D7.1 – RENAISSANCE visual identity, web site and social media

Rebecca Hueting (DBL), Alessandra Tedeschi (DBL)

Document Number	D7.1
Document Title	RENAISSANCE visual identity, web site and social media
Version	0.5
Status	Final version
Work Package	WP 7
Deliverable Type	Report
Contractual Date of Delivery	31.07.2019
Actual Date of Delivery	31.07.2019
Responsible Unit	DBL
Contributors	Rebecca Hueting, Alessandra Tedeschi
Keyword List	Website, social media, dissemination
Dissemination level	PU

This project has received funding from the European Union's H2020 research and innovation programme under the grant agreement No **824342.** This report reflects only the author's view and the Commission is not responsible for any use that may be made of the information it contains.

RENAISSANCE Consortium

RENAISSANCE "Renewable Integration & Sustainability in Energy Communities" (Contract No. 824342) is a Collaborative project within the H2020-LC-SC3-2018-2019-2020/H2020-LC-SC3-2018-ESSCC. The consortium members are:

1		VRIJE UNIVERSITEIT BRUSSEL (VUB) 1050 Brussels, Belgium	Contact: Thierry Coosemans thierry.coosemans@vub.be
2		ATOS SPAIN SA (ATOS) 28037 MADRID | Spain	Contact: Javier Valiño javier.valino@atos.net
3		IKERLAN S COOP (IKL) 20500 MONDRAGON | Spain	Contact: Aitor Milo Urkiola amilo@ikerlan.es
4		DEEP BLUE Srl (DBL) 00193 ROME | Italy	Contact: Alessandra Tedeschi Alessandra.tedeschi@dblue.it
5		EVERIS (EXE) 28050 MADRID | Spain	Contact: Miguel Fontela Miguel.Fontela.Martinez@everis.com
6		ESTACION DE INVIERNO MANZANEDA (MEISA) 32780 A POBRA DE TRIVES | Spain	Contact: Gustavo Samartín direccion@manzaneda.com
7		FUNDACION CIRCE CENTRO DE INVESTIGACION DE RECURSOS Y CONSUMOS ENERGETICOS (CIRCE) 50018 ZARAGOZA | Spain	Contact: Andreas Munoz renaissance@fcirce.es

Horizon 2020
European Union Funding
for Research & Innovation

8	DEMOCRITUS UNIVERSITY OF THRACE	DIMOKREITIO PANEPISTIMIO THRAKIS (DUTH) 69100 KOMOTINI | Greece	Contact: Pantelis Botsaris panmpots@pme.duth.gr
9	CERTH CENTRE FOR RESEARCH & TECHNOLOGY HELLAS	ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS (CERTH) ANAPTYXIS 57001 THERMI THESSALONIKI | Greece	Contact: Nikos Nikolopoulos n.nikolopoulos@certh.gr
10	BAX & COMPANY VALUE FROM SCIENCE AND TECHNOLOGY	BAX INNOVATION CONSULTING SL (BAX) 08013 BARCELONA | Spain	Contact: Maarja Meitern m.meitern@baxcompany.com
11	sdm elektro	SDM-PROJECTS (SDM) 3090 OVERIJSE | Belgium	Contact: Ellen Vanderdood vanderdood@sdme.be
12	NAPE NATIONAL ENERGY CONSERVATION AGENCY	NARODOWA AGENCJA POSZANOWANIA ENERGII SA (NAPE) 00 002 WARSZAWA | Poland	Contact: Andrzej Wiszniewski awiszniewski@nape.pl
13	ABB	ABB OF ASEA BROWN BOVERI (ABB) 1930 ZAVENTEM | Belgium	Contact: Luc Picard luc.picard@be.abb.com
14	Sunamp	SUNAMP LIMITED (SUN) EH33 1RY MACMERRY | United Kingdom	Contact: Tianyue Li tianyue.li@sunamp.com
15	GEMEENTE EEMNES	GEMEENTE EEMNES (EEM) 3755 ZH EEMNES | Netherlands	Contact: Sven Lankreijer s.Lankreijer@Eemnes.nl

Horizon 2020
European Union Funding
for Research & Innovation

Document change record

Version	Date	Status	Author (Unit)	Description
0.1	17/06/2019	Draft	A .Tedeschi (DBL)	Draft
0.2	24/06/2019	Draft	A. Gonzalez (VUB)	Review
0.3	22/07/2019	Draft	R. Hueting (DBL)	Final Draft
0.4	26/07/2019	Draft	S. Rasbash (BAX)	Final Review
0.5	31/07/2019	Final Version	R. Hueting (DBL)	Final Version

Horizon 2020
European Union Funding
for Research & Innovation

Executive summary

In this document, the project's website and social media profiles are presented and described in detail. The website provides all the useful information about the project's objectives and planned activities, introduces partners of the consortium and offers references to linked projects. The website will be regularly updated and it will represent the main dissemination activity channel: news, milestones, events, incoming workshops and any other announcement will be issued via its news section. The project partners will support this task by sharing updates about publications, conferences or project results. Not only interested visitors but also the general audience will be able to read through the content, download resources and get engaged via the newsletter form or social media links. Deep Blue (DBL), as Dissemination Leader, is responsible for the design, realisation, maintenance and update of both the website and the social network pages.

Horizon 2020
European Union Funding
for Research & Innovation

Table of Contents

List of Figures

Horizon 2020
European Union Funding
for Research & Innovation

Acronyms

DSO	Distribution System Operators
GDPR	General Data Protection Regulation
GHG	Green House Gases
IEEE	Institute of Electrical and Electronics Engineers
LEC	Local Energy Communities
LEC	Local Energy Community
LLCOE	Local Levelised Cost of Energy
RES	Renewable Energy Sources
TRL	Technology Readiness Level
TSO	Transmission System Operators
W3C	World Wide Web Consortium
WCAG	Web Content Accessibility Guidelines

Horizon 2020
European Union Funding
for Research & Innovation

1. Renaissance H2020 website

1.1 General information

Firstly, excerpts from the project's proposal have been chosen and, in some instances, rewritten for greater clarity and to fit the dissemination communication objective. Then, a framework structure and a graphical layout have been proposed to better satisfy the information needs of the project's target audience. Texts have been drafted and peer reviewed by the consortium and approved by the project coordinator, Dr. Thierry Coosemans (VUB). Fonts, styles and identity, including the logo, have been chosen following the consortium preferences collected during the kick-off meeting (Brussels, 14th May 2019). The website's official address is WWW.RENAISSANCE-H2020.EU and it is hosted on DBL servers, operated through the Wordpress content management system.

The layout design of the website will lead the user on the journey through project's content, using a simple and neat structure which offers a comprehensible overview of the methodologies, approach and objectives while still offering in-depth details by the use of internal cross-links or highlighting concepts through explanatory graphs, tables and boxes. The website is compliant with the most recent General Data Protection Regulation - (EU) 2016/679 and the Web Content Accessibility Guidelines (WCAG) (version 2.0) issued by the World Wide Web Consortium (W3C) provisions.

1.2 Architecture

The internal structure of the website allows rapid read-throughs to those who wish to have an overview of the project activities, but it also offers different degrees of in-depth contents (e.g. methodologies, impacts, list of common glossary). Moreover, a page for each pilot site will be issuing up-to-date details about ongoing activities, thus allowing local communities and stakeholders to have the latest information always available. The resources section, as required for H2020 projects, provides open access to public content such as deliverables, reports, infographics and other media developed by the consortium. As the project evolves, new pages and contents may be added accordingly.

Horizon 2020
European Union Funding
for Research & Innovation

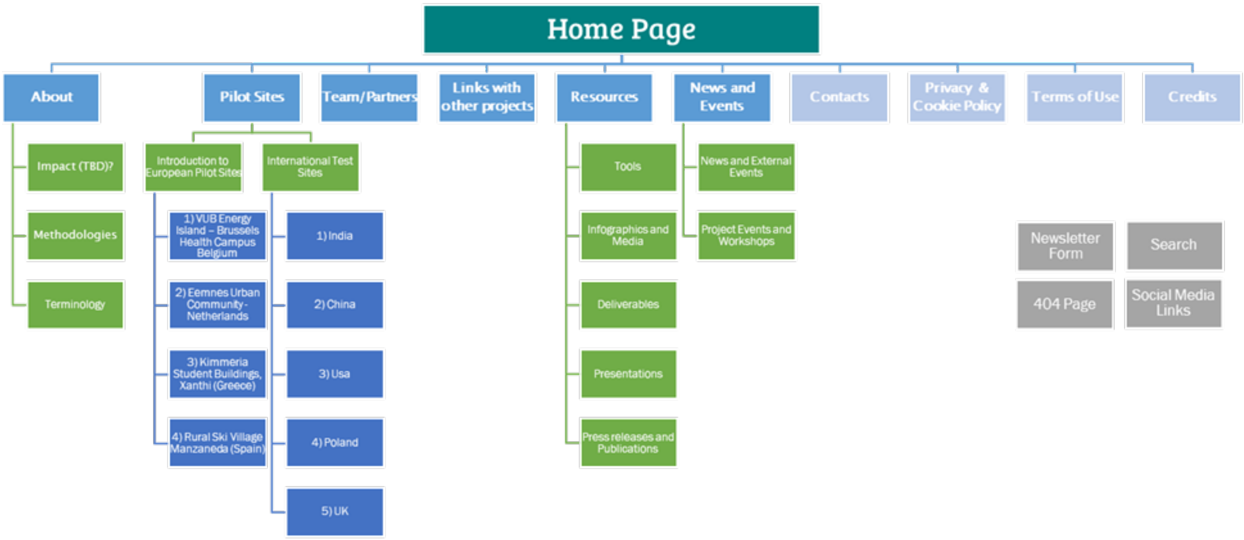


Figure 1 – Renaissance H2020 website map

2. Website pages content

2.1 Home page

Renewable integration and sustainability in energy communities
Renaissance will deliver a community-driven scalable and replicable approach, to implement new business models and technologies supporting clean production and shared distribution of energy in local communities.

[READ MORE button linking to About page]
[CONCEPT IMAGE below will display in the right box]

Horizon 2020
European Union Funding
for Research & Innovation

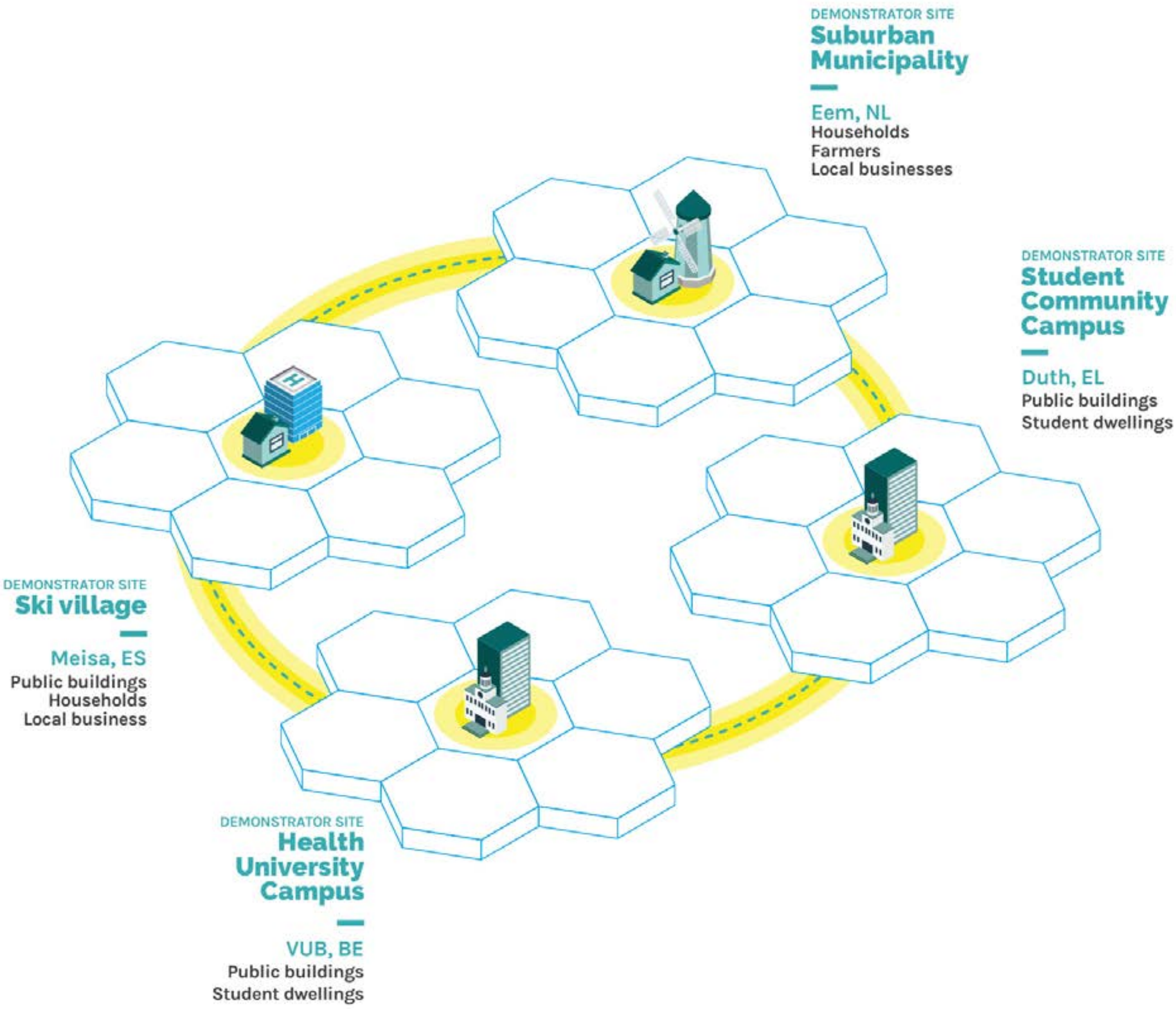


Figure 2 - Concept Image

Highlighted Content

(periodically selected and updated among available results)

Mamca Analysis
(LEFT BOX)

Thanks to the MAMCA © social-consensus building tool (multi-actor multi-criteria analysis) RENAISSANCE will evaluate business cases for energy systems. It will help exploring and testing acceptability of financial and organisational architectures in each pilot site.

Read more…*(link to related Methodology section)*

Horizon 2020
European Union Funding
for Research & Innovation

News

(RIGHT BOX)

- News 3: First Meeting in Madrid on 29th July 2019
- News 2: Kick off Meeting in Brussels 24th May 2019
- News 1: Project Website and Social Media

Newsletter

Contact field

2.2 About

Overview

At first the project will identify stable and equitable business cases for four/several Local Energy Communities (LEC) [*link to glossary]* across Europe, thank to MAMCA analysis.

The resulting scenarios will support the co-design of the ReEnergise tool, which helps identifying the optimal configuration for an integrated and decarbonised Local Energy Systems. The tool will be tested in each Pilot Site followed by a financial viability assessment.

In the meanwhile, thanks to the blockchain architecture, an innovative platform for integrated management and value delivery across all actors will be implemented and interoperability realised.

As a consequence, the energy communities of prosumers at demonstrator sites will be fully connected and the use of RES will increase beyond 27%.

In the last phase, the RENAISSANCE approach will be virtually simulated under market conditions connecting 10 sites across the globe, to demonstrate its scalability and replicability.

Horizon 2020
European Union Funding
for Research & Innovation

Context

Energy is generated outside the community where it is consumed. This layout is a consequence of a distribution grid designed and built for centralised production in large power plants: energy is transported to the consumer placed kilometres far from the production site. Such a grid results as both contributing significantly to [glossary]GHG[/glossary] emissions), as well as being inherently inefficient and costly in energy transmission and distribution.

These LECs could allow for energy trading within and among communities, increasing the amount of locally produced energy and the share of renewable energy in the whole picture. While underlying technology solutions for LESs have already been mostly developed, and new business models emerge - especially where legislative changes enable it - there is a lack of consumer-centric solutions.
Renaissance project supports the shift from technology-driven approaches to consumer-driven approaches, fostering the activation of communities.

Challenge

Many models have already been developed to integrate distributed energy resources in the grid, such as virtual power plants, community groups, energy hubs and others. However, these integration approaches mostly focus on technical aspects. To date, LEC approaches have failed to deliver the combination of value generation and high degrees of RES *[link to glossary]* integration as models focused on self-reliance, resiliency, or aggregation services. The limited momentum for solution uptake can mainly be attributed to missing active engagement from local communities as well as existing regulatory barriers.
Local consumers want low-cost, hassle-free energy at their disposal: **the key challenge and ambition of RENAISSANCE is to cross the chasm from early adopters to early majority.**

Concept

The RENAISSANCE project will develop a comprehensive benchmarking model, to significantly improve the uptake of local integrated energy grids and likely reduce consumer prices at least by 10%-15%. Thanks to the Local Levelised Cost of Energy

Horizon 2020
European Union Funding
for Research & Innovation

LLCOE indicator, comparison of smart grids with current centralised energy systems becomes possible. This approach is expected to help create market opportunities

driven by economic value, increased community engagement and compliance with public policies. **The combination of novel micro-grid design and management tools with existing energy generation and storage technologies, will allow the identification of business cases and subsequent operational solutions which maximise value capturing and energy delivery for end-users.**

Objectives

To deliver a proven community-driven approach which is scalable and replicable globally, RENAISSANCE will:

- bring to the market a set of tools to identify business cases for clean integrated systems in any local environment
- allow dynamic mapping of energy vectors and associated financial values
- identify new business models to activate a critical mass of local stakeholders

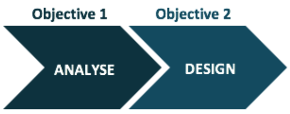
See the graph below to explore the project's objectives, methodologies and outcomes.

Figure 3 - Interactive Navigator

2.3 Methodology

RENAISSANCE will refine its approach through three tiers of demonstrators, which will bring its TRL *[link to Glossary]* from level 6 (technology demostration) to level 9 (system test, launch and operations). Starting from the one in Brussels, RENAISSANCE will be demonstrated in further three demonstrator pilot sites.

System analysis and design



As a first step at project start, energy communities will be actively engaged in the Multi Actor Multi Criteria Analysis (MAMCA)[*link to glossary*] to evaluate a demonstrator's business ecosystems, promoting consumer/prosumer participation and building consensus around site-specific new business cases.

Then, demonstrators will be analysed by a multi-energy site analysis tool already used to optimise LES configuration, to set the basis for the design process of the **Renaissance Energy Island Software Replicator**, namely **RENERGiSE**: thanks to the open-source public data available from the Vrije Universiteit Brussels (VUB), such enhanced tool will turn energy flows between nodes into monetary values and spatial information will help assess profitability of new business models. As a result, for any type of microgrid considered, it will provide energy communities an informed guidance and increase overall efficiency.

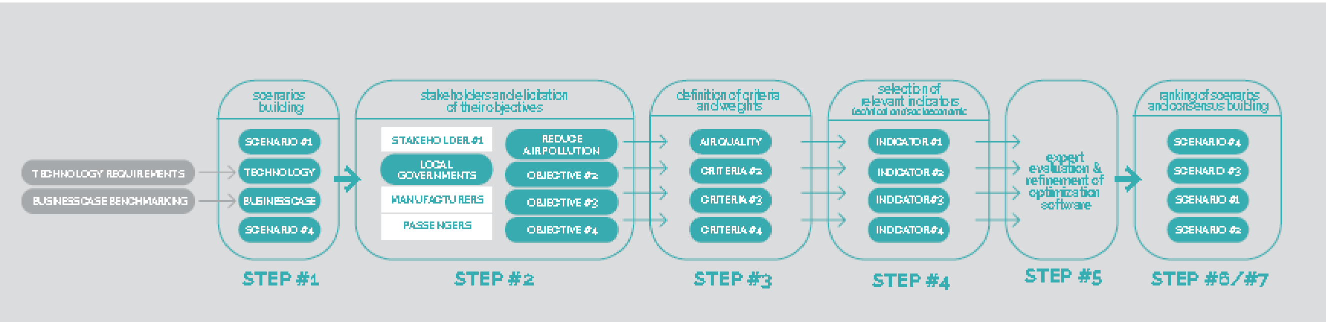


Figure 4 - MAMCA process for Renaissance

Integrate

Starting from the existing FUSE platform, the project will develop an enhanced **RENAISSANCE platform**. Based on a secure, interoperable and scalable blockchain architecture, the **RENAISSANCE platform** will interconnect all existing demonstrators' energy vectors into a unique decentralised multi-vector energy services market where consumers/prosumers will interact and perform financial actions defined by smart contracts, the limits of which are established in real time. The platform will regulate

Horizon 2020
European Union Funding
for Research & Innovation

the energy service trade market dynamically and transparently ensuring effective operations at minimum cost.

At the end of this phase, the set of solutions provided will be used to simulate additional scenarios of energy interactions and help identifying those barriers hindering energy island potentials.

Demonstrate

In this phase, the set of tools improved during the project will be validated by partners through the **design and operation of local energy systems in the four pilot sites** *(link to Pilot Sites main page)*, where technical, energetic, economic and social aspects are considered under market realistic circumstances. Moreover, the hardware/software infrastructure will be rolled out to validate the security of the financial transactions and the stakeholders' level of acceptance and involvement.

Replicate

Replicability is a core objective of the project. Providing a set of solutions enabling the analysis and management of energy islands, software solutions and ICT integration, RENAISSANCE will help optimise design and operation, minimising LLCOE and infrastructure investments.

Virtual demonstrators in Eastern Europe, India, China, United Kingdom, USA will demonstrate the value of the RENAISSANCE set of solutions to any type of local energy system at any country *(link to International Demonstrators, enabled when active)*.

Milestones

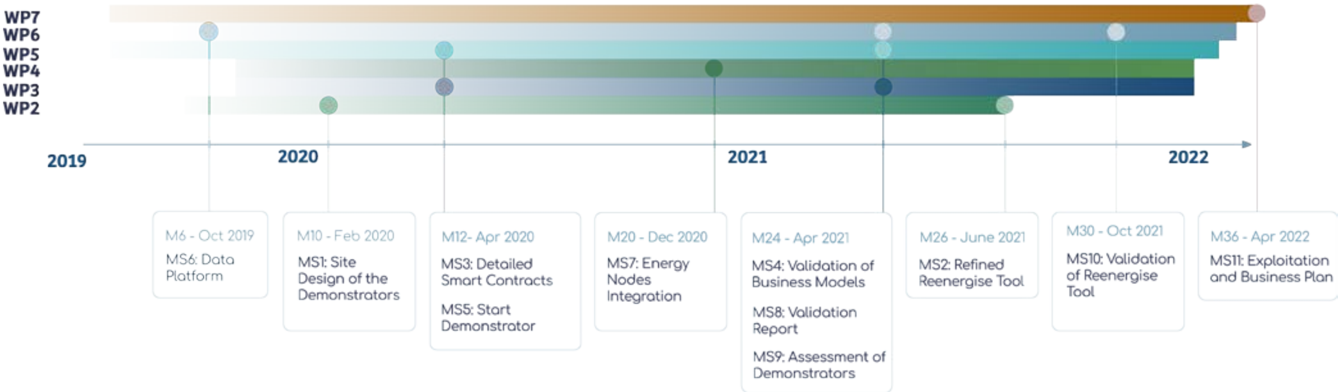


Figure 5 -project milestones

Horizon 2020
European Union Funding
for Research & Innovation

Workplan

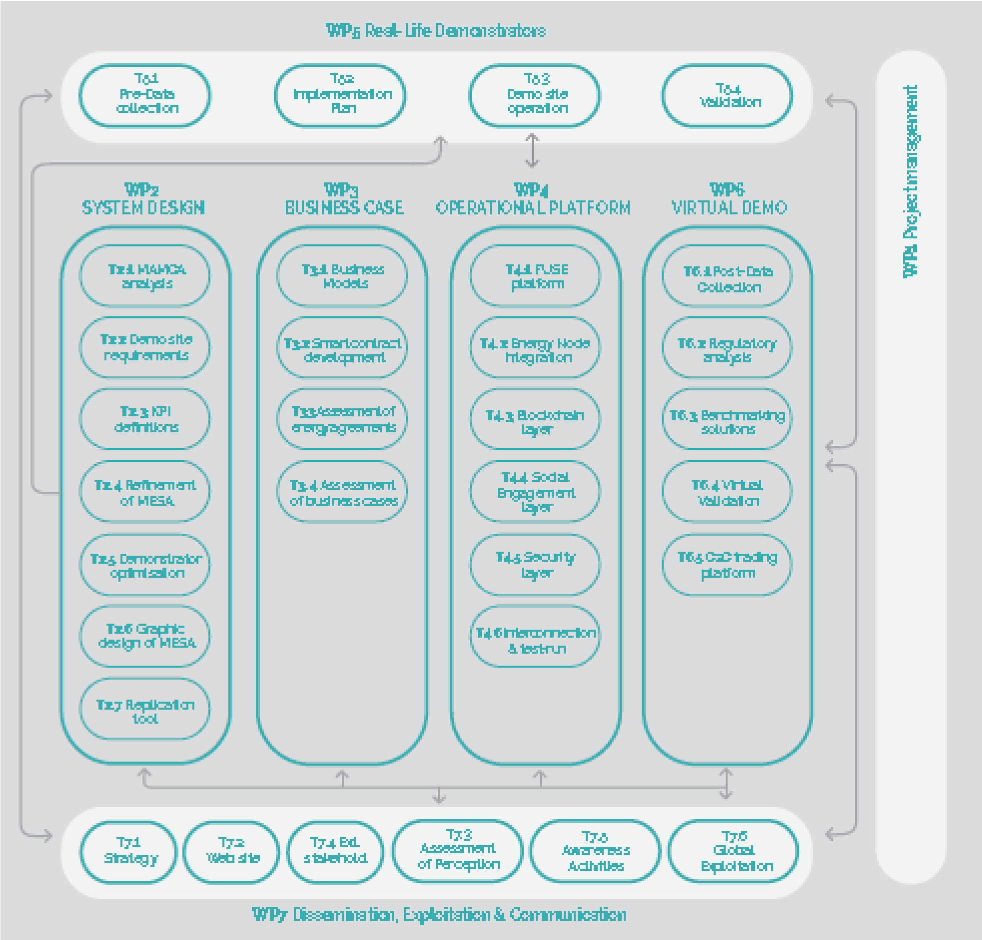


Figure 6 - project workplan

2.4 Pilot Sites

The project will support industry leaders in analysis and design tools as well as energy management platform delivering services. The envisioned suite of tools aims to increase the share of energy that is produced locally, from renewable sources when available, with a clear market focus, making them widely replicable across Europe. In order to validate the suite of tools, their application will be demonstrated in real-life pilots in Belgium, Greece, Spain and the Netherlands.

Horizon 2020
European Union Funding
for Research & Innovation

Each site represents different end-user groups, integrates different combination of energy vectors and faces diverse challenges when it comes to designing local energy systems. By avoiding the investment in hardware on pilot sites, RENAISSANCE focuses on the replication rather than the implementation of energy islands allowing to envision a future free of fossil fuels. Demonstrators will allow to discover requirements and business models in the smart grid value chain. Each pilot site will be served by the RENAISSANCE Platform, setting the basis for a **"universal" interoperability framework** for data and service exchange among nodes.

Pilot sites are owned by different actors in the value chain:

- a DSO operating in a Rural Ski Village in Spain (Manzaneda)
- a city authority in the Netherlands (Municipality of Eemnes)
- a social housing owner in Greece (Xanthi)
- a public service provider in Belgium (Brussels Health Campus)

Virtual Demonstrators

To validate RENAISSANCE solutions in market-like environments, the project will deliver ten virtual pilots in five countries across the globe, applying its approach to urban sites of relevant size (up to 10.000 dwellings) and with high smart-grid growth potential.

[Each Pilot Site page is structured to include:
The introductory text
A location map
A graph representing the site model
A picture of the site (Save from GA or ask Pilot's representative)
A table of energy demand and micro-grid measures
A box about social engagement: Leader and Key Local Stakeholders]

Horizon 2020
European Union Funding
for Research & Innovation

Eemnes (the Netherlands)

Eemnes is a 3600-household town located in the centre of the Netherlands, 35km from Amsterdam. Eemnes seeks to be energy neutral by 2030. **This demonstrator aims to validate a local, blockchain-enabled, peer-to-peer energy market in an operational environment**. During the first three years, the demonstrator size will be between 100-200 participants consisting of households, local businesses and farmers. The ambition is to scale up to 1.000 participants within Eemnes over a period of 10 years.

The demonstrator will include high energy-efficient dwellings and several municipal buildings.

The municipality has been granted an exemption to Dutch Electricity Laws by the Ministry of Economic Affairs (2018-2027). The exemption will allow operating a peer-to-peer energy trading system. This system will be a national (and potentially European) first in realising dynamic pricing in a prosumer environment (peer-to-peer trading).

Energy demand and micro-grid measures

Energy Demand	**Current**	**Measures**	**Estimated**
Electricity consumption	3.410 kWh/y per dwelling	250 Smart Meters 250 Gateways 1 Battery Trading platform	2.920 kWh/y per dwelling
Energy Supply created		**Production in MWh/yr**	**Savings in Ton CO2**
Solar panels (275WP)	1200	280,5 MWh/jr	114,9

Social engagement

Leader:

- the municipality of Eemnes

Key Local Stakeholders:

- EnergieCooperatie Eemnes, a local not-for-profit energy association;
- De Alliantie, a social housing provider owning 800 of 3500 homes in the town;
- The local business association;
- EnergieVan, acting as Energy Service Aggregator on behalf of the cooperation;

Horizon 2020
European Union Funding
for Research & Innovation

Kimmeria Student Buildings, Xanthi (Greece)

The pilot site is located in a rural area about one km west of the city of Xanthi and one kilometer east of the Kimmeria Village, in North Greece. It includes a building complex of 11 buildings with a total area of 15.000 m^2, that consists of eight buildings for student residences, one electromechanical equipment building, one restaurant and one amphitheatre, owned by Democritus University of Thrace (DUTH). Student residences are provided free of charge, therefore characterising the buildings as social housing.

Reliability and low operational costs through the maximum utilisation of RES technologies are the focus points of this demonstration site due to its social character. During the RENAISSANCE project, the demonstrator will run mainly using the local generation. The remaining share required is drawn by the main electricity. The successful execution of the pilot will unlock the potential replicability at large scale in university campuses and residences located in rural areas with similar climate conditions. High availability of renewable sources such as solar and heat would enable the creation of sustainable self-sufficient energy communities.

In order to engage end-users and eventually influence their consumption behaviour, smart metres will be installed and connected to the RENAISSANCE platform. Installation of smart metres for both thermal and electrical consumption will increase observability and transparency of consumption profiles by 100%, enabling to test DR schemes and innovative market models. Smart contracts and improved communication tools such as mobile apps will increase participation of end-users by 50%.

In addition, with the contribution of a simulation engine, the model will be extended to include its virtual connection with the macro-LV/MV (DSO level) grid, by including energy production/consumption profiles of near-located energy intensive industries and that of the city of Xanthi, for which data are available. Through simulation results, the technical extent up to which a micro-grid can interact with a macro-grid can be identified (flexibility potential). Integrated solutions demonstrated in RENAISSANCE will be stress tested for their scalability and replicability.

Horizon 2020
European Union Funding
for Research & Innovation

Energy demand and micro-grid measures			
Energy Demand	**Current**	**Measures**	**Estimated**
Electricity consumption	1500 MWh/y 10MWh/y excess electricity	7kWe ORC generating 50 MWh/y Smart meters	1300 MWh/y
Heat	2300MWh/y (100% RES) Excess 100 MWh/y (RES)	Thermal buffers 9000l Adjustments on the current pipe network PCM storages: 60kWh Smart meters	Improved use of heat for electricity production Reduction of biomass consumption
Energy Supply created	**Measures**	**Production in MWh/yr**	**Savings in Ton Co2**
ORC generator	7kWe generating electricity	50 MWh/y	57 tCO2/y

Social engagement
Leader: ▸ DUTH **Key Local Stakeholders:** ▸ DUTH Democritus University of Thrace ▸ DUTH students and staff ▸ CERTH ▸ Municipality of Xanthi ▸ Commercial and Industrial facilities (who are supporting with a LoS)

Horizon 2020
European Union Funding
for Research & Innovation

Brussels Health Campus, Brussels (Belgium)

The Brussels Health Campus containing the university hospital (Universitair Ziekenhuis Brussel UZB-VUB) and part of the Vrije Universiteit Brussel (VUB), is an advanced energy island owning and running a state-of-the-art microgrid that can work in island mode for 5 consecutive days. It includes a thermal and electricity grid, waste water recovery, a high-speed glass-fibre telecom network and a total of 33 HV transformers divided over HV 18 substations. Energy production and storage include photovoltaics (817 kWp), CHP 2.8MW, and 3 emergency generators (5.25 MVA), and a total capacity of 2,5 MWh in battery storage. The microgrid serves the hospital complex, 250 student dwellings, the faculty of health sciences, a primary school and a fitness centre. The microgrid contains about a 1000 smart metres that are included in the Building Management System. The microgrid system is conceived to go in island mode with complete automatic transition in max. 15s to critical need and 3 min to comfort need. Cutting edge control technology and maximal reliability are the focus points of this demonstration site.

VUB will develop and introduce the scenarios in the controllers of the Building Management System. The implementation of batteries in the microgrid does not only allow for internal balancing and renewable energy storage, but also allows to foster trading in the reserve markets.

The measurements of the 1000 smart metres are stored at VUB and will be used as an open source simulation platform for the testing of the software tools and algorithms developed. In fact, the historical data can not only be used to improve the models, but also allow the testing of virtual communities, smart clustering and trading mechanisms.

Horizon 2020
European Union Funding
for Research & Innovation

Energy demand and micro-grid measures			
Energy Demand	**Current**	**Storage Measures**	**Estimated**
Electricity Consumption	25000MWh/year	Ice Buffer 20MWh BTES 1.6MWh Total Batteries 3,1 MWh	875MWh/Year
Energy Supply created	MWh/year	**Production measures in MWh/yr**	**Savings in Ton Co2**
Solar panels	800	Additional 1200	280 ton/ year
Social engagement			

Leader:

- Uz-VUB

Key Local Stakeholders:

- Uz-VUB 400 students (smart meters and consumption behaviour)
- UZVUB personnel will be engaged in a crowd funding exercise for purchasing the new photovoltaics in the hospital, as such investigating methodologies for citizen engagement in the capex participation.
- ENERVALIS (data gathering)

Horizon 2020
European Union Funding
for Research & Innovation

Rural Ski Village, Manzaneda (Spain)

Manzaneda is a municipality in the eastern province of Ourense, in the Galicia region of north-west Spain. The site is a remote rural village and ski resort with residential properties and various commercial establishments. The resort hosts over 100.000 visitors per year and is home to around 900 permanent inhabitants. The energy community of Manzaneda is formed by different end users: private residential (163 residential private owners plus 53 owned by MEISA), commercial (Hotel Meisa and related facilities) and industrial (ski lifts, commercial area, shops, restaurant, swimming pool, multi sports hall, water treatment plant, artificial snow guns), services users (TELEFONICA, VODAFONE, RETEGAL and more). The demo site at Manzaneda is operated by MEISA, a public ownership company created in order to operate the Manzaneda Ski Resort. The organisation is responsible for the electrical energy supply to the ski resort and for the operation and maintenance of the distribution grid. The energy community will explore a simulation of time-of-use energy tariffs. It will be one of the first sites in Spain where the new law on self-consumption (Real Decreto-ley 15/2018) can be applied in real-life environment and be integrated to the local energy community business case development.

In this energy community, smart metres will record real-time energy consumption (heat & electricity). Demand-response actions, including electricity storage (battery), heat storage (P2H) and EVs charging will be developed to reduce consumption during the peak hours and increase it during low energy cost periods. Then, the cost energy will be calculated in one (or few) given smart contract scenario(s), optimised for the whole energy community and compared to present cost for the consumers in the energy island. An e-vehicles charging station and a caravan parking electrical supply infrastructure will also be installed to increase electricity usage also during warmer seasons.

Horizon 2020
European Union Funding
for Research & Innovation

Energy demand and micro-grid measures			
Energy Demand	**Current**	**Storage Measures**	**Estimated**
	4.334 MWh/year	Total Batteries: 42 KWh 1 Electric Vehicle	4.109 MWh/Year
Energy Supply created	**MWh/year**	**Production measures in MWh/yr**	**Savings in Ton Co2**
Solar panels	150 kW	225 MWh/year	195 ton/ year

Social engagement

Leader:

- Exeleria (EXE)

Key Local Stakeholders:

- MEISA, pilot site main facilities owner and DSO owner
- 167 private owners (smartmeters, batteries and consumer behaviour). [An incentives program will be defined to encourage private consumers to "play the game" of optimizing their common time dependence consumption and DR actions].
- Local ESCO providing heat and DHW from a Biomass District Heating system
- Galicia regional government

Horizon 2020
European Union Funding
for Research & Innovation

International virtual demonstrator sites

India

Together with the Indian partnership, RENAISSANCE has identified six sites for potential replication sites in India and will build a connection with MNRE for the Solar / Green Cities https://mnre.gov.in/solar-cities.

Poor air quality and unreliable power supplies were identified as key issues in the International Energy Agency's India Energy Outlook 2015 report[1]. Furthermore, India is expected to surpass China in energy demand by 2040. To minimise the current dependency on fossil fuel consumption and increase the reliability and access to energy in both rural and urban environments, India is looking into setting up local energy systems that are more reliable, less pollutant and help reduce energy poverty in the country. By joining the RENAISSANCE project, the Indian partners are supporting a cheaper and more sustainable energy market.

- Virtual Demo 1: small villages in Jharkand region
- Virtual Demo2: Jigani Industrial Area in Karnataka region
- Virtual Demo3: Prestige Oasis, Karnataka region

[1] https://www.iea.org/publications/freepublications/publication/IndiaEnergyOutlook_WEO2015.pdf

Horizon 2020
European Union Funding
for Research & Innovation

China

The virtual demonstrator will be selected during the duration of the project in collaboration The Global Energy Interconnection Development and Cooperation Organization (GEIDCO), with its permanent office domiciled in Beijing, China, is an international organisation among willing firms, associations, institutions and individuals who are dedicated to promoting the sustainable development of energy worldwide.[2]

China has a large smog problem due to a high dependency on coal powerplants. To mitigate this problem, China is already one of the biggest investors in renewable energy in the world. Following the same objectives, the involvement in RENAISSANCE will make the electricity greener and the grid safer and more reliable, all of which will in turn make the air cleaner and result in lower CO_2 emissions.

United States, North Carolina

The virtual demonstrator will be selected during the duration of the project in collaboration with the Research Triangle Region of North Carolina, one of the oldest and largest research parks in the world, in North Carolina near the mid-point of the U.S. East Coast[3].

The United States are very dependent on fossil fuel and oil in particular. To mitigate the increasing price of energy, local research groups are pursuing the development of smart grid technologies. Island grids are of significant importance in the US as many villages or farm are isolated and thus either not connected to the national grid or suffering high energy transmission losses. To mitigate those effects, participating to a project such as RENAISSANCE is a valuable opportunity. This would allow to lower the cost of energy, get a more reliable electricity and limit the fossil fuel dependency.

[2] http://www.geidco.org/html/qqnycoen/index.html
[3] http://www.researchtrianglecleantech.org/

Horizon 2020
European Union Funding
for Research & Innovation

Poland, Warsaw

The first identified demonstrator site of Szaserow consists in 28 multifamily residential buildings with 800 dwellings and approximately 1800 residents. Stakeholder groups involved are the housing co-operative, tenants who are owners of dwellings and co-owners of common areas, City of Warsaw as owner of kindergarten located inside the settlement.

The second demonstrator site is the City Of Kozienice: 18 000 inhabitants, where of a half are living in 56 buildings of the Co-operative Kozienice constructed during the 1960s, public buildings of the City, co-operative and commercial buildings, district heating system supplied so far by the hard coal fired heat only plant of 35MW capacity. Heat is used for residential and public buildings being subject of deep renovation in short perspective.

Involved stakeholders will be inhabitants, municipality, the municipal company managing the DH, water & sewerage and waste economy, public transportation.

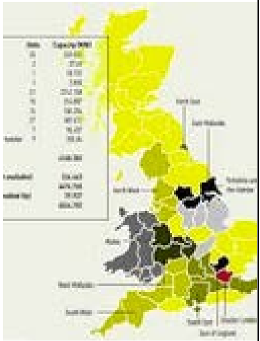
The city hopes to gain experience in desiging the business models for introduction of RES in municipal economy including application of smart-grid solutions. A study concerning indication of potential technology package that could maximise and optimise such system from energetic and/or financial perspective especially for development of electro mobility in public transportation and use RES for heating purposes. GHG emissions in Poland decreased strongly in the period 1990-2002, but after 2002, emissions slowly grew until 2015.[4] To achieve its global GHG emissions target for 2050, Poland needs to start investing significantly in RES and prepare the move to smart grids. The RENAISSANCE project is perfectly aligned with this strategy and is thus an excellent opportunity for the Polish local energy markets.

United Kingdom, Oxfordshire

[4] http://www.europarl.europa.eu/RegData/etudes/BRIE/2017/607335/IPOL_BRI(2017)607335_EN.pdf

Horizon 2020
European Union Funding
for Research & Innovation

The virtual demonstrator will be selected during the duration of the project in collaboration with Cambridge Cleantech[5], a leading cleantech community in Europe. They achieve this through their mission of enhancing the area's global competitiveness by co-ordinating, supporting and promoting commercial opportunities for their members. They have pre-identified a community in Oxfordshire, UK to become one of the virtual demonstrator sites.



The UK intends to lower its CO_2 emissions according to the Paris agreement. To do so, the electricity production will need to move from natural gas power plant to renewable power plant. As one of the strategies is to pursue microgrid development, it is very interesting to develop UK based smart grid cases, especially as UK grid is facing increasingly capacity constraints at the NDO level. Through the RENAISSANCE project, the UK-based pilot will be studied and allow make a first case study for future development.[6]

[5] http://www.cambridgecleantech.org.uk/about-us

[6] Xenias, Dimitrios, et al. "UK smart grid development: An expert assessment of the benefits, pitfalls and functions." *Renewable Energy* 81 (2015): 89-102.

Horizon 2020
European Union Funding
for Research & Innovation

2.5 Linked Projects

Through the BRIDGE initiative, RENAISSANCE will cooperate with inteGRIDy and the other projects listed below, especially in the analysis of potential barriers to innoviation, also addressing policy issues.

Other R&D initiatives and opportunities of collaboration are explored with recent and ongoing projects.

[Wordpress accordion list module below allow to insert more projects periodically]

eDream
H2020
2018-2020

WiseGRID
H2020
2016-2020

SHAR-Q
H2020
2016-2019

FLEXICIENCY
H2020
2017

NOBEL
H202
2010-2012

DRIVE
H2020
2017-2020

Horizon 2020
European Union Funding
for Research & Innovation

2.6 Glossary

Definitions of acronyms in alphabetical order are listed in this page

---

2.7 Team

Logos

Coordinator Logo (VUB, Belgium)

Partners Logos with Country of Origin

2.7 Resources

Find here all useful materials developed by RENAISSANCE project.

Contents will be published as downloadable or interactive materials. Following descriptions will be used as abstracts when related results will be available.

Reenergise

The **Renaissance Energy Island Software Replicator** is a decision-making tool able to analyse energy vectors in any given environment and support the identification of viable business cases. It helps identifying socio-economic and environmental performance, highlighting the configurations that are cheaper to run. Such tool includes:

- all assets (use, storage, generation and renewable sources)
- all dimensions: horizontal (prosumers, peers), vertical (clusters, centralised generation plants, storage) and diagonal (across energy types).
- Geographic information system GIS information about assets
- financial data layer to assess economical impacts

The tool is integrated in the MAMCA software, allowing a detailed mapping of participants' preferences. Thanks to a user-friendly interface, it's easier to keep track of stakeholders' interests when making decisions.

Stress testing tool (to be published when results are available)

A dynamic micro-grid simulator for refined design and control strategy, will help defining the best synergy strategies, thus in the sizing and placement (location) of the different assets of the microgrid. Thanks also to inputs received from Reenergise tool, such as system components specifications and dimension, it supports demand/supply harmonisation.

RENAISSANCE Platform (to be published when results are available)

RENAISSANCE PLATFORM is an energy management enhanced software, in which additional functionalities will enable consumer-centric operations of LES and connect different energy vectors in a single ICT architecture. This way, LES will be turned into fully transactive energy networks based on blockchain technology and cryptocurrencies with high social acceptance. Such an interoperable platform will offer a range of multi-energy innovative services, including **Smart Contracts** enabling community-to-community trading, thus reducing fragmentation of local ecosystems.

Selected Hardware advancements

Innovative **PCM heat storage**: storing technologies will be tailored to meet the Pilot Sites' needs, to offer the best solutions for what concerns flexibility and integration with different energy vectors.

Energy Box: The existing multi-purpose smart controller, proved to manage smart devices in any environment integrating communication technologies, will be further developed for interoperability with Renaissance Platform and completed by the deep-learning techniques and the blockchain layer to ensure safer transactions.

Horizon 2020
European Union Funding
for Research & Innovation

2.8 Standard pages

- Privacy Policy and Legal Notice
- Contacts module
- Search module
- Newsletter module
- 404 not found page

2.9 Social Links

LinkedIn
https://www.linkedin.com/groups/8795142
Twitter
https://twitter.com/H2020_Ren

Horizon 2020
European Union Funding
for Research & Innovation