

HORIZON EUROPE PROGRAMME - HORIZON-CL5-2023-D3-01-01

Renewable Energy Valleys to increase energy security while accelerating the green transition in Europe - Innovation action (IA)



REFORMERS

RENEWABLE ENERGY VALLEYS

REFORMERS

Regional Ecosystems **FOR** Multiple-Energy Resilient Systems

Grant Agreement No. 101136211

Duration: 60 months | 1st November 2023 - 31st October 2028

D2.2: REFORMERS COMMUNICATION PACKAGE



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the European Union

DOCUMENT INFO

Deliverable number	D2.2
Deliverable title	REFORMERS Communication Package
Work Package	WP2
Deliverable type	OTHER
Dissemination level	Public
Due date	M4 (February 2024)
Pages	36
Document version	2.0
Lead author(s)	Rebecca Hueting (DBL), Fabio Lovati (DBL), Manuele Messineo (DBL)
Contributors	All Partners



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DOCUMENT CHANGE HISTORY

Version	Date	Author	Description
DRAFT			
0.1	07/02/2024	Rebecca Hueting (DBL), Fabio Lovati (DBL), Manuele Messineo (DBL)	Structure, initial contents
0.2	21/02/2024	Rebecca Hueting (DBL)	Consolidation of input from contributors
COORDINATOR APPROVAL			
1.0	26/02/2024	Stella Arapoglou (VUB)	Coordinator review
1.1	28/02/2024	Rebecca Hueting (DBL)	Consolidated version for coordinator approval
FINAL VERSION			
2.0	29/02/2024	Stella Arapoglou (VUB)	Format review, version ready for submission



EXECUTIVE SUMMARY

D2.2 REFORMERS Communication package includes all official project's communication assets intended to accompany all official project communication to external audiences and stakeholders.

This document includes:

- The logo and its application guidelines
- The digital identity, including colour palette and font types
- The website structure and texts
- The link to the project slide deck (ppt)
- The link to the project brochure (pdf)
- The link to the project poster in A1 (pdf)
- The link to the project roll-up 80x200cm (pdf)
- The link to the Newsletter template (png)
- The link to the high-resolution version of the concept image (png)



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Acronyms	
DT	Digital Twin
EVRT	Energy Valley Replication Toolbox
FV	Flagship Valley
GDPR	General Data Protection Regulation – EU Directive
LCA	Life-cycle assessment
LLCOE	Local Levelised Cost of Energy
LEC/RE C	Local Energy Community / renewable Energy Community
LES	Local Energy System
PV	Photovoltaic
REV	Renewable Energy Valley
RE	Renewable Energy
RV	Replication Valley



1. Logo

The official project logo includes different versions for application on dark and light backgrounds (Figure 1).

- [Sharepoint link to folder with different versions of logo](#)



Figure 1 - project logo with tagline

2. VISUAL IDENTITY

The project visual identity includes guidance on how to use margins, backgrounds, and positions on different page layouts (Figure 2, Figure 3, Figure 4, Figure 5, Figure 6).

- [Link to Sharepoint folder with logo and visual identity](#)



Figure 2 - application of logo on light and dark background with margins



Figure 3 - application of logo in vertical format with tagline on light and dark backgrounds

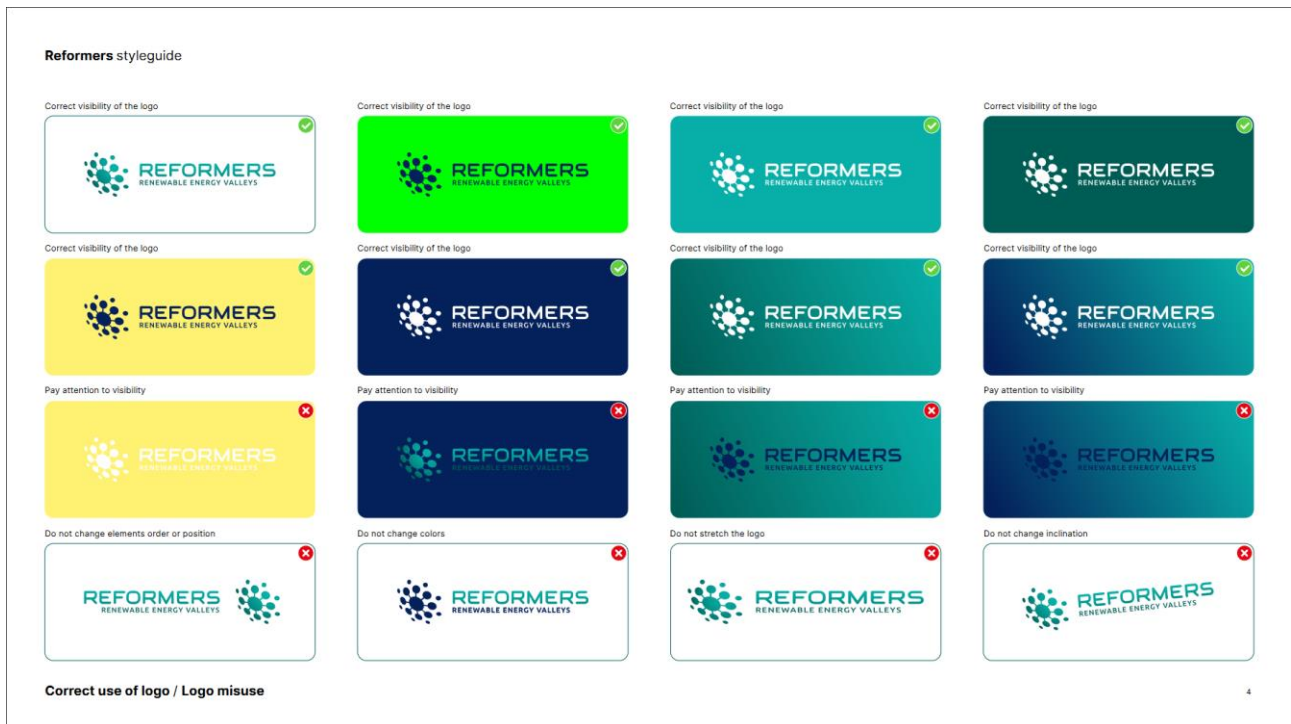


Figure 4 - correct and wrong applications of logo on different backgrounds

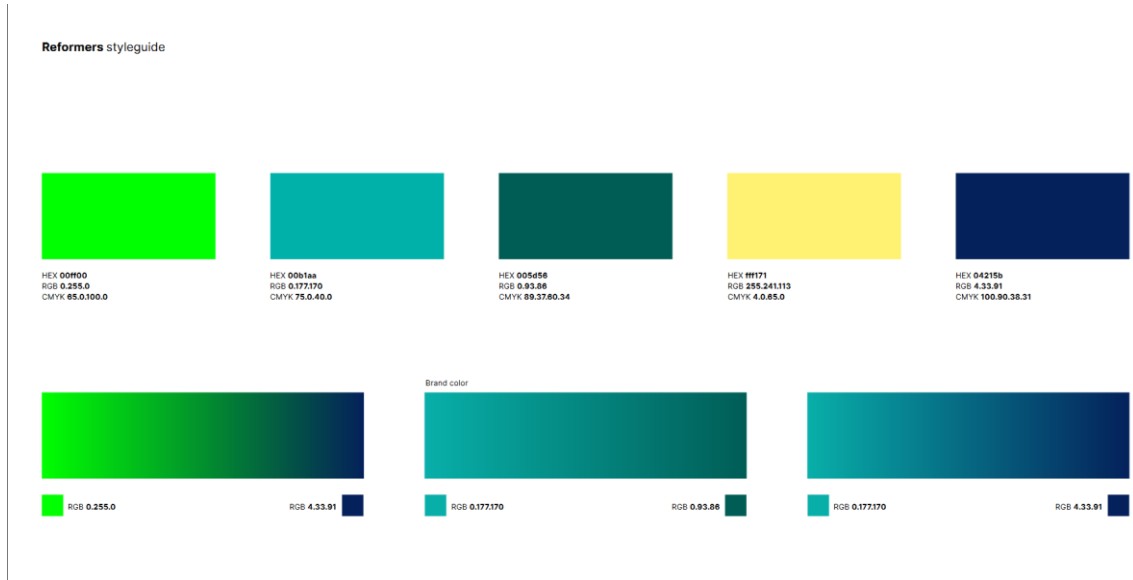


Figure 5 - colour palette

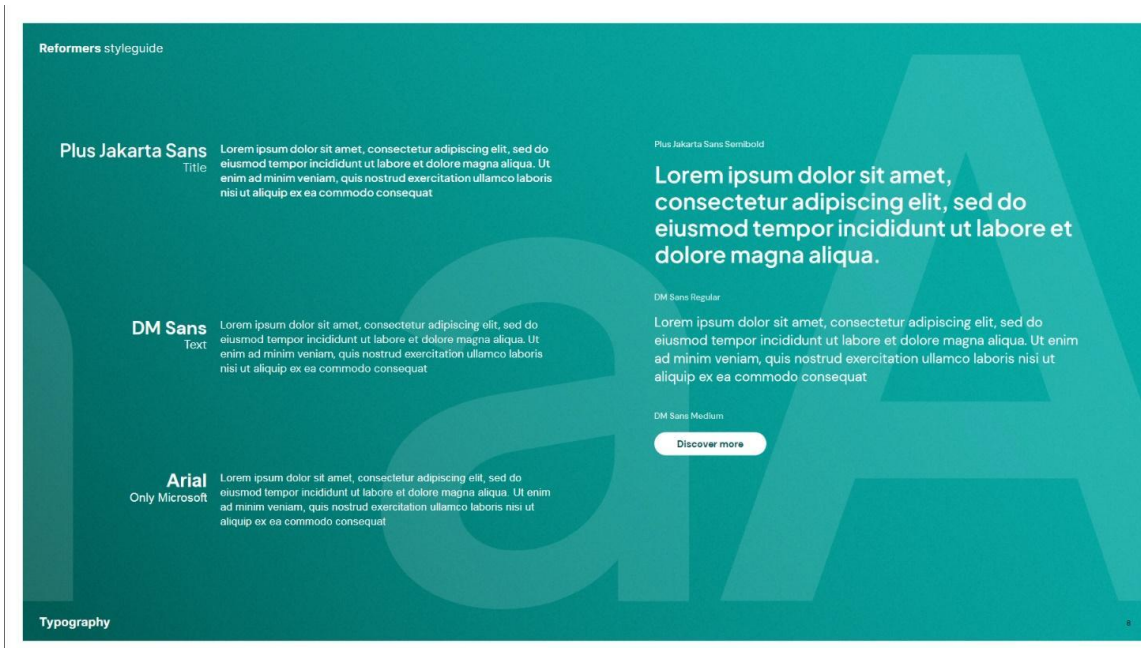


Figure 6 - font styles

3. SLIDE DECK

A slide deck in Power Point format has been developed to introduce the project during online and in-person meetings. It includes all basic information about the project and can be easily adapted and customised by Consortium members depending on needs.

- [Link to Sharepoint folder with most recent slide deck](#)

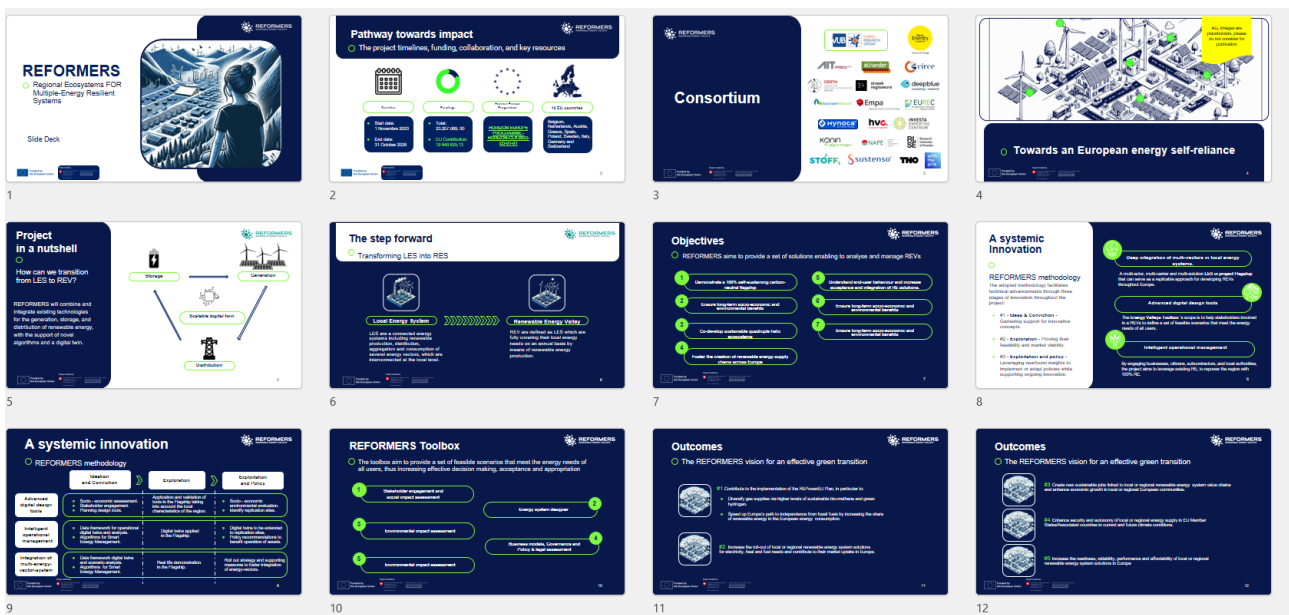


Figure 7 - project slide deck

4. BROCHURE, ROLL-UP AND POSTER

An official brochure in A4 word document format has been developed for both online and printed utilisation. It contains basic information about the project, and it is intended as a product for all audiences who can have quick access to additional contents hosted on the official website, and to contact information.

- [Link to sharepoint folder with official A4 brochure, 80x200 Roll-up and A1 poster](#)

5. NEWSLETTER

A Newsletter model has been developed as a formatted content for distributions in mailing lists. Newsletters will be updated with most recent contents and issued on a yearly basis, depending on major achievements.

- [Link to sharepoint folder with 1st Newsletter template, planned in March 2024](#)

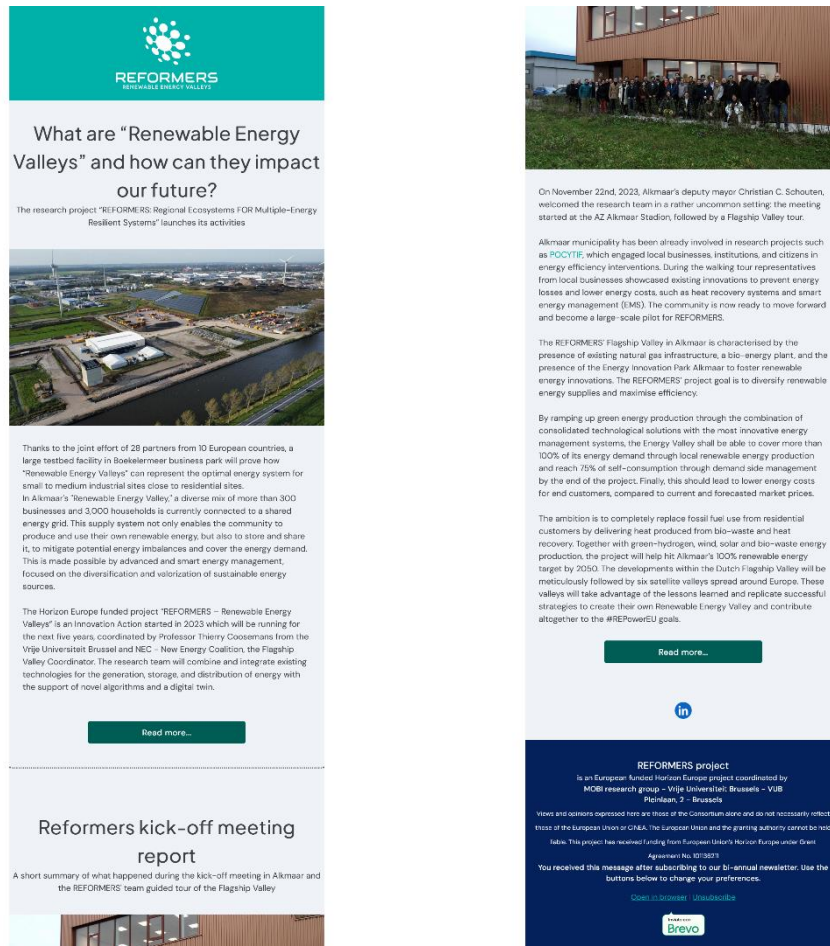


Figure 8 - Newsletter template

6. WEBSITE TEXTS

The official project website structure and technical specifications have been summarised in D2.1 Communication and Dissemination plan. This section only contains the approved texts of all internal pages and links to ensure cross-navigation while browsing contents.

- [Link to sharepoint folder with website mockup](#)



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Highlights

Our monthly selection of most relevant project contents. Click on the numbers above the text box to read more highlights.



News

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Tags: Energy / Reformers / Valley

[Read more](#)

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News

Latest news from Reformers > View all news

January 22, 2024

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Tags: Energy / Reformers / Valley

[Read more](#)

January 22, 2024

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Tags: Energy / Reformers / Valley

[Read more](#)

January 24, 2024

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Tags: Energy / Reformers / Valley

[Read more](#)

January 25, 2024

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Tags: CSG / recommendations / SET / Toolbox / LDM / UIL

[Read more](#)

Highlights

Our monthly selection of most relevant project contents. Click on the numbers above the text box to read more highlights.


News

1. Lorem ipsum dolor sit amet, consectetur adipiscing elit

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Tags: Energy / Reformers / Valley > Read more

1
2
3
4
5




Newsletter

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General project information
info@reformers-energyvalleys.eu

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Sitelinks

- Flagship valley
- Replication sites
- News
- Knowledge platform
- Team
- About
- Contacts
- Resources


 **Funded by the European Union**
This project has received funding from the European Union's research and innovation programme Horizon Europe under the grant agreement No.101015628



Figure 9 - website mockup

6.1. Home page

6.1.1. Main content box

Regional Ecosystems FOR Multiple-Energy Resilient Systems

Fostering Renewable Energy Valleys to increase energy security while accelerating the green transition in Europe

“How can communities transition from Local Energy System to Renewable Energy Valleys?”

Read more in [ABOUT]

6.1.2. Concept image

[High quality image, horizontal, full width]

6.1.3. Slider with highlighted content

[Container of selected contents: page, resource, news, or other content uploaded on the website. Includes a title, a subtitle, an image preview, a format tag]

6.1.4. Latest news

[Selection and preview of the 3 most recent news, possibility to manually select those appearing]

6.1.5. Newsletter form

Subscribe to our newsletter [form]

6.1.6. Footer

info@reformers-energyvalleys.eu

6.2. About

REFORMERS - Regional Ecosystems FOR Multiple-Energy Resilient Systems

Renewable Energy Valleys to increase energy security while accelerating the green transition in Europe

[HORIZON EUROPE PROGRAMME - HORIZON-CL5-2023-D3-01-01](#)

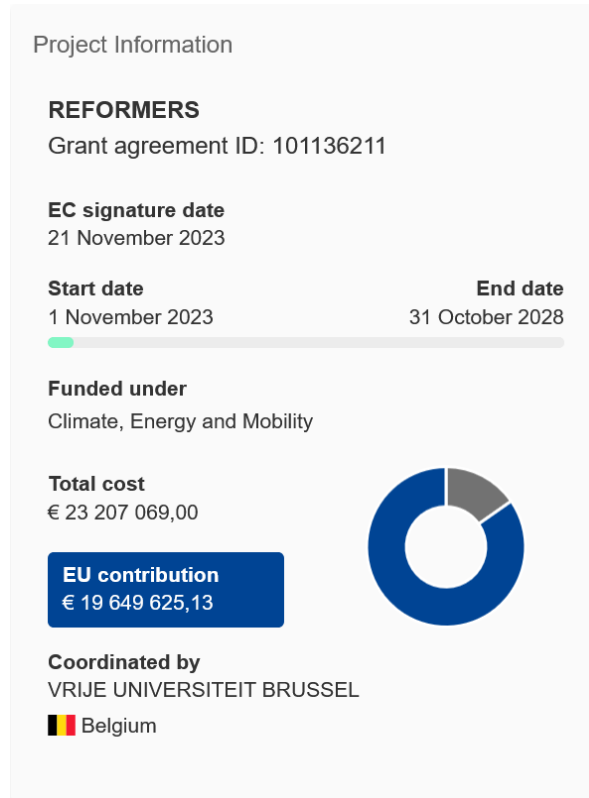


Figure 1 - CORDIS project box - a similar box will appear in the ABOUT Page

6.2.1. Project in a nutshell

“How can communities shift from Local Energy Systems to Renewable Energy Valleys?”

LES - Local Energy System. A LES is a connected energy system including renewable production, distribution, aggregation, and consumption of several energy vectors which are interconnected at the local level. In REFORMERS a **Renewable Energy Valley (REV)** is defined as a LES which is fully covering its local energy needs on an annual basis by means of renewable energy production.

Turning a LES into a REV means harnessing local renewable energy sources able to meet specific profiles of demand for heating and cooling, electricity, and transport.

REFORMERS will combine and integrate proven and rather innovative technologies (TRL from 6 to 8) for the generation, storage, and distribution of renewable energy with the support of novel algorithms and a digital twin.

Our first existing innovation testbed is in Alkmaar, our Flagship Renewable Energy Valley. The REFORMERS' Flagship Valley (FV) in Alkmaar is characterised by the presence of existing natural gas infrastructure, a bio-energy plant, and the localization of Energy Innovation Park Alkmaar to foster renewable energy innovations.

[READ MORE ABOUT THE ALKMAAR FLAGSHIP VALLEY - LINK]

“Can renewables alone cover the full energy demand of a large and complex community at affordable prices for end consumers?”

The main ambition of REFORMERS project is to diversify renewable energy supplies and maximise their overall efficiency. By ramping up green energy production and consumption through the combination of (lab-)proven technological solutions with the most innovative energy management systems, **the Flagship Valley in Alkmaar shall be able to cover more than 100% of its energy demand through local renewable energy production and reach 75% of self-consumption through demand side management by the end of the project.**

By then, end customers should be able to buy renewable energy (electricity, heat, and fuels) at a lower cost than current and forecasted market prices.

[INFOGRAPHIC ON REFORMERS MODEL – IMAGE 16:9]

6.2.2. Context and challenges

“How can European regions meet their own energy needs?”

While the developments of wind and solar energy create optimism because the needed volumes to reach climate-neutrality seem achievable at lower cost and environmental impact, the intermittent nature of these energy sources creates stress on the basic principle of the electricity grid: supply must equal demand at any time. In addition, the EU must urgently decrease its dependency on (unreliable) fuel imports which have amplifying effects on overall energy prices.

REFORMERS addresses these challenges starting by involving an entire community - from private businesses and industries to public administrations and citizens in designing and developing a REV, putting in common energy needs, data, infrastructures, and knowledge. The result will be a model to be replicated in other local communities around Europe.

6.2.3. Objectives

“Can Renewable Energy Valleys become self-sufficient adopting already available technologies?”

REFORMERS aims to provide a set of solutions enabling to analyse and manage REVs reaching the level of an independent energy supply for different highly integrated energy vectors. Most of the innovations we propose combine and integrate existing technologies (generation, storage, distribution) in novel combinations and more integrated architecture, driven by novel algorithms.

Nevertheless, self-sufficiency is only possible thanks to the contributions from several research institutions and companies which developed state-of-the-art engineering and design tools in their respective fields. As members of REFORMERS' Consortium, we will integrate them into a two-sided framework which will be tested and deployed in the extensive real-life demonstration site in Alkmaar:

the EVRT – REFORMERS Energy Valley Replication Toolbox

and

the DT – REFORMERS Digital Twin

The gathered know-how in Alkmaar FV's will be used to continue its operation after the project and for replication towards several other sites in Europe. The lessons learned in such sandbox will be gathered into policy advice and business models.

[READ MORE ABOUT THE FLAGSHIP VALLEY IN ALKMAAR]

[READ MORE ABOUT REPLICATION VALLEYS]

[READ MORE ABOUT REFORMERS TOOLBOX and DIGITAL TWIN]

6.2.3.1. Objective 1: Demonstrate a 100% self-sustaining carbon-neutral flagship Renewable Energy Valley

Description:

Design, build and operate a renewable energy valley linked to a diverse community of 3000 households and 300 businesses.

Status:

The “living lab” covers different combinations of closed and open markets, and urban and rural setting. It develops and promotes the diversification of gas supplies via higher levels of sustainable bio-methane (mainly based on organic waste and agricultural residues) and green hydrogen.

Target:



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- Produce >100% of the FV energy consumption through local renewable production.
- Reach an auto-consumption of >75% through demand side management and energy storage units.
- Deliver energy at a Local Levelized Cost of Energy (LLCOE), equal or lower than current and forecast local energy prices in the FV.

6.2.3.2. Objective 2: Ensure long-term socio-economic and environmental benefits of the Renewable Energy Valley on the local communities

Description:

Assess the costs avoided from fossil fuels imports - in line with the [REPowerEU strategy](#) - to decrease the dependence on such imports. Moreover, assess the stability, robustness, and fitness of the local resources and needs of the LES developed. Environmental and socio-economic impacts (positive and negative) will also be assessed during the design phase and operations for the local community or region.

Status:

- i) Local stakeholders have been contacted to start the identification of most suitable business and service models to draw investors' interest.
- ii) Most suitable governance models are currently under evaluation, to support the transition process, provide best-practices and legitimise decisions.
- iii) Legislative and regulatory landscape evaluation is ongoing, that might influence REV's adoption in Europe.
- iv) Stakeholder groups have been identified and co-creation techniques included in the Communication, Dissemination and Engagement plan. They will be used to evaluate solutions and promote consensus while assessing REFORMERS' social impact.

Target:

- Model, test and deliver an environmental and socio-economic impact assessment methodology for REV's.
- Cut fossil fuel consumption in the FV by 100% (except for logistics and transport means not using locally produced renewable energy or fuels)
- Create new jobs linked to renewable energy system value chains.

6.2.3.3. Objective 3: Co-develop sustainable quadruple helix ecosystems for the creation of Renewable Energy Valleys

Description:



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Support the co-development of new arrangements for business and governance with a quadruple helix ecosystems approach (science, policy, industry, and society) to generate local jobs, skills, economic growth, and benefits for citizens. Stakeholder engagement, training materials - especially for citizens, tools and solutions for replication will be the means to co-design the FV and replication pathways in the REVs.

Status:

The participation of the local industry and other stakeholders in the value chain, including citizens and Energy Communities has kicked-off in the early phases. A tailored engagement strategy has been developed, to ensure citizens' participation in the design, implementation, and exploitation of REV thus increasing acceptability.

Target:

- Implement co-developed arrangements among stakeholder groups, representing the quadruple helix ecosystems (science, policy, industry, society).
- Involve more than 500 participants in events held across the FV and REVs throughout the project.

6.2.3.4. Objective 4: Foster the creation of renewable energy supply chains across Europe

Description:

Develop cost-effective upscaling and commercialization approaches of renewable energy system solutions for electricity, heat, and fuel, linked to robust business models along the value chains. REFORMERS focuses on triggering collaborative ventures with local stakeholders and facilitate collaboration, providing financial opportunities to invest in renewable energies and facilitating access to information on markets opportunities and helping them connect with potential customers.

Status:

REFORMERS identifies and involves SME's that are already active in the renewable energy sector or that have the potential to partnering with industry associations and business networks. The project plans to organise networking events and workshops and to deliver tailored training and guidance to help SMEs and other stakeholders develop the skills and knowledge they need to succeed in the RE sector.

Target:

- Create new job opportunities linked to local or regional renewable energy system value chains.
- Involve >50 SMEs linked to European RE supply chains.

- Implement supply chain agreements in the European renewable energy sector.

6.2.3.5. Objective 5: Understand end-user behaviour and increase acceptance and integration of RE solutions.

Description:

A clear understanding of end-user behaviour and stakeholder needs is key to increasing acceptance and integration of renewable energy solutions and the needed infrastructures and technologies to allow their full deployment.

Status:

Different energy end user's (e.g. buildings, mobility, industrial parks) of the multiple renewable energy carriers have been identified, and their energy consumption behaviour is currently under analysis in the Local Energy System.

Target:

- Engage as many stakeholder groups as possible in advanced network building activities, from social media to real-life.
- Reach 90% energy user acceptance in the FV.

6.2.3.6. Objective 6: Develop a versatile, scalable and interchangeable Digital Twin for Local Energy Systems

Description:

Develop, test, and deploy a digital twin blueprint for Renewable Energy Valleys which is scalable, reconfigurable, and cyber-secure. The digital twins will allow for scenario analysis to constantly improve multiple carrier grid management, planning, data gathering/handling and cyber security. This in turn would lead to the reduction of energy use and energy losses through the integration of effective and innovative energy-efficient solutions. Moreover, operating an REV with the support of a digital twin is expected to cut the operating costs (primarily by reducing imbalance costs and by reducing exposure to price fluctuations) and open new value streams.

Current status:

Currently the operational analysis of the specific local energy grid in the FV, for all types of energy carriers, is ongoing. In year 2025 detailed energy forecasting and local grid management will be available for early testing.

Target:



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- Produce a versatile, scalable and interchangeable **Digital Twin Blueprint** for Renewable Energy Valleys to be used in the Replication Valleys.
- Deploy the digital twin in the Flagship Valley to support optimal operations.

6.2.3.7. Objective 7: Enhance security and autonomy of local or regional energy supply in EU Member States in current and future climate conditions through the REFORMERS' Replication Toolbox

Description:

Deliver a user-friendly and practical **Energy Valley Replication Toolbox** allowing to assess and design roll-out scenarios. Scenarios are essential to identify the best solutions and design a roadmap for future self-sustaining large energy communities. The Replication Toolbox will include all the necessary tools and methods to support regions and local communities transitioning to Renewable Energy Valleys.

REFORMERS' Toolbox will address technical and non-technical aspects:

- Assessment tools of technological and environmental aspects to achieve decarbonization and self-sustainability.
- Feasible governance and business models and an assessment of policy and legal aspects to keep alive future energy valleys.
- Methods to facilitate stakeholder engagement and to run Socio-Economic Impact Assessments to achieve the energy transition.

Status:

Different aspects shall be taken into consideration when evaluating different potentials in terms of geography, climate, and natural resources, when designing a Renewable Energy Valley.

Target:

- Increase the readiness, reliability, performance, and affordability of local or regional renewable energy system solutions in Europe.
- Validate the deployed Replication Toolbox in each RV.

6.2.4. Methodology

REFORMERS wants to demonstrate that highly developed urban and peri-urban regions can be decarbonised completely on a local level without the loss of security-of-supply and at economic competitiveness. This complex challenge, and by extension the whole energy transition, requires systemic innovation.

[READ MORE ABOUT CONTEXT AND CHALLENGE]

The shift towards local, clean energy production in combination with energy saving and diversification, in line with REPower Europe goals, can be achieved by:

1. A highly integrated design of multiple energy vectors (electricity, heat, gas, hydrogen, and mobility) and their respective generating sources, buffers, and consumers.
2. A design approach which considers the local characteristics of the energy system (including territorial and environmental specificities as well as consumer behaviours and needs).
3. A forward-looking analysis for the tangible assessment–and benchmarking– of the environmental impact of the suggested solutions/technologies involved.

[READ MORE ABOUT REPOWEREU]

REFORMERS' Methodology is based on systemic innovation which relies on maturing of technical innovations along the following steps:

- **Ideation & conviction.** Rally support for the innovative ideas to be implemented.
- **Exploration.** Demonstrate feasibility and market uptake.
- **Exploitation & policy.** Exploit the newly found insights and implement or adjust necessary policy measures, accompany further roll-out and innovation. The operational activities performed in the project can be identified with these steps.

[METHODOLOGY SCHEME, HORIZONTAL IMAGE]

From the pure technical perspective, the activities of the project can be grouped in the following innovative fields of engineering:

1. Deep integration of multi-vectors in local energy systems

REFORMERS will demonstrate a multi-actor, multi-carrier, and multi-solution LES in project Flagship around the city of Alkmaar that can serve as a replicable approach for developing REVs throughout Europe. All major energy carriers, namely electricity, heat, and gas (biomethane and green hydrogen) will be generated, transported, stored, converted, and utilized in the area. The solutions will be organized under different Renewable Energy Valley Tracks (REVT), which act as functional blocks to set up a valley.

2. Advanced digital design tools

The REFORMERS project will advance and demonstrate how extended application of digital tools can harness the existing renewable energy developments or foster new initiatives in complex stakeholder structures including businesses, citizens, subcontractors, local authorities, to repower the region with 100% RE.

An **Energy Valleys Replication Toolbox** will be developed by integrating advanced existing calculators for LES. Its scope is to help stakeholders involved in the deployment of a REVs to define a set of feasible scenarios that meet the energy needs of all users, thus increasing effective decision making, acceptance and appropriation.

The REFORMERS Energy Valleys Toolbox is constituted out of four interfacing tools:

- Tool #1 - Stakeholder engagement and social impact assessment [LINK]
- Tool #2 - Energy system designer [LINK]
- Tool #3 - Environmental impact assessment [LINK]
- Tool #4 - Business models, Governance and Policy & legal assessment [LINK]

3. Intelligent operational management – Digital Twin

A digital twin is a digital representation of a physical product, system, or process. It can help to simulate real situations and their outcomes, allowing to make better decisions. In REFORMERS, the digital twin is the backbone of the intelligent operational management of the FV. End-users will be able to interact with the FV digital twin via a service-oriented architecture.

The FV digital twin allows to:

- run forecasts
- evaluate grid management strategies
- perform scenarios analyses

When fully operational, the FV digital twin:

- unlocks the value potential for the aggregators and other tech-savvy energy companies who could operate the energy system cost-effectively and reliably.
- unleashes an added value stream to the REV by opening it up to wholesale markets.
- encloses the possibility for replication and scalability of the intelligent operational management to different sites, **enabled by the digital twin blueprint**.

[METHODODOLOGY SCHEME, HORIZONTAL, SEE PAG. 9 OF GA ANNEX I - PART B]

6.2.5. Stakeholder engagement

REFORMERS handles a solid inclusion of Social Science and Humanities (SSH) in its approach for social acceptance of its solutions and a large effort is dedicated to this matter through the entire project life cycle. User and stakeholder expectations are carefully gathered and validated in the FV, to ensure the social sustainability of the project outcome.



The focus will not only lay on engaging the stakeholders, but also on keeping them 'onboard'.

Furthermore, REFORMERS' core idea focuses on bringing together different stakeholders around RE energy projects, using methodologies from Social Sciences that allow to translate the results of holistic models into usable information for real-life applications.

Social sciences are essential to investigate the acceptance of local renewable energy projects, as citizens and other stakeholder groups might view them with suspicion and – if not involved by a calibrated engagement approach – can hinder project implementation and threaten the transition to a climate neutral society. A holistic approach which identifies and assesses the mutual influence of governance, business models and legal aspects will be adopted, and optimal solutions identified.

The REFORMERS engagement approach will consider three levels:

- (i) the local stakeholder's ecosystem level
- (ii) the value chain level
- (iii) the actors and stakeholders' level

Under this approach several methods and tools, based on an intensive dialogue across the FV and RVs, will be built to ensure a practical implementation of the developed framework. Possible samples of these methods and tools could be:

- Orchestrating Innovation
- Collaborative Business Modelling
- Governance Modelling.

Are you an SME, an NGO, an Energy Community, or another stakeholder and/or you would like to know more about the REVs involved in REFORMERS project?

Join us and get the opportunity to meet your peers and other relevant actors in your local renewable-energy value-chain!

[JOIN US]

6.3. Flagship valley

6.3.1. Alkmaar: a bit of history

Where is the Alkmaar's Renewable Valley, and how did it originate?

Alkmaar's Renewable Valley is an innovative initiative started in the Netherlands, designated to become Europe's first Renewable Energy Valley. This medium-sized area hosts over 300 business facilities and 3000 households, all connected to a shared energy grid. It serves as

a part of the EU-funded REFORMERS project, aimed at creating regional ecosystems, focusing on renewable energy and local energy production and consumption.

What makes Alkmaar's Renewable Valley unique?

This valley is unique due to its comprehensive diversification and integration of various renewable energy sources, such as solar, wind, and bio-energy plants. It's a flagship for future energy valleys in Europe, focusing on locally produced and consumed energy. The initiative also involves the requalification of existing infrastructure for renewable energy distribution and storage.

How is Alkmaar's Renewable Valley contributing to development and innovation?

Alkmaar's Renewable Valley is at the forefront of green energy production, housing facilities like the Energy Innovation Park Alkmaar, for testing new technologies in renewable energy generation, storage, and distribution. It's a model for energy resilience and sustainable development, bridging traditional energy sectors with innovative systems.

6.3.2. Innovation testbed in Alkmaar

The FV Alkmaar 'southland' is a 4 (four) square kilometers area, hosting housing, industrial, commercial, residential, and agricultural activities. It is centred around the Boekelermeer business park (A), surrounded by Overdie's dense residential zone (B) to the north, Heiloo's lighter residential (C) and industrial sectors (D) to the west; finally, extending eastward beyond the Noordhollands Kanaal to include Zuidschermmer's rural region (E).

[FV MAP WITH LABELS AND COLOURS, HORIZONTAL]

The key features of the Valley include accessible and expanding renewable energy sources (wind, solar, bio-energy), the Energy Innovation Park Alkmaar (EIPA), and InVesta for advancing biomethane and hydrogen production. Additionally, existing gas infrastructures are being re-designed to increase green energy distribution and storage.

Table 1 –Alkmaar Flagship Valley data table

Target	2022 – initial status	2028 – 2030 term target	Variation in %	Variation in direct equivalent CO2 emission
Annual solar capacity	13 GWh	26 – 43 GWh	+100% – +230%	
Wind production capacity	23 GWh	23 – 47 GWh	+0% – +100%	



Bio-energy electricity and production	plant and heat	293 GWh	293 - 293 GWh	+0%	
Biomethane production		0 GWh	147 – 230 GWh	NA	
Clean production	hydrogen	0 GWh	9 – 109 GWh	NA	
Natural consumption	gas	84 GWh	0 GWh	-100%	- 15 kTon
Annual emissions	CO2-eq	20 kton	5 – 2,5 kton	-75% – 87.5%	

6.3.3. Transitioning households in Heiloo and Overdie

Next to the transformation of the energy system on Boekelermeer business park, REFORMERS also includes other end-consumers such as households at Overdie and Heiloo.

Overdie is a neighbourhood in Alkmaar where approximately 4,000 residents are situated. Many of the residents in the neighbourhood are living in social housing being provided by housing corporations. Whereas these houses are currently connected to the natural gas grid, the aim of REFORMERS is to extend the existing regional heat grid to the neighbourhood and thereby replacing natural gas usage. At least one high-rise building, owned by Woonwaard, will be connected to this extended heat grid.

Heiloo is an adjacent village to the city of Alkmaar. The municipality is home to 24,000 residents on 19 square kilometres. As part of REFORMERS, the neighbourhoods will be equipped with additional solar panels on rooftops, 10 individual and 1 collective battery units, and 10 individual small heat storage units for the residents and businesses. Through the implementation of a Teleport Home by Withthegrid, these assets will become controllable, thereby unlocking their full potential for flexibility and optimisation.

6.4. Replication valleys

Rephrase from the GA WP7 description: There are 6 Replication Valleys participating in the project. Replication valleys will test tools allowing a tangible assessment and benchmarking of suggested solutions, technologies and innovation and help identify suitable business models. The policy, legal and regulatory frameworks will be studied and strategies to raise awareness and ensure a positive social impact fine-tuned for each local context (as an example targeted training and capacity-building activities).

6.4.1. Replication Valley #1: Western Macedonia (WM), Greece



Funded by
the European Union

Project funded by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Education,
Research and Innovation SERI

The Western Macedonia economy, heavily reliant on the lignite mining industry and the Agios Dimitrios Power Plant in its capital Kozani, is transitioning away from lignite, affecting 16,000 jobs. In response, the region is developing financial tools and innovation hubs to mitigate the impact of this shift.

Table 2 - Western Macedonia Replication Valley data table

Dimension	Details
Number of Municipalities Involved	Multiple, with Kozani being the capital
Population	250,453 inhabitants
Number of Jobs Affected by Lignite Phase-out	~ 630 direct jobs (for the deployment of 2.1 GW of wind energy) ~2,100 indirect jobs
Ongoing energy transition processes	Phasing out of lignite mining through the development of financing tools and regional innovation hubs for transition to sustainable energy sources.

6.4.2. Replication Valley #2: Greater Poland Energy Valley

Greater Poland RV comprises five regions with the same goal: shift from lignite mining to green energy, by focusing on renewable sources and green hydrogen, with Konin city as a key replication site. In fact, the City of Konin together with the association “Konin Agglomeration” with 16 urban and semi-urban counties will be replication site.

Table 3 - Greater Poland Replication Valley data table

Dimension	Details
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Number of Municipalities and cities involved	43 municipalities and 15 cities in 5 different counties
Population	433,000 inhabitants
Number of Businesses	Over 40,000
Ongoing energy transition processes	Transition from lignite mining for power plants to RES, including green hydrogen generation; Collaboration with “Konin Agglomeration” for replication in 16 urban and semi-urban counties.

6.4.3. Replication Valley #3: Municipality of Andorra

Coal mining and power production has dominated the economy of the region since the beginning of the 20th century. The decarbonization plan of the Spanish government is having an immediate, profound effect on the local economy. Andorra looks forward to increasing electric vehicles share a 20% by 2030, with the objective of becoming carbon neutral in the transport sector by 2050.

Dimension	Details
Number of municipalities involved	Andorra Municipality
Population	9000 inhabitants
Number of businesses	Not Applicable
Ongoing energy transition processes	Digitalisation of the local energy system, increase electric vehicles by +20%



6.4.4. Replication Valley #4: Murau district, Austria

The district Murau is an inner-alpine valley in the region of Styria, in the Southern Part of Austria. This rural area aims to reach the energy transition in 2040, by covering the whole region with renewable energy communities.

Table 4 - Murau district Replication Valley data table

Dimension	Details
Number of municipalities involved	Multiple municipalities in Murau district
Population	30,000 Inhabitants
Number of businesses	2815
Ongoing energy transition processes	To reach the energy transition in 2040 not only on the level of energy balance, but in real time 365 days 24h

6.4.5. Replication Valley #5: Region of DDS, Province of East Flanders, Belgium

In the Region of DDS, Province of East Flanders, Belgium, the current industrial ecosystem is fed mainly by fossil-derived power. A further electrification of their processes is expected, therefore the opportunities for renewables will increase within the region, such as more PV-installations, as well as a new fermentation plant has been erected.

Table 5 - DDS Flanders region Replication Valley data table

Dimension	Details
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Number of municipalities involved	Not specified
Population	181,000 Inhabitants with a total of 40000 addresses
Type of Businesses	Mainly industrial sector, followed by the tertiary sector and agriculture
Ongoing energy transition processes	Aim at increasing PV installations (only 6.5% of potential roof surface has been used so far) and new renewable energy usage, such as installation of new biogas plants, to reduce fossil-derived power.

6.4.6. Replication Valley #6: Delft Region, Netherlands

Delft Region, Netherlands, is a densely populated centre of inventing and making, where science and manufacturing industry have a long history. Next to the condensed build environment there is a large area of glass house farming located west of Delft and a more rural and agricultural area east of Delft. Municipality, citizens, entrepreneurs, and knowledge centres like the Technical University of Delft will jointly take concrete steps to bring our ambition of a sustainable valley closer.

Table 6 - Delft region Replication Valley data table

Dimension	Details
Number of Municipalities Involved	1 (Delft region)
Population	106,000 Inhabitants
Number/type of businesses	A significant manufacturing and academic presence is reported.



Ongoing energy transition processes	Collaboration in sustainability efforts through the integration of urban and rural/agricultural energy needs.
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6.4.7. Join us

[Call to action and contact point to join replication activities]

6.5. News

[Most recent news published in blogpost format]

6.6. Resources

6.6.1. Infographics and media

[Links to published documents]

6.6.2. Press releases and coverage

[Links to published documents and related press coverage]

6.6.3. Deliverables

[Links to published documents]

6.6.4. Scientific publications

[Links to published documents and DOI]

6.6.5. Toolbox

[Overview and link to knowledge base - TBD]

6.6.5.1. Renergise 2.0 – Energy valley system design tool (VUB)

The tool, aimed at a robust high-level design of an energy system of an REV, is a further development of the current Design-Optimization-Framework. The latter is a State-of-the-Art digital tool for the design of LESS: an energy balance modelling approach was implemented into a techno-economic optimization model. During REFORMERS the tool will be extended to include:

- introduction of additional vectors such as mobility and hydrogen,



- introduction of electricity network and heating grid model, to improve accuracy and assess potential capacity limitation and congestion,
- smart prosumer clustering and aggregation algorithms for the modelling of large-scale valleys.

Main partner/s involved:

VUB

CERTH

6.6.5.2. Verify 2.0 - Environmental impact assessment tool

The environmental impact assessment aims to measure the benefits of adding renewable energy systems (RES) in Renewable Energy Valleys (REVs). Based on the protocol ISO14040, the open-source web-based tool VERIFY will generate new environmental assessment knowledge at the valley level, integrating any given energy stream associated with the satellite energy valley and the replication valleys, thereby guiding both investment and operation decisions. The tangible outputs include the Comparative LCA performance e.g., in terms of annual primary energy savings, annual CO₂ savings, lifetime primary energy savings, lifetime CO₂ savings. The tool VERIFY will be implemented to include different energy streams and technologies from the FVs and RVs, with results verified through impact assessments and replicability analyses.

Main partner/s involved:

CERTH

6.6.5.3. BM orchestrator and modelling framework (TNO)

Clean energy finds its way from local producers and active customers to other active customers elsewhere, and to anonymous customers anywhere. The concept of an REV helps to understand this social-physical co-evolution of energy production and to make it work. To create this toolbox an important task is to let the technical concept of self-sustaining REVs profit from social knowledge about business, governance, policy, and law, and let this knowledge profit from technologies that evolve within REVs; co-evolution is the underlying assumption. The use of energy not only to financial profit, but also to reach a variety of socio-economic purposes, like energy security, prosperity, and social cohesion. Social knowledge about business models, governance, policy, and law needs to be translated to the concept of the REV. Methods, models, and tools to establish REVs are successful when indeed technical and non-technical aspects of an energy valley occur. To measure this a lived through understanding of the concept of the specific REV needs to be broken down into components that can be observed when they occur.

Main partner/s involved:

TNO

6.6.5.4. Social impact analysis and stakeholder engagement approach

The developed integrated stakeholder engagement tool will consist of knowledge and awareness-building elements, co-creation steps and social impact assessment instruments. Interaction between the Renergise tool #1 and the Verify tool #2 outputs allows for integrated solutions design that considers technical as well as crucial social elements.

Main partner/s involved:

VUB, DBL, RISE

6.6.5.5. Toolbox tutorial and training (DBL)

The Toolbox tutorial and training will ensure that stakeholders receive all the necessary information and training needed to swiftly adopt the REFORMERS' approach in the development, implementation, and operation phases of a Renewable Energy Valley. The training kit will include step-by-step guidance to apply the methodology in full: from ideation and exploration to exploitation. A list of best practices, checklists and templates will be developed and tailored tutorials will be provided depending on target groups' specific needs.

Main partner/s involved:

VUB, DBL, RISE

6.6.5.6. Glossary

[Terms not familiar for general audiences will be collected in a glossary, as a browsable category on the website resources' section]

- LCA - Life Cycle Analysis
- LES - Local Energy System. A connected energy system including renewable production, distribution, aggregation, and consumption of several energy vectors which are interconnected at the local level.
- LLCE - Local Levelized Cost of Energy
- REC/LEC – Renewable/Local Energy Communities
- REV – Renewable Energy Valley. A LES which is fully covering its local energy needs on an annual basis by means of renewable energy production.
- SSH - Social Science and Humanities

6.7. Contacts

[Contact form and official project email contacts]

6.8. Knowledge base

[Section hidden until 2025]

6.9. GDPR and privacy

7. SOCIAL MEDIA ACCOUNTS

7.1. LinkedIn

- [Link to REFORMERS LinkedIn account](#)

7.2. Instagram

- [Link to REFORMERS Instagram account](#)

7.3. X – formerly Twitter

- [Link to REFORMERS X Account](#)

8. CONCLUSIONS

The current document is intended as a living document, by which all Consortium members can quickly get access to the most recent versions of document templates and communication products. The materials in folders hereby linked will be periodically updated, depending on the specific phase of the project, and based on the emerging needs and communication objectives. The website, slide decks and the digital versions of printable products will be enriched to inform about early achievements, results, and outputs, shifting from communication to dissemination products over time. To this aim, all partners will support providing input and ideas.

A second version of the REFORMERS Communication and Dissemination plan will be submitted in M18 - D2.4 Updated Communication and Dissemination plan.

