



# Renaissance

RENEWABLE INTEGRATION & SUSTAINABILITY  
IN ENERGY COMMUNITIES

## D3.5 – RENAISSANCE BUSINESS MODELS ASSESSMENT RESULTS

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## Executive summary

This report describes the main findings of the evaluation of the business models of the RENAISSANCE demo sites in Spain, Belgium, the Netherlands and Greece. It is a business readiness assessment covering five key areas for successful business model development: customer, technology, business model, team and funding readiness.

The document is divided into 5 sections.

**Section 1** firstly, introduces the objective of the Task 3.4 and defines the scope of this assessment. Secondly, it introduces the demo sites of RENAISSANCE, their key objectives in the project, and the considerations that went into carrying out this assessment.

**Section 2** presents the methodology chosen for the assessment of the RENAISSANCE Demo Sites, the KTH (Royal Institute of Technology) Innovation Readiness Level<sup>1</sup>, followed by a description of the different core areas covered by the methodology and an explanation of how to interpret the results obtained in each of these areas. The last part presents the chosen approach that enabled the assessment of the Demo sites.

**Section 3** presents the results of the evaluation of the business models of the four RENAISSANCE Demo Sites using the KTH methodology for innovation readiness. The assessment includes evaluation of CRL, TRL, BRL, TmRL and FRL, at the beginning of the project and at the present time.

**Section 4** provides a summary of recommendations that could be addressed by the demo sites to achieve a higher score in the various core areas. This could lead to a roadmap for how to accelerate the growth of the demo sites from RENAISSANCE.

**Section 5** summarises the overall results of the evaluation and the conclusions drawn from the individual evaluations of each RENAISSANCE Demo.

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<sup>1</sup>KTH Innovation Readiness Level

<https://kthinnovationreadinesslevel.com/>

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Acronym	
BRL	Business Readiness Level
CRL	Customer Readiness Level
CS	Current State
EC	Energy Community
ESCO	Energy Service Company
FRL	Funding Readiness Level
IPRL	Intellectual Property Readiness Level
LES	Local Energy Systems
MAMCA	Multi Actor Multi Criteria
P2P	Peer- to- Peer
PS	Project Start
RL	Readiness Level
TmRL	Team Readiness Level
TRL	Technology Readiness Level
RES	Renewable Energy Sources

Table 1 – List of Acronyms



# 1. Introduction

## 1.1. Task 3.4

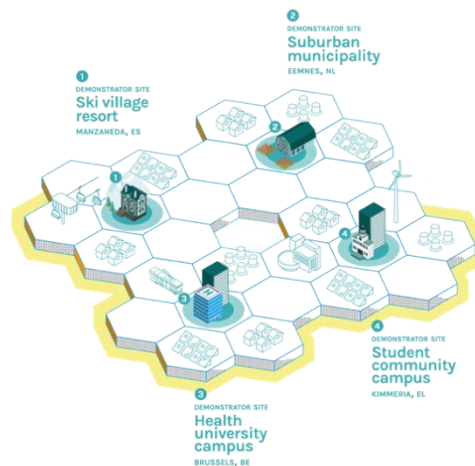


Figure 1 – RENAISSANCE Demo Sites

Task 3.4 aims to provide a comparative feasibility analysis of the business cases for the demo sites in Spain, Greece, the Netherlands, and Belgium. The RENAISSANCE Demo Sites were set up with three overarching goals: one first aim was to identify requirements and business models for subsequent use by various stakeholders in the smart grid value chain, secondly to validate the tools and services for designing local integrated energy systems within the RENAISSANCE project; and thirdly, to explore strategies that enable successful consumer activation.

Each RENAISSANCE demonstrator site is owned by a different actor in the value chain: Distribution System Operator (MEISA), city authority (Municipality of Eemnes), student housing owner (DUTH), and public service provider (VUB Brussels Health Campus). Moreover, each of these demo sites represents different end-user groups with different goals and priorities when it comes to establishing a local energy system. For some of them (Kimmeria and Brussels), the main goal is not to create a business model, but to provide a reliable and sustainable energy supply that enables social innovation. In the case of Eemnes, it is the only Demo Site in RENAISSANCE with a direct engagement with the citizens, a market-oriented energy

community (EC). Manzaneda, operated as an ESCO, aims to explore innovative business models that enables the increase of RES.

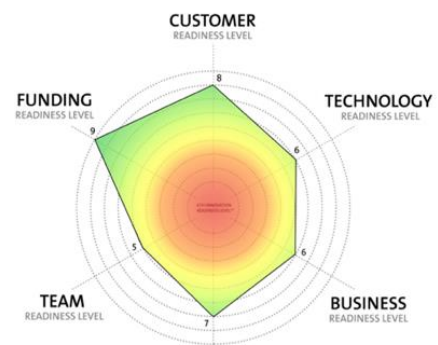
Due to the importance of carrying out a compelling assessment of the existing business models that covers the most relevant aspects; it has been organized a process in which the active participation of the Demo Site managers and the overall partners ' input was fundamental.

## 2. Methodology

The following section presents the methodology chosen to assess the RENAISSANCE Demo Sites, the KTH Innovation Readiness Level, followed by a description of the different core areas covered by the methodology.

### 2.1. Framework: KTH Innovation Readiness Methodology

The methodology chosen for the assessment is the KTH Innovation Readiness Level <sup>2</sup>, a complete framework for guiding idea development and assessing idea status across key dimensions. It provides structure in the development of an early-stage idea into an innovation on the market. The model is a market-driven methodology, and it is highly useful for teams developing ideas and managers supporting idea development to measure progress and status.



**Figure 2 – KTH Innovation Readiness Level**

The KTH method covers 6 readiness levels in innovation development: Customer Readiness Level (CRL), Technology Readiness Level (TRL), Business Model Readiness Level (BRL), IP Readiness Level (IPR), Team Readiness Level (TmRL), and Funding Readiness Level (FRL). Figure 2 presents an example of a radar graph illustrating the different readiness levels.

For each area, there are clear definitions of the different stages, as well as milestones and activities required to achieve each stage. Each indicator has its own scale from 1 to 9, depending on the stage of innovation development and tangible evidence. What needs to be done to reach each level of the KTH IRL model is set out in the criteria for each level.

For example, in the BRL, the scale evaluates innovation from stage 1, the very unclear idea, to stage 9, the sustainable business model tested and

<sup>2</sup> KTH Innovation Readiness Level : <https://kthinnovationreadinesslevel.com/>

verified. As presented in Figure 3, at each level are defined activities, criteria, and milestones.

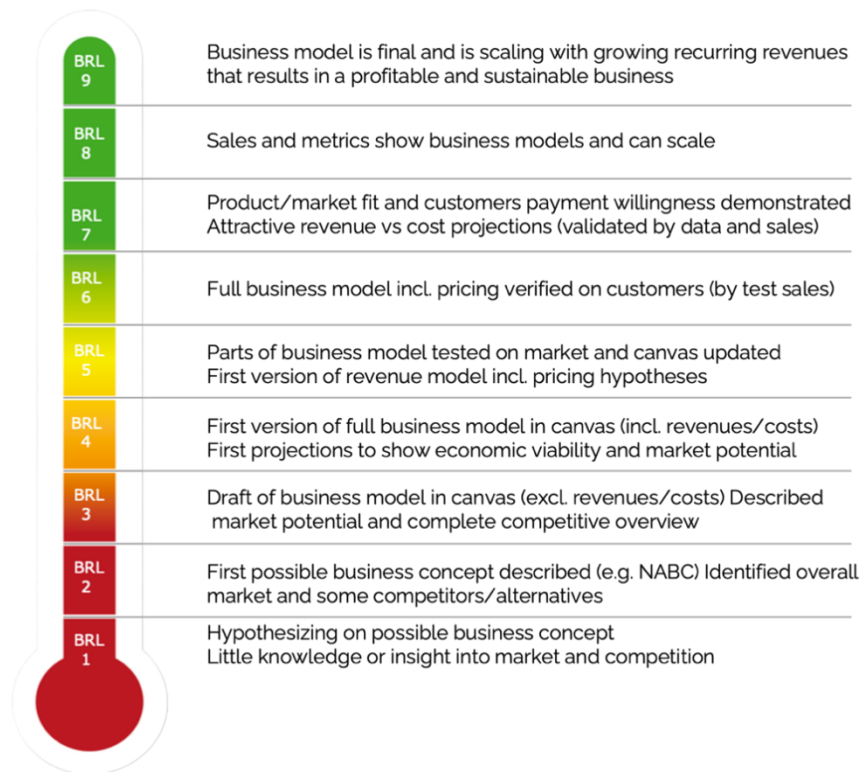


Figure 3 – BRL KTH Innovation Readiness

## 2.2. Readiness Levels description

Below is a brief description of each of the readiness levels covered by the KTH Readiness Methodology. The six readiness levels can be measured separately, but they are interrelated and interdependent. However, in assessing the business model of the Demo Sites of RENAISSANCE, all readiness levels are considered, except for IPRL, as this is outside the scope of this review.

### 2.2.1. Customer Readiness Level (CRL)



The CRL focuses on confirming customer need and interest. It evaluates how the solution is getting out into the market, so that it is being used and creates value.

The CRL is divided into three main stages:

- CRL 1–3: describes a first hypothesis of possible market needs and obtains first market feedback
- CRL 4–6: established customer interest and relationships.
- CRL 7–9: first commercial sales with a significant number of active users.

### 2.2.2. Technology Readiness Level (TRL)

The TRL evaluates the maturity level of the technology, product, service, or concept. It focuses primarily on the functionality of the 'technology' and is fit for purpose. The term 'technology' should be interpreted as the solution to be developed, whether or not it is strictly speaking a technology.



The scale ranges from 1 to 9, with TRL 1 being the lowest and TRL 9 the highest. At TRL 1, scientific research begins, and the results are translated into future research and development, while at TRL 9, the technology has already been tested in a real-life environment.

### 2.2.3. Business Readiness Level (BRL)



BRL focuses on creating a viable and sustainable business model around the idea. The business model can be commercial or non-commercial, for-profit or not-for-profit. The business model should describe how an organisation creates, delivers, and captures value.

Additionally, when talking about a sustainable model, it should be one where revenues are higher than or equal to costs (over time) and where the positive contribution to the environment and society is greater than the negative contribution to the environment and society (over time).

The BRL scale is divided into three main stages:

- BRL 1–3: Describe the business model in an increasing level of detail.
- BRL 4–6: Simulate/calculate if the sustainable business model is viable based on hypotheses, assumptions, and feedback.

- BRL 7–9: Test the sustainable business model and confirm that it is viable.

#### 2.2.4. Team Readiness Level (TmRL)

TmRL focuses on getting the right people together to go from idea to market and to make sure they have the best possible chance to perform well. The TmRL scale primarily deals with competencies – that there is the right knowledge, skills, experience, etc. at each stage of the idea development; capacity; that there is enough work capacity of people with the right competencies to do the work necessary at each stage of the idea development; and team alignment; that the people in the team are sitting in the same boat and rowing in the same direction.



The TMRL scale is divided into two main stages:

- TMRL 1–4: The initial team to verify and develop the potential of the idea.
- TMRL 5–9: The team responsible for building a startup/organisation to realise the idea and bring it to the market.

#### 2.2.5. Funding Readiness Level (FRL)



The FRL focuses on securing enough funding to develop the idea and to reach an economically viable and sustainable business model for it over time.

The FRL is based on two core assumptions:

- I. Successful innovation (taking new ideas to the market) depends on finding a viable and sustainable business model for the idea so that it can create value and impact over time in the market.
- II. New ideas always require input in the form of people's time, money, and other resources to be developed before they can be sold or generate revenue/value in other ways, so there will always be a need

for some sort of funding to cover the resource needs before you reach a viable business model.

The FRL scale is divided into two main stages:

- FRL 1–4: Primary focus on identifying suitable funding mechanisms to verify and develop the potential of the idea so that it can identify a viable business model.
- FRL 5–9: Primary focus on being able to realise the business model and reach economic viability and sustainability over time

### 2.2.6. IPR Readiness Level (IPRL)

IPRL focuses on controlling and using Intellectual Property Rights to increase the likelihood of successfully taking the idea to the market and creating value.



The IPRL scale is divided into two main stages:

- IPRL 1–4: Identifying, describing, and assessing the potential to protect the IPR.
- IPRL 5–9: Taking active steps to protect and control your IPR according to a thorough strategy.

Although, as mentioned above, the IPR readiness level was not considered for carrying out the evaluation as it was out of the scope of Task 3.4.

## 2.3. Assessment Approach

The process that enabled the development of this report is described below.

1. **Individual calls and collection of partners' inputs:** For the first part of the assessment, BaxCo (Bax & Company) organised individual meetings with the Demo Site leaders to jointly carry out a preliminary assessment of the business models.
2. **Workshop with Demo Site Managers:** During the RENAISSANCE General Assembly, held in Manzaneda on 03/31/2022, BaxCo led a workshop with demo site leaders to present assessment results to date, understand progress, and discuss lessons learned. Demo site leaders were asked to share their ambitions for the end of the project, and the discussion led to overall conclusions and recommendations for policymakers.
3. **Consortium Review:** The final step of the process was for all partners to review the first complete version of the assessment and consolidate their own findings based on what was discussed during the Manzaneda workshop.



### 3. Assessment of the business cases

The following section presents the results of the assessment of the business models of the four RENAISSANCE Demo Sites using the KTH method for innovation readiness. The assessment includes the evaluation of CRL, TRL, BRL, TmRL, and FRL at the beginning of the project (2019) and at the present time (2022).


#### 3.1. Rural Ski Village Manzaneda (Spain)


The EC of Manzaneda is an initiative led by public and private actors and is formed by different types of users: private residential, commercial, and industrial. The site is a remote rural village and ski resort with residential properties and various commercial establishments. One of the main objectives of this Demo site was the






Figure 4 – Rural Ski Village Manzaneda

exploration of new business models that would increase the percentage of RES and benefits for the community, improve grid stability and validate the replicability of such projects in the region of Spain.

RL	Timeframe	Assessment
<b>Customer Readiness Level</b> 	Project Start	At the beginning of the project, CRL was at stage 3. Only a small segment of clients was identified as potential EC users. They had an initial understanding of the potential benefits of setting up an EC. The MAMCA workshops held by the VUB with the support of DBL enabled a steadier engagement of stakeholders.
	Now	As it stands, the tests have enabled end users to see the value of EC more clearly and have raised awareness among similar stakeholders. NTT Data is already offering its services to city councils and large industrial parks as potential

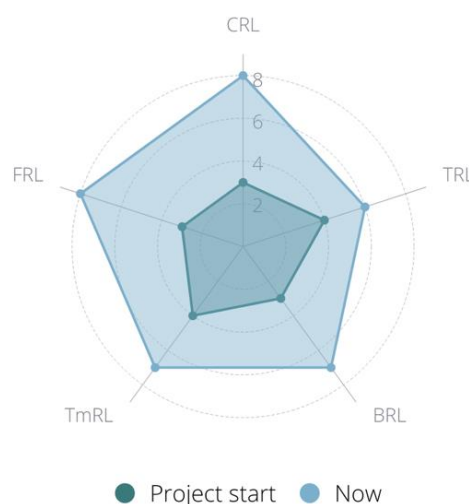
		replicators in Galicia. A significant number of active users of the market-ready service have been demonstrated. For the above reasons, CRL is now considered to be at Level 8.
<b>Technology Readiness Level</b> 	Project Start	At the beginning of the project, Manzaneda's TRL was stage 4. Initial validation of the technologies to be installed was only carried out in a laboratory environment, not under real conditions. Initial planning envisaged the integration of three platforms: 1) a monitoring platform from NTT Data Solution that would collect generation data from the PV system, second-life batteries, EV charging system, and thermal energy data; 2) the i.Leco cloud that would serve as an API platform for testing the SaaS; and 3) a SCADA system that would collect monitoring data from the grid MV.
	Now	At the moment, the TRL is at stage 6 and most of the technologies have been implemented in the Demo plant in Manzaneda and tested in a fully operational environment. However, there were some challenges faced during the demonstration of the Peer to Peer (P2P) model and Software as a Service (SaaS), mainly due to some problems encountered during the installation and hurdles in the Spanish legal framework, further explained in D6.5 'Regulatory Analysis'. The managers of the demo site plan to test the technology in a virtual P2P market.
<b>Business Readiness Level</b>	Project Start	At the beginning of the project, the BRL was at stage 3. With the emergence of new business models, the P2P scenario seems to be the most attractive for all stakeholders, as shown in the results of the MAMCA workshop (D2.1). As part

		<p>of the work carried out under D3.1, a first definition of energy services and business models related to the Demo Site was developed. A first, draft business model was presented with a clear summary of the energy markets to be considered, the proposed business model for each of the actors involved in Manzaneda's EC, and a preliminary revenue stream and cost structure for each of them.</p>
	Now	<p>The BRL of the Ski Village in Manzaneda is now at stage 7. The Xunta of Galicia has signed an exploitation contract with NTT Data for setting up a new LES. However, it has been difficult to define the revenues of the business model, mainly due to the conception of the EC under Spanish law and the demanded requirements (ownership model and generation capacity to be connected to the energy system).</p>
<b>Team Readiness Level</b> 	Project Start	<p>At the start of the project, TMRL was at stage 4. A coordination team was appointed as documented in D5.2. Gustavo Samartín (Manzaneda) was assigned as site manager and Miguel Fontela (NTT Data Solution) as Hardware and Software Solutions Leader. Meaning that key competences were in place, and leaders were committed to the idea of taking the EC of Manzaneda forward.</p>
	Now	<p>Now, after 3 years, TMRL is at stage 7. The team has evolved, and all team members involved have a clearer idea of their tasks to move forward. The team involved in the technology rollout (NTT Data Solution) has little dependency on any one person for certain key skills or expertise. NTT Data has a clear growth plan on</p>

		how to expand the team and capacity to offer LES in the Spanish market.
<b>Funding Readiness Level</b> 	Project Start	At project start, the FRL was at stage 3. As mentioned in the assessment of the BRL, an initial business concept was described in D3.1 with the input from D2.1, where a preliminary scenario was described from a high-level perspective. It included an overview of the existing energy markets and potential revenue streams, meaning that the Demo Site had basic insights and knowledge of the different financing options.
	Now	Currently, the demo site has an FRL of 8. NTT Data sees a clear market fit for LES and has therefore expressed interest in offering its clients funding sources for the establishment of new LES.

**Table 2 – Manzaneda Assessment**

## Manzaneda RL Assessment



**Figure 5 – Manzaneda Readiness Level Assessment**


## 3.2. Kimmeria Student Building (Greece)





**Figure 6 – Kimmeria Student Building**

The EC of Kimmeria is located in a rural area, 1 km away from the city of Xanthi. It consists of 11 buildings, including 8 residential buildings for students and other facilities from the university.

Students' residences are provided free of charge, therefore characterising the buildings as social housing. The main driver of this community is to reduce the cost of energy at their facilities by improving the efficiency of RES, reducing CO<sub>2</sub> emissions while at the same time promoting social innovation in the student housing.


RL	Timeframe	Assessment
<b>Customer Readiness Level</b> 	Project Start	At the start of the project, the CRL was at stage 2. This was an initiative led mainly by DUTH. The MAMCA workshops held by VUB, with the support from DBL, enabled a steadier engagement with the stakeholders (municipality, students, and an SME from the region), although the participation of the most relevant stakeholders was not achieved mainly because they don't have the necessary infrastructure installed in order to produce, self-consume or exchange energy .
	Now	The CRL is now at stage 6. DUTH's technical team has presented a business case to

		<p>the management board of the University, and they have agreed to invest in it. DUTH has conducted several workshops among students but has also made other stakeholders in the region, such as the municipality and other industrial companies, aware of the project and interested in expanding the energy community. The existing network of contacts was strengthened; further contacts were made with additional clients, leading to collaboration with other universities across Greece to implement LES.</p>
<b>Technology Readiness Level</b> 	Project Start	<p>At the start of the project, Kimmeria's TRL was at stage 6. The smart contracts supporting the incentive programme were not tested in real conditions at that time, but only in simulations under operational conditions.</p>
	Now	<p>The technology readiness level is now at stage 8. The incentive programme and the e-coin reward system are in place, which means that the technology system is completed and qualified through testing and demonstrations. In addition,</p>

		the software has been fully integrated into the operational hardware, and the development of documentation has been completed.
<b>Business Readiness Level</b> 	Project Start	At the beginning of the project, BRL was at stage 2. As part of the work carried out under D3.1, an initial proposal for the business model to be developed by Kimmeria was presented, covering all the stakeholders involved, the needs, the approach to be followed and the potential benefits to be achieved.
	Now	The business maturity level is currently at stage 6. Kimmeria has a non-profit business model whose main objective is to maximise the production of green energy and ensure a reliable energy supply. The non-profit model fits public sector clients such as universities and academic institutions. However, due to the lack of revenue for the management company and the lack of incentives, it is less likely to be used. Subsidies are needed to accelerate the adoption of LES in organisations like DUTH.

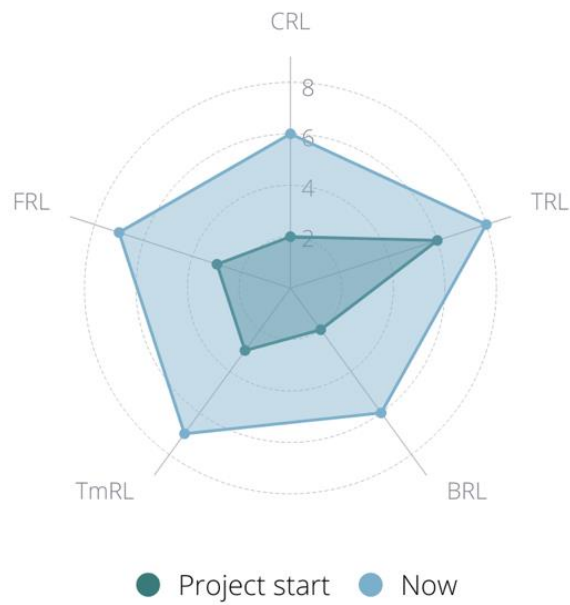
<b>Team Readiness Level</b> 	Project Start	At the start of the project, the TMRL was at stage 3 and a coordination team was appointed, as documented in D5.2, with Konstantinos Lymperopoulos (DUTH) as Site Manager, Alexandros Pechtelidis (DUTH) as Hardware Solutions Leader, and Adamantios Papatsounis as Software Solutions Leader. At this point, the most important competences were covered, but they also pointed out additional profiles to add to the team in order to develop it further.
	Now	The team's readiness level is currently at stage 7, which means that the team and culture are fully in place and proactively developing, thanks in large part to the leadership approach of the initial coordination team. The team members are mostly engineers. However, Kimmeria lacks sales and management expertise as well as an organisational structure, which limits the long-term operation of the energy community.
<b>Funding Readiness Level</b>	Project Start	At the start of the project, the FRL was at stage 3, with initial funding coming from the H2020 project RENAISSANCE.



		At this stage, an initial business concept hypothesis and verification plan were outlined as part of the work on D5.2, describing an implementation plan for the Kimmeria Demo site.
	Now	The funding readiness level is currently at stage 7, and the team has submitted a business case to the University Board. With the result of RENAISSANCE, they show that they can convince the university to be the only investor. Discussions are being considered for other EU funding sources as well as other synergies that could enable the next level of replicability of the Kimmeria Demo Site approach. In the context of a new funding source, the key areas of energy markets, traction/customer interest, and market potential with scalability will be considered.

**Table 3 – Kimmeria Assessment**

## Kimmeria RL Assessment




**Figure 7 – Kimmeria Readiness Level Assessment**


### 3.3. Eemnes (Netherlands)


Eemnes is a 3600-household town located in the centre of the Netherlands, 35 Km from Amsterdam. The EC of Eemnes is one of the initiatives of the municipality's strategies for reaching CO<sub>2</sub>-neutral energy consumption by 2030. This energy community is being rolled out by encouraging citizens to become active consumers and prosumers in their local energy market.




Figure 8 – Eemnes Demo Site

RL	Timeframe	Assessment
<b>Customer Readiness Level</b>  	Project Start	<p>At the beginning of the project, the CRL was at stage 3. The municipality of Eemnes had a clear idea of the technology solutions that could support their goal of becoming carbon neutral by 2030 and an idea of the actors they needed to achieve this goal. Therefore, during the MAMCA workshops (see D2.1), representatives of citizens (EnergieVanNu energy cooperative), the distribution network (DSO), and the digital platform provider were involved in the selection of the EC scenario. Consensus was also reached on the criteria to be taken into account when</p>

		considering the needs of the stakeholders.
	Now	The CRL is now at stage 7. Partnership agreements have been signed between the platform provider i.LECO, the end consumers and the energy cooperative EnergieVanu. Currently, more than 50 customers are actively participating in virtual energy trading, and it is expected that the project will attract <90 new customers. This has been achieved thanks to local energy events and direct mailings to the citizens of Eemnes. However, it was a challenge to explain to the users how the pricing is composed (the dynamic price and local pricing in the market)
<b>Technology Readiness Level</b>  	Project Start	At the beginning of the project, the TRL was at stage 4. i.LECO's energy platform fitted into the Dutch energy ecosystem and signed contracts with the local DSO. At this point, i.LECO had already validated its software and had a first overview of the system architecture. The next logical step was to

		deploy the platform in a fully functional environment.
	Now	The TRL is now at stage 8. Several milestones have been achieved since the project started. Users have access to a user dashboard where they can see not only their energy consumption but also virtual trading and virtual billing. An update event was held in September 2021, which strengthened the cooperation with the members of the energy community and collected feedback on UX with the user dashboards.
<b>Business Readiness Level</b> 	Project Start	At the start of the project, Eemnes' BRL was at stage 3. Given the exemption granted to the municipality and the scenario chosen during the MAMCA workshop (documented on D2.1), the first objective was to test a P2P virtual energy trade. A draft business model was developed as part of D3.1, which included a description of the new players, their business models, value proposition, revenue streams, and cost structure.

	Now	<p>The BRL is now at stage 6, but the goal of testing a P2P model was discarded as it is not feasible under the current Dutch energy system and regulations. The new focus is on peer-to-pool trading, which will ensure a successful continuation of the Demo. Based on the data collected so far, a detailed business model has been developed, including a pricing and revenue model. However, administrative costs are still higher than profits. To have a profitable business model, 100 users are not enough; 500 users are more likely for scaling. In addition, two external parties should be involved to work with the energy community: one to provide data aggregation and one energy provider to provide access to the energy market.</p>
<b>Team Readiness Level</b> 	Project Start	<p>At the start of the Project, TMRL was at stage 4. The Eemnes EC is facilitated by member-driven energy cooperation, thus the Eemnes Demo site members are responsible for the management of the LEC. A</p>

		<p>coordination team was appointed as recorded in D5.2, with Rene Pie as Site Manager, Sven Lankreijer as Hardware Solutions Leader, and Stefan Lodeweyckx as Software Solutions Leader. The key competences and commitment from team members were in place to move forward.</p>
	Now	<p>At the moment, the TMRL is at stage 5, as evidenced by Eemnes' efforts to set up a special group of volunteers to take care of project management and coordination. This group consists of complementary knowledge profiles that are also representative of the stakeholders of the energy community.</p> <p>However, Eemnes' management team still lacks expertise in running an energy community and specific knowledge of energy markets, regulation, and business operations. Tensions between the volunteers and the technical team have become more evident lately.</p>


<b>Funding Readiness Level</b> 	Project Start	<p>At the start of the project, FRL was at stage 3. The first funding was obtained through the H2020 project RENAISSANCE, and it facilitated the launch of the project.</p> <p>By then, an initial hypothesis for the business concept and an initial verification plan were outlined.</p>
	Now	<p>The FRL is now at stage 4. As the Demo has matured, it has enabled a more solid vision of the business concept, and the funding opportunities are increasing.</p>

Table 4 – Eemnes Assessment

## Eemnes RL Assessment

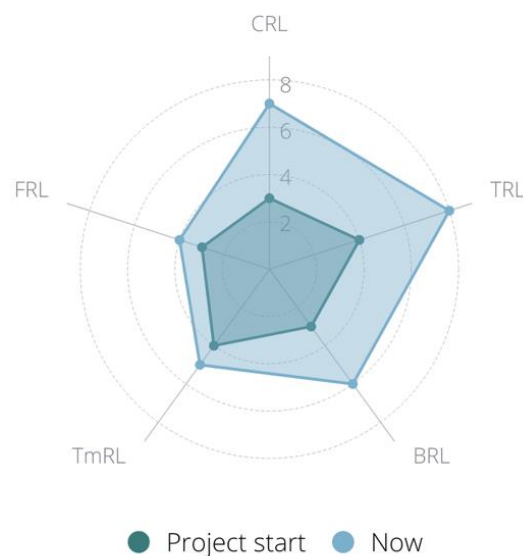


Figure 9 – Eemnes Readiness Level Assessment



### 3.4. Brussels Health Campus (Belgium)


The Brussels Health Campus consists of the University Hospital and a part of the Vrije Universiteit Brussel (VUB). It is an advanced energy island that




**Figure 10 – Brussels Health Campus**



can work in island mode for 5 consecutive days. The microgrid serves the hospital complex, 250 student dwellings, the faculty of health sciences, a primary school, and a fitness centre. The main objective of this Demo was to


develop the controllers for the Building Management System. The measurements of the 1000 smart meters are stored at VUB and will be used as an open-source simulation platform for the testing of the software tools and algorithms developed.

RL	Timeframe	
<b>Customer Readiness Level</b>  	Project Start	At the start of the project, the CRL was at stage 2. This is an initiative led mainly by VUB, with a two-fold objective: the technical optimisation of the microgrid but also provide a reliable supply of the energy service. With that purpose, a specific social campaign EnerJettic <sup>3</sup> was outlined to strengthen the engagement with the students.
	Now	At the moment, CRL is at level 5. The technical team has presented a business case to

<sup>3</sup> EnerJettic – Platform design to accomplish a better engagement with the students from the VUB campus – <https://www.renaissance-h2020.eu/enerjettic/>

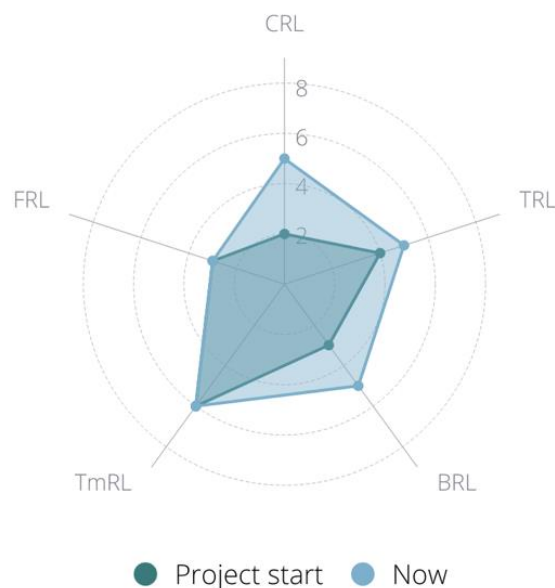
		the management board of the University Hospital, and they have agreed to invest in it. The main objective was to provide a reliable energy service, and that has been addressed with the deployment of the technology.
<b>Technology Readiness Level</b>  	Project Start	At project start, the TRL was at stage 4. The demonstration site has its own energy management and control system. The main technology development here is to show an improvement in the interaction between the BMS and the smart breakers that will allow us to control the load of the hospital in an intermediate layer, thus optimising the overall control and performance of any type of microgrid. The next logical step for the technology was to be tested in a fully operational environment.
	Now	At the moment, TRL is at stage 5. It has been designed as a digital twin of the hospital that will allow the simulation of the integration of the hardware and software components installed. The digital twin is now fully

		operational. The next steps foreseen will allow the validation of the integration.
<b>Business Readiness Level</b> 	Project Start	<p>The Brussels Energy Community has no ambition to make a profit from the Energy Community business model. At the moment, BRL is at stage 5. As mentioned before, the main objective is to provide a reliable and stable energy service. ABB and SDM are developing a customer offer based on LES but without community elements. The research team of VUB and MOBI actively supports business development innovation.</p>
<b>Team Readiness Level</b> 	Project Start	<p>At the start of the project, TMRL was at level 6. A coordination team was appointed as documented in D5.2. Jimmy Van Moer was selected as General Site Manager and Hardware &amp; Solution Manager. Since the project started, the team has had multidisciplinary profiles that would allow the Demo to be implemented successfully and that are working proactively to boost the project.</p>

	Now	TMRL is at stage 6, and so far, there has been active collaboration between the MOBI research group and the hospital business unit. They also count on the support of ABB and SDM for further business development.
<b>Funding Readiness Level</b> 	Project Start	N/A
	Now	N/A

**Table 5 – Brussels Assessment**

## Brussels RL Assessment



**Figure 11 – Brussels Readiness Level Assessment**

## 4. Demo Site recommendations

In the following section, it is presented a summary of recommendations that could be addressed by the Demo sites in order to reach a higher score in the different core areas.

### Manzaneda

- Efforts should focus on strengthening alliances with strategic partners to drive business development activities. Especially now that the Spanish government has launched financing programmes to accelerate the introduction of energy communities.
- End-users should be more actively included in providing feedback on product qualification. This will ensure that the developed product meets the needs of the users.

### Kimmeria

- To expand this energy community and include other stakeholders, a more detailed business model and revenue model without cryptocurrencies must be developed. It will allow a real estimation of the total addressable market and increasing customers reliability.
- Strategic partnerships should be considered to achieve better service coverage for potential clients. This will also enable the development of a more comprehensive roadmap.

### Eemnes

- As new users continue to join the energy community, the business model should be continuously refined to explore further revenue options and ensure straightforward scalability.
- Now that the partnership agreements between the platform provider and the energy cooperative have been signed, a strategic plan should be developed on how to reach new end users.

### Brussels

- Strategical partnerships should be considered to include the testing of new energy technologies, thus creating new revenues and a more attractive business model for VUB.
- Likewise, the scaling up of the energy community should be considered, for instance, including other buildings from the campus or setting up partnerships with stakeholders located in the same area.

## 5. Conclusions

The following section contains, in the first part, a summary of the overall results of the assessment, conclusions from the individual assessments of each RENAISSANCE Demo, and finally proposes a set of actions and requirements that would enable greater growth of EC.

### 5.1. Overarching conclusions

The RENAISSANCE Demos are very different in nature. The Manzaneda site is set up as an ESCO, operated by a specialised service company. The Eemnes community comes closest to a not-for-profit but market-oriented energy community. The Brussels and Kimmeria sites are essentially innovation projects led by university teams, although the Brussels site has partnerships with industry partners such as SDM and ABB. These framework conditions determine the attention and opportunities for future exploitation.

As represented in Figure 13, during the project, the overall business readiness levels have increased from 3–4, bridging the research to development phases, to 6–7, the border from development to deployment. This reflects the progress made during the project so far, including the necessary improvements in understanding of the regulations, business cases, supplier relations, and, of course, performance testing from technical and financial perspectives.

#### Viability of business models

Various combinations of local energy systems and business models seem currently feasible.

**Commercial LES**, based on a positive business model, seems beneficial in industrial settings that combine large scale among one or a few owners with energy cost savings. The benefits come primarily from energy generation and reduced energy purchases. Examples are remote sites with low energy

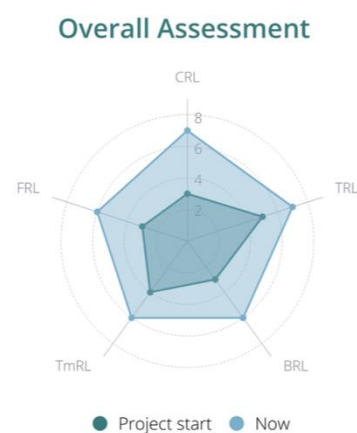


Figure 12 –Overall Readiness Level Assessment

intensity, where connection costs are high, or energy-intensive industrial zones, where balancing is valuable. In this case, professional LES management services are profitable. The minimum size seems to be 1 MW / €1 million. However, the ownership and management models are not yet standard.

**Commercially operated but not for profit LES** appear to be profitable in the public sector where an ambition to reduce environmental impact is combined with scale. This provides a combination of revenue from project design and management, but more importantly, the business case is less important than achieving policy goals. If the project is operated by a commercial entity, replication and scaling are likely. If the project is initiated by non-profits or volunteers (Kimmeria), access to very similar decision makers is required, otherwise replication is unlikely. Examples include hospital sites that require guaranteed availability of power, academic sites with a beyond state-of-the-art ambition regarding energy or grid performance.

**Local energy communities focused on households** are a special case. The operating margin on available loads is low; the minimum size seems to be 100–500 participants. Again, 1MW or €1M investment seems to be a threshold. However, the development of such energy communities is very labour-intensive and takes time. The pre-existence of a community seems to be a prerequisite. This is the case, for example, in Poland, with homeowners associations managing multi-family buildings. In cities or villages, a significant amount of work is otherwise required to formally organise a LES. The cost of managing a community is high and must be subsidised to be successful. This could be a policy objective, for example, to maximise local green energy production. In the case of a mixed model of volunteer LES supported by professional managers or external solution providers, friction between individuals has been reported.

## 5.2. Conclusions per Demo Site

### Manzaneda

- In Spain, a grant programme has been set up to promote energy communities. However, at the moment, the concept of energy communities is very limited. Today, it is only allowed to share energy within a 500 m radius of LV. NTT Data could sell the service, but today's regulations restrict this.
- Due to the constraints of regulation, industrial sites and the public sector are the most attractive because they are under a single ownership model. Remote residential areas are a priority for the government and receive subsidies. For long-term commercial viability, sites should have a generation capacity of more than 1 MW and a management income of €100.000/year.

### Kimmeria

- The Kimmeria team would like to expand its model to other universities and is in discussion with 4 other universities across Greece. Kimmeria has the political and financial means. However, the team lacks an organisational model and financial and sales expertise that ensures a proper replication strategy.

### Eemnes

- Eemnes EC has adapted the business model based on outsourcing data aggregators, but it is not profitable. At least 100 to 500 people are needed to make a profit.
- There is always real tension between volunteers and technical experts, who think they make a lot of money.

### Brussels

- ABB and the SDM team would like to extend its model to other hospitals that have the political and financial means to do so. Showcasing that is



not the financial results that speaks for LES, but the need for a reliable and stable energy supply.

## 6. References

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