> <p>Activity – PUE</p> <p>Sector</p>	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Policy and Regulations</li> </ul>	<p>②</p> <p>During demonstration</p>

	related to standardization in the Smart Energy domain.			Principles		
<a href="#">IEEE Empower a Billion Lives Competition</a>	IEEE Empower a Billion Lives is a global competition aimed at fostering innovation to develop solutions to electricity access. Solutions are expected to be scalable, regionally relevant, holistic, and leverage 21st-century technologies with exponentially declining prices.	International	<p>Ⓜ</p> <p>✓</p> <p>✓</p>	<p><b>MEDIUM</b></p> <p>Activity – All</p> <p>Sector – Electrification</p> <p>Principles</p>	<ul style="list-style-type: none"> <li>• Technical</li> </ul>	<p>①</p> <p>Project beginning</p> <p>③</p> <p>After implementation</p>
<a href="#">ISO/IEC JTC1/SC27</a> “Security techniques”	The development of standards for the protection of information and ICT. This includes generic methods, techniques and guidelines to address both security and privacy aspects	International	<p>Ⓜ</p> <p>✓</p>	<p><b>MEDIUM</b></p> <p>Activity – PUE</p> <p>Sector</p> <p>Principles</p>	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Policy and Regulations</li> </ul>	<p>②</p> <p>During demonstration</p>
<a href="#">ISO/IEC JTC1/SC41</a> “Internet of Things”	ISO/IEC JTC 1/SC 41 is being supported administratively by IEC. All information related to ISO/IEC JTC 1/SC 41 is available on the IEC web site Standardization in the area of Internet of Things and related technologies. Serve as the focus and proponent for JTC 1's standardization programme on the Internet of Things and Digital Twin, including their related technologies. Provide guidance to JTC 1, IEC, ISO and other entities developing Internet of Things and Digital Twin related applications.	International	<p>Ⓛ</p> <p>✓</p>	<p><b>LOW</b></p> <p>Activity – PUE</p> <p>Sector</p> <p>Principles</p>	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Policy and Regulations</li> </ul>	<p>②</p> <p>During demonstration</p>
<a href="#">LEAP-RE</a>	LEAP-RE is a Long-Term Joint Research and Innovation Partnership on Renewable Energy between the European Union and the African Union.	Pan-African	<p>Ⓜ</p> <p>✓</p> <p>✓</p>	<p><b>HIGH</b></p> <p>Activity – All</p> <p>Sector</p>	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Economic</li> <li>• Social</li> <li>• Environmental</li> </ul>	<p>①</p> <p>Project beginning</p> <p>②</p> <p>During demonstration</p>



			Principles	<ul style="list-style-type: none"> <li>• Policy and Regulations</li> </ul>	
<a href="#">MGP</a> Mini-Grids Partnership	The Mini-Grids Partnership is a consortium of over 320 like-minded mini-grid stakeholders interested in enhancing and complementing each other's work through collaboration and coordination. To this end, the Partnership seeks to be an 'umbrella' group that can bridge discrete but related stakeholders and initiatives, from both the public and private sector.	International	(L) ✓ <b>LOW</b> Activity Sector – Electrification Principles	<ul style="list-style-type: none"> <li>• Policy and Regulations</li> </ul>	(1) Project beginning
<a href="#">Power Africa</a>	A U.S. Government-led partnership, Power Africa convenes the collective resources of the private sector, international development organizations, and governments from around the world to increase energy access and to end energy poverty in sub-Saharan Africa..	Pan-Africa	(M) ✓ ✓ <b>MEDIUM</b> Activity – PUE Sector – Electrification Principles	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Economic</li> </ul>	(2) During demonstration (3) After implementation
<a href="#">PWCET series</a> (by ARE and GIZ)	Series of online seminars for understanding the clean energy transition with community-driven decentralized renewable energy projects.	Pan-African	(M) ✓ ✓ <b>MEDIUM</b> Activity – PUE Sector – Electrification Principles	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Economic</li> <li>• Policy and Regulations</li> </ul>	(1) Project beginning
<a href="#">PRODUSE</a>	<b>PRODUSE</b> is an joint <b>initiative</b> by GIZ and EUEI PDF to broaden the knowledge about the background and the promotion of Productive Use of Energy.		(M) ✓ <b>MEDIUM</b> Activity – PUE Sector Principles	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Economic</li> <li>• Policy and Regulations</li> </ul>	(1) Project beginning (3) After implementation
<a href="#">RETO-DOSSO</a>	This project aims to support renewable energy(RE) awarens and technology implementation to help establish	Africa (Niger)	(H) ✓ <b>HIGH</b> Activity – PUE	<ul style="list-style-type: none"> <li>• Technical</li> <li>• Environmental</li> </ul>	(2) During demonstration

	sustainable means of subsistence in rural areas of Niger (Dosso region). Therefore, electricity generated from renewable energy sources secure basic needs, such as food and water. Excess electricity from solar stand-alone systems will strengthen the rural economy by creating simple yet innovative business ideas as local sources of income.		✓	Sector Principles		
<a href="#">Rugsal Trading</a>	encouraging his neighbours to swap wood-based charcoal for a substitute made from coconut scraps. Heaps of shells and husks discarded by juice sellers around Freetown provide an energy source that requires no chopping.	Africa (Sierra Leone)	Ⓜ	<b>Medium</b> Activity Sector Principles – Circular economy	• Technical	② During demonstration ③ After implementation
<a href="#">SESA</a> Smart Energy Solutions for Africa	Smart Energy Solutions for Africa (SESA) is a collaborative project between the European Union and nine African countries that aims at providing energy access technologies and business models that are easily replicable and generate local opportunities for economic development and social cohesion in Africa.	Africa (Ghana, Kenya, Malawi, Morocco, Namibia, Nigeria, Rwanda, South Africa and Tanzania)	Ⓜ	<b>Medium</b> Activity – Co-creation Sector Principles	• Economic • Technical	② During demonstration
<a href="#">SOLTRAIN</a>	SOLTRAIN is a regional initiative on capacity building & demonstration of solar thermal systems in the SADC region.	Pan-African	Ⓛ	<b>LOW</b> Activity – PUE Sector Principles	• Technical • Policy and Regulations	① Project beginning
<a href="#">SOLUTIONSplus</a>	Global platform for e-mobility solutions with demonstrations in cities, toolboxes, capacity building, replication	International	Ⓜ	<b>HIGH</b> Activity – EVs	• Technical • Economic	② During demonstration

	activities. Active in Europe, Asia, Africa and Latin America. With 46 partners and 150 associated partners, the project unites industry, research, local and national governments, public transport operators, city networks and associations.		✓	Sector – E-mobility Principles	• Policy and Regulations	
<a href="#">TUMI</a> Transformative Urban Mobility Initiative	Funded by the German Federal Ministry for Economic Cooperation and Development BMZ, TUMI supports climate-friendly, inclusive, safe and affordable mobility in cities. For example, the initiative organizes city-to-city exchanges on e-mobility adoption in Africa, see also: <a href="#">link</a> .	International	Ⓜ	<b>Medium</b> Activity – EVs Sector – E-mobility Principles	• Economic • Policy and Regulations	② During demonstration
<a href="#">Water Europe Working Group</a> - "Water and Public Health"	This Working Group is already established in the Water Europe platform. Different initiatives can be shared and proposed in this open forum to increase visibility of the activities of Energica related with provide clear advice to the water value chain	International	Ⓜ	<b>Medium</b> Activity – water purification Sector Principles – WEF nexus	• Social • Technical	② During demonstration
<a href="#">WE4F</a> Water and Energy for Food	WE4F, through its Regional Innovation Hubs, provides financial support, technical assistance, and investment facilitation to water-food, energy-food, and water-energy-food innovations.	Pan-African	Ⓜ	<b>HIGH</b> Activity – ICES Sector Principles	• Economic • Technical	② During demonstration

## 2.2 Local initiatives

The successful implementation of energy projects not only depends on technical and economic characteristics of the solutions deployed but the support of local stakeholders and the society. Local stakeholder management therefore is a crucial pillar of local projects and targeted by dedicated tasks within WP2 and WP3 of the ENERIGCA project. Initiatives are an essential because active and dynamic part of a local stakeholder landscape, and therefore of extraordinary importance to interact with. In fact, local initiatives can be the catalyst for efficient stakeholder management and involvement. The following sections identifies suitable strategies for the ENERIGCA project of how to identify and engage with local initiatives and maximize the synergies of shared activities between project and initiative.

As initiatives arguably simply are an active and dynamic stakeholder the ENERIGCA project on a local level will interact with, we reconsider fundamental strategic management approaches. Thus, we reconsider the fundamental project lifecycle of stakeholder engagement, following from identification of initiatives to continuous monitoring and evaluation, as illustrated in figure 3 (for a fundamental theoretical background see for example [12–14]).

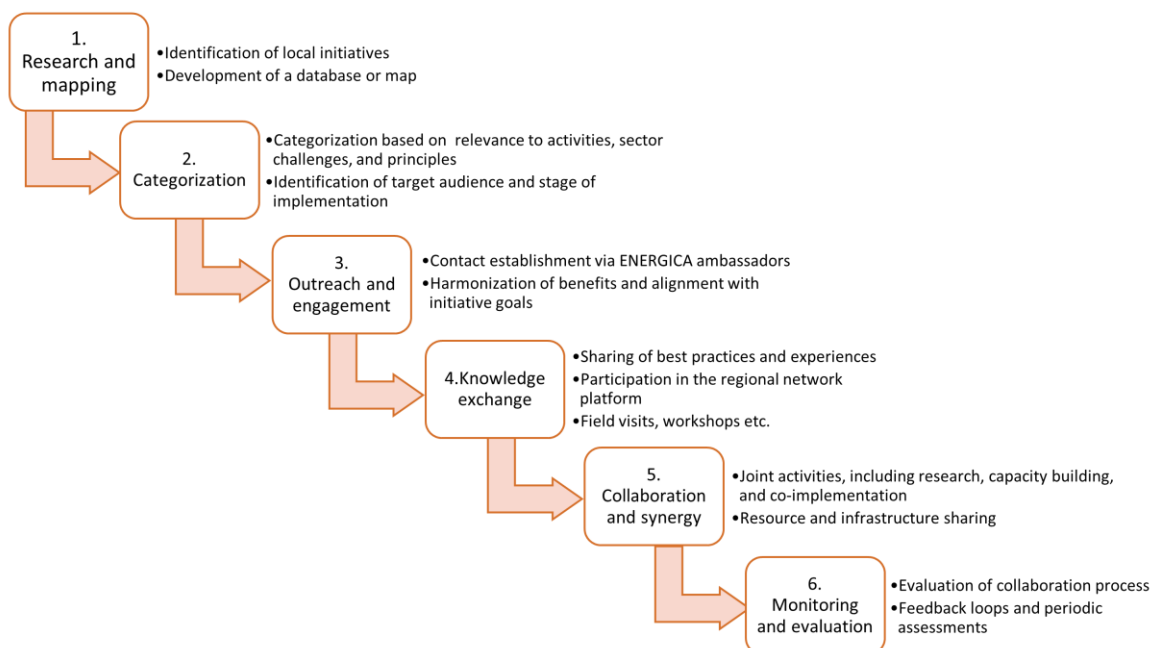


Figure 3: Schematic flow of identifying and interacting with local initiatives.

1. **Research and mapping:** Identification of existing local initiatives at the implementation site of the project. This will involve conducting thorough research through online sources, consultations with the local demonstrators, experts, other stakeholder, and community members identified in WP2 and WP3. A comprehensive database or map will be created to document the initiatives found.
2. **Categorization:** Categorization of the identified local initiatives based on relevant criteria. The categorization will adopt the categorization applied in the mapping of regional/international initiatives as described under section 2.1. This especially includes the categorization via relevance and proximity to the ENERIGCA implementations (activity, sector challenges, or principles). Identified initiatives will be integrated in the stakeholder mapping and categorization as succeeded in D2.2. Further, the target audience or beneficiaries, the stage of initiative implementation, and the overall goals and objectives will

be identified. This will provide a better understanding of the existing initiatives' landscape and identify potential areas for collaboration.

3. Outreach and engagement: Establishing contact with the identified local initiatives through various means, including emails, phone calls, or in-person meetings. In this stage, aside the local demonstrator partners, especially the regional centers of excellence (EACREEE, ECREEE, SACREEE) will fulfill a crucial role of acting as ambassadors of the ENERGICA project. The outreach will focus on introducing the ENERGICA project and expressing interest in exchanging knowledge and experiences with them. The potential benefits of collaboration will be explained, highlighting how it aligns with their goals. The outreach to initiatives will be streamlined with the overall outreach to local stakeholders as foreseen within WP2 and WP3 activities.
4. Knowledge exchange: Exploring opportunities for knowledge exchange with the local initiatives. This can involve sharing the project's objectives, methodologies, and findings while also learning from their experiences, challenges, and best practices. Workshops, seminars, or joint field visits may be organized to facilitate this exchange. The local initiatives will be an essential part of the regional platform established in D9.2 to exchange knowledge and transfer solutions.
5. Collaboration and synergy: Identifying areas of synergy and potential collaboration between the ENERGICA project and the local initiatives. This could include joint activities essentially be linked to WP2 and WP3 capacity building programs, and co-implementation of specific components. Further, joint resource and infrastructure sharing will be explored. The aim is to create a mutually beneficial collaboration.
6. Monitoring and evaluation: Developing a system to monitor and evaluate the progress of the collaborations. This will include regular communication, feedback loops, and periodic assessment of the impact of the knowledge exchange and collaborative activities. Strategies and approaches will be adjusted as needed to ensure effective and beneficial collaborations for all parties involved. This final step is of crucial importance when interacting with initiatives. Initiatives tend to be a highly dynamic type of stakeholder, who mutually change over time depending on the local challenges, and whose stakes in the ENERGICA activities change accordingly. A constant observation of the dynamics is therefore indispensable.

### 3. SYNTHESIS AND OUTLOOK

This report lays the foundation continuous exchange of the ENERGICA project with related initiatives relevant for the project activities, energy sector challenges, or fundamental principles guiding the activities within the ENERGICA project. Based on a theoretical framework, which enables to categorize initiatives and organize the exchange, an initial mapping has resulted in more than regional and international 30 initiatives to be relevant to exchange with. Further, the strategy and approach to engage with local initiatives relevant at the implementation sites has been drafted in alignment to the fundamentals of linking to regional and international initiatives. The initial mapping will be used as a basis to establish a new regional platform for sharing best practices and promote a regional networking for sustainability and knowledge transfer around the technologies and approaches developed in ENERGICA. Further, the bilateral exchange with ENERGICA partners and relevant initiatives will be promoted to study potential for scaling-up and replicability of solutions developed within the project. Finally, the Deliverable will remain open for continuous updates and integration of further initiatives.

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