

## **GRASPINNO**

Transnational model, strategies and decision support for innovative clusters and business networks towards green growth, focusing on green e-procurement in EE/RES for energy refurbishment of public buildings.

# **Deliverable: 4.4.1 Report on GRASPINNO Living Lab**

**Control or Manage Electricity Consumption Living  
Lab**

**Terrassa, Spain**

*Prepared by*

*CCIT*

**Date: (31/07/2018)**

## Table of Contents

1	EXECUTIVE SUMMARY .....	3
2	INTRODUCTION .....	5
3	PART I: INTRODUCTION TO LIVING LABS .....	6
3.1	GENERAL DESCRIPTION AND DEFINITIONS .....	6
3.2	GRASPINNO LIVING LABS METHODOLOGY .....	7
4	PART II: SETTING UP CONTROL OR MANAGE ELECTRICITY LIVING LAB IN SPAIN .....	9
4.1	Connect .....	9
4.1.1	The leader of Control or Manage Electricity Consumption Living lab in Spain .....	9
4.1.2	Potential LL stakeholders .....	10
4.1.3	The scope of Control or Manage Electricity Consumption Living lab .....	12
4.1.4	Control or Manage Electricity Consumption Living Lab plan .....	14
4.1.5	Declaration of participation .....	18
4.1.6	Key Performance Indicators .....	19
4.2	Educate and train .....	25
4.2.1	Educate stakeholders .....	25
4.2.2	Train stakeholders .....	25
4.3	Implement .....	29
4.3.1	Process of implementing the Monitoring System .....	29
4.3.2	Measurement of Key performance indicators .....	30
4.4	Improve .....	34
4.4.1	Generation of potential improvements of LL solutions .....	34
4.4.2	Implementation of improvements .....	35
4.5	Evaluate .....	38
4.5.1	Evaluation of proposed LL solutions for energy management .....	38
4.5.2	LL evaluation .....	40
4.5.3	Guidelines and recommendations .....	44
4.6	Disseminate .....	45
5	CONCLUSIONS .....	46
6	APPENDIX – Stakeholders Declaration of Participation (5 DoP) .....	48

## List of Figures

Figure 1: A visual representation of the Living Lab process (Vicini, Bellini, Sanna, SMART 2012)	6
Figure 2: GRASPINNO Living Lab approach .....	8
Figure 3: Potential stakeholders of Control and Manage Electricity Consumption Living lab .....	11
Figure 4: Average electricity price for household in Europe .....	12
Figure 5: Living lab training session at Chamber of Terrassa Headquarter on 22/02/2018 .....	27
Figure 6 Attendee satisfaction with training session, 22.2.2018, Chamber of Terrassa Headquarter .....	28
Figure 7 Stakeholders identified and contacted .....	30
Figure 8 Knowledge on energy management and electricity consumption before participating in LL .....	39
Figure 9 Knowledge on energy management and electricity consumption after participating in .....	40
Figure 10 Stakeholders level of satisfaction .....	40
Figure 11 Benefits gained by participating in LL .....	41
Figure 12 Knowledge before participating in LL .....	42
Figure 13 Knowledge after participating in LL .....	43

## List of Tables

Table 1: List of LL contact person .....	10
Table 2: List of potential LL stakeholders in Spain .....	10
Table 3: Control or Manage Electricity Consumption Living Lab Stakeholders .....	15
Table 4: Control or Manage Electricity Consumption time plan .....	17
Table 5: Control or Manage Electricity Consumption Living Lab Key Performance Indicators (KPI) .....	20
Table 6 Stakeholders benefit of the LL participation .....	31
Table 7 General knowledge improved by participating in LL .....	32
Table 8 Knowledge gained by participating in LL .....	33
Table 9 Living Lab Stakeholders and meetings done .....	34
Table 10 Improvements Implementation prioritization .....	36

## 1 EXECUTIVE SUMMARY

GRASPINNO project aims to support and strengthen innovative clusters and network for increasing their capacity and competence in green growth and eco-innovation, especially in innovative energy refurbishment and green public procurement. It addresses the challenge of developing effective energy management solutions by improving the capacity of both public and private sector on eco-innovation solutions by adopting Living Lab methodology. Indeed, the Living Lab (LL) presents a specific trend in open innovation approaches that enables co-creation of novel user-oriented solutions. Its role is likewise deployed within GRASPINNO project to change the stance of actors and civil society toward green sustainable growth. The GRASPINNO Living Labs integrate R&I processes and create a user-oriented open innovation ecosystem that will strengthen transnational cooperation and networking among existing clusters and networks of green energy market eco-innovation. The main goal of GRASPINNO LLs is to transfer the knowledge obtained within the project's pilots actions and to exchange experiences or concerns for green growth, especially including end-users, and so setting the base for further actions.

The price of electricity has been identified as being one of the most important reason why the enterprises, publics and privates do improvement on their facilities. The electricity cost, continuously increasing, have a great impact on organizations budgets. The Spain is the 5<sup>th</sup> European country with the most expensive price of electricity. Considering another factors as the legal regulation ("sun tax" - Royal Legislative Decree 900/2015) affecting directly renewable energy installation stopping this advances, the organizations (all) have to make decisions on their buildings to improve their energy management. This topics, electricity cost and "sun tax" are discussed extensively on energy forums, congress, meetings, energy agencies, etc...

**Therefore, Control or Manage Electricity Consumption Living Lab focus on improving energy management through the knowledge of own consumption, proposing a solution to improve business activities.** Several tools, developed under GRASPINNO project are provided to public sector to improve their buildings management on energy field, from procurement process, facilitating the information access to market solutions such as monitoring systems, green criteria and good practices. Control or Manage Electricity Consumption Living lab presents experiences from private sector to public sector focused on how market solution can facilitate the

electricity consumption control and optimization promoting the “management” concept rather than “control” concept. The Control and Manage Electricity Consumption Living Lab:

- Gives information about market solutions to manage electricity consumption
- Collects feedback about solutions to manage electricity consumption
- Shares successful cases using this solutions to manage electricity consumption on different kind of enterprises
- Collects information about problems for access to this kind of solutions to manage electricity consumption
- With the “sun tax” what we can do if we want to install renewable energy source
- Bring sectors public and private closer sharing information and experiences
- Provides GRASPINNO tools, eGPP platform, database and LCC toll to assist LL stakeholders to manage electricity consumption.

LL stakeholders gain knowledge on energy management and collaboration between private and public sector. The main benefits for Public Administration is the knowledge and the good practices from private sector. At the same time, SME, private sector can create new links with public authorities to share experiences and to explain which are their necessities. Local government can gain information about how they can support the improvement on buildings and on process focused on be more efficient on energy management.

## 2 INTRODUCTION

The Deliverable 4.4.1 Report on GRASPINNO Living lab (Control or Manage Electricity Consumption Living Lab, Spain) consist on two main parts, part I and II. The first part of document presents a short introduction to concept of Living labs and the GRASPINNO methodology to be used in setting up the Living lab, while the second part presents an overview of actual setting up a eGPP Living Lab in Spain.

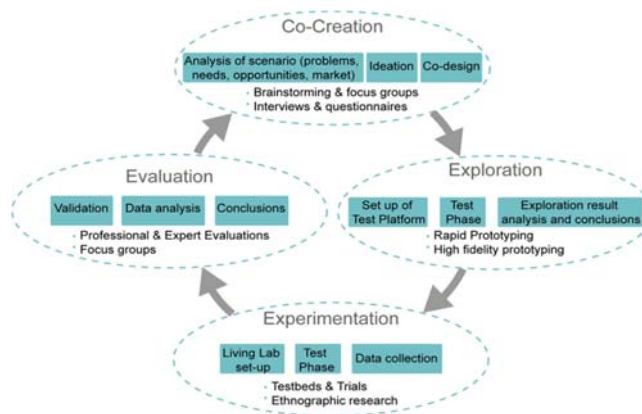
In the part I, the general understanding of Living Lab concept is established by providing general description and definition of Living Lab. Following general understanding on LL, the detailed approach on setting up GRASPINNO Living Lab is presented. The set-up of GRASPINNO Living Lab includes six phases each following several steps, whereas the sequence of this steps within the phases can differ based on the demand or environment of the Living Lab. The deliverable concludes with short but valuable experience of setting up the Living Lab and some valuable conclusion to encourage other interested stakeholders to use and adopt this innovative approach in the field of green energy processes.

In the part II, the setup of Control or Manage Electricity Consumption Living Lab in Spain following the GRASPINNO Living lab methodology is presented. This report will be a standalone report and will be feed together with other GRASPINNO Living Labs into a report D4.4.2 Findings from Living labs, whereas the main conclusions and recommendations deriving from all living labs will provide valuable insights for suitability of living labs.

### 3 PART I: INTRODUCTION TO LIVING LABS

#### 3.1 GENERAL DESCRIPTION AND DEFINITIONS

Living Labs present a specific trend in open innovation approaches. In Living Lab approach, external ideas are resources in innovation process. The aim of the Living Lab approach is to support innovation process with a usable product or service as a result of the innovation process. Different stakeholders are involved in the Living Lab, from researchers, developers and end users with the goal to co-create innovative products and services in a real-world environment. The Living Lab concept is based on a systematic user co-creation and integrating research and innovation processes (bringing together users, R&D institutions, producers, service providers and all relevant stakeholders in focused and integrated development process). These are integrated through the co-creation, exploration, experimentation and evaluation of innovative ideas, scenarios, concepts and related technological artefacts in real life use cases. Such use cases involve user communities, not only as observed subjects but also as a source of creation. This approach allows all involved stakeholders to concurrently consider both, the global performance of a product or service and its potential adoption by users. This consideration may be made at the earlier stage of research and development and through all elements of the product life-cycle, from design up to recycling.



*Figure 1: A visual representation of the Living Lab process (Vicini, Bellini, Sanna, SMART 2012)*

Living Labs usually exploit opportunities of modern ICT and can be seen as “a large, broadly conceptualized laboratory”. Cooperation of all stakeholders (from users, to companies, ICT providers, developers, government organizations, universities and other involved institutions) is sought.

## 3.2 GRASPINNO LIVING LABS METHODOLOGY

The GRASPINNO Living Lab methodology is applied in each participating country and consists of 6 phases i.e. Connect, Educate and train, Implement, Improve, Evaluate and Disseminate, as shown from figure 2.

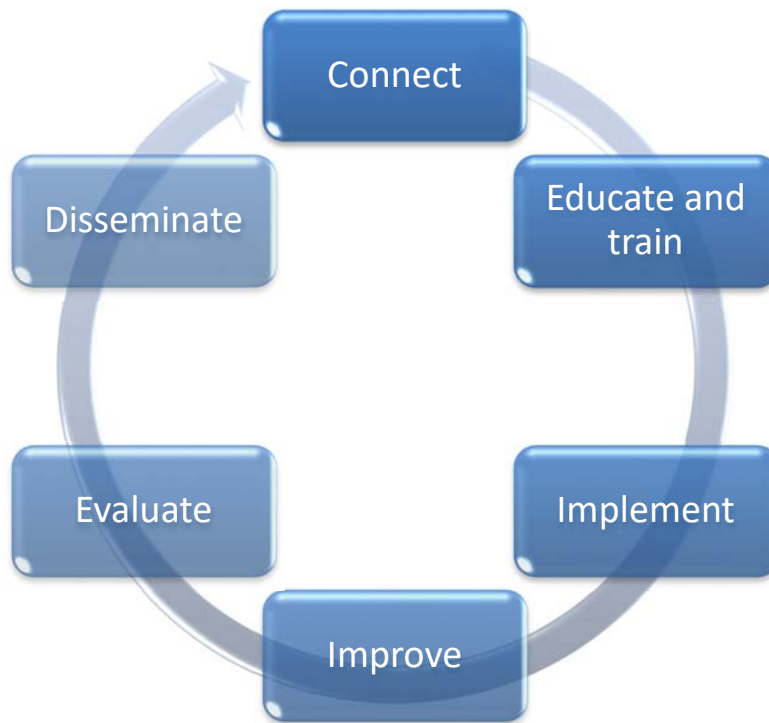
Through Living Lab approach stakeholders (public sector, SMEs as well as other interested participants) are involved as active contributors as well as a source of creation and not only as observed subjects. Namely, innovations (including new approaches and tools) generally face resistance from the users especially if users are not sure about benefits to be gained - this might be especially true for the public sector. Experiential learning is one of the most powerful teaching and learning tools to overcome this reluctance and to facilitate behavioural change. Experiential learning involves: (i) a “reflective learning phase”; (ii) a learning phase coming from the experimentation; and (iii) a learning phase coming from feedback. These phases are well aligned with the phase Educate and train, Implement and Improve of the iterative GRASPINNO Living Lab approach.

Two main types of stakeholders in particular are targeted – namely public sector and product providers (especially SMEs). Beside mentioned, also mentoring/financing experts need to be involved to share their expertise in funding/mentoring opportunities, to invent/produce/use eco-innovative solutions in eGPP/building refurbishment. Additionally, the LL need to involve policy stakeholders with power to design public policies for eco-innovation, action plans for energy refurbishment of public buildings, framework of models, strategies, methods, database and tools to support the green energy MED policies.

In order to implement the Living Lab approach in GRASPINNO procedures were informalized thus the activities of LL are implemented without formalisation in terms of legal commitments, formalisation of procedures and management. The informal establishment of Living Lab, not requiring establishment of new legal entity but only formal commitment to participation (Declaration of Participation or similar) is intended to ease the involvement of stakeholders. Nevertheless, the work in LL is structured and led by project partners following joint methodological approach. One LL per partner country is mobilized bringing together organisations actively involved in GRASPINNO implementation as well as other organisations interested to observe



but not to actively participate. The activities follow the phases of Living Lab as shown below. Some activities are open to all participants while other activities (individual consultations and individual support with implementation) are given only to organisations actively participating in GRASPINNO activities.



*Figure 2: GRASPINNO Living Lab approach*

The national Living Labs work together following the same methodology and exchanging experiences. At the same time the Living Lab implementation methodology is flexible enough to allow for adaptations to national/regional specifics.

## 4 PART II: SETTING UP CONTROL OR MANAGE ELECTRICITY LIVING LAB IN SPAIN

### 4.1 Connect

#### 4.1.1 The leader of Control or Manage Electricity Consumption Living lab in Spain

The leader of Control or Manage Electricity Consumption Living lab is the Chamber of Commerce, Industry and Services of Terrassa. The Chamber was established on the 29<sup>th</sup> of June 1886 in Terrassa (28 Km from Barcelona) and it was established as first Chamber of Commerce in Catalonia and as the third in Spain. Its current demarcation area comprises 12 municipalities, representing an area of 400.000 habitants and of 30.000 companies (98 % of them SMEs). This industrial area represents 80 % of total Catalan exports. The CCIT professional team are 26 qualified and experienced professionals who are specialised in different work areas. They are responsible for conducting the Chamber's activities. This dynamic team closely co-operates with our own network of more than 80 experienced freelance professionals, among trainers and consultants. CCIT have also developed 4 expertise areas, including own successful methodology programmes on:

- ✓ SMEs Internationalization
- ✓ SMEs development
- ✓ Managerial training
- ✓ Company creation consultancy and training

The initiator of Living lab in Terrassa is CCIT because one of the roles of the chamber of commerce is create links between enterprises, public administration, promoting networking, interchange of information building business. Under this vision, the person from CCIT assigned to manage the LL is same person who do the GRASPINNO project coordination who manage the Quality & Environmental department having experience involving enterprises on this field, giving support to consultancy department as well. On other hand, is responsible of Logistic department managing building maintenance and coordinating services related to Headquarter building. The Chamber of Commerce and Industry of Terrassa has proven experience in organizing

a lot of kind of events, meetings, B2B meetings, conferences and all kind of business events to promote the networking and the interchange of knowledge involving a high number of participants from public and private sector.

*Table 1: List of LL contact person*

Organization	Contact person	e-mail	Telephone
Chamber of Commerce and Industry of Terrassa (CCIT)	Marianella Pereira	mpereira@cambraterrassa.org	+34937339833 +34682353073

#### 4.1.2 Potential LL stakeholders

The selection criteria of potential LL stakeholders were based on identifying those stakeholders that could benefit from knowledge on energy management and from collaboration between private and public sector. CCIT identified 12 potential stakeholders to involve them in LL, 4 from public administration, 3 from Organization and Association and 5 SMEs. All potential stakeholders confirmed their interest to interchange information and experiences under an innovative forum such as Living Lab. The following stakeholders (presented in table 2 and Figure 3) were contacted to participate in LL and to attend open events.

*Table 2: List of potential LL stakeholders in Spain*

Nr .	Stakeholder	Profile	Living Lab active
1	Chamber of Commerce, Industry and Services of Terrassa	Organisation with public profile	Yes
2	UPC: Polytechnic University of Catalonia SEER	Education sector Public	Yes
3	Terrassa City Council	Local Authority Public	Yes
4	AECA Group	Private Engineering solutions in renewable energy, energy efficiency and water treatment under the turnkey concept	Yes
5	LEITAT	Organisation	Yes

		Technological Center Private non-profit association	
6	CREVIN S.A.	Private Industry textil	Yes
7	EDUCESA	Education sector Public	No
8	Skeyndor S.A.	Private Health and Cosmetic Industry	No
9	Hilados Egarfil S.A.	Private Chemical Sector	No
10	GREINTEC	Private non-profit association Business association for building installations	No
11	OPTIMALCOST SCP	Private Consultancy on energy save	No
12	Municipality of Castellar del Vallès	Local Authority Private	No

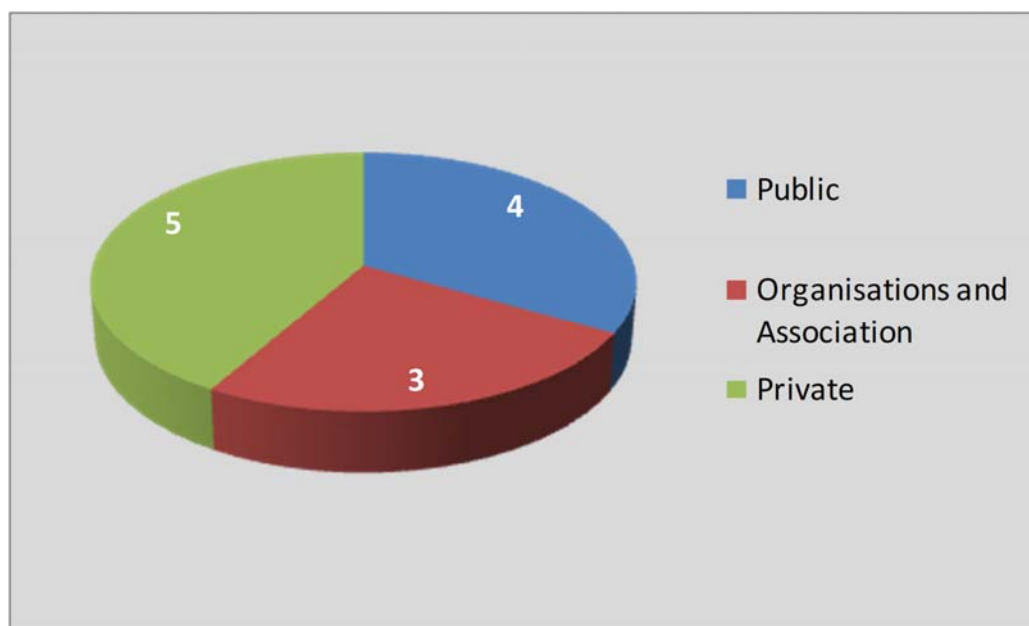


Figure 3: Potential stakeholders of Control and Manage Electricity Consumption Living lab

#### 4.1.3 The scope of Control or Manage Electricity Consumption Living lab

**Control and Manage Electricity Consumption Living Lab focus on improving energy management of stakeholders through the knowledge of own consumption, proposing different solutions to improve business activities. It presents experiences from private sector to public sector focused on how market solution can facilitate the electricity consumption control and optimization promoting the “management” concept rather than “control” concept.**

Several tools, developed under GRASPINNO project, will be provided to public sector to improve their buildings management on energy field, from procurement process, facilitating the information access to market solutions, green criteria and good practices. Buildings are one of the most important part to develop the organization activities and the energy consumption cost have a high impact on budget, especially the electricity cost. Electricity cost, continuously increasing, have a great impact on organizations budgets and Spain is the 5<sup>th</sup> European country with the most expensive price of electricity (as seen from figure below **Error! Reference source not found.**).

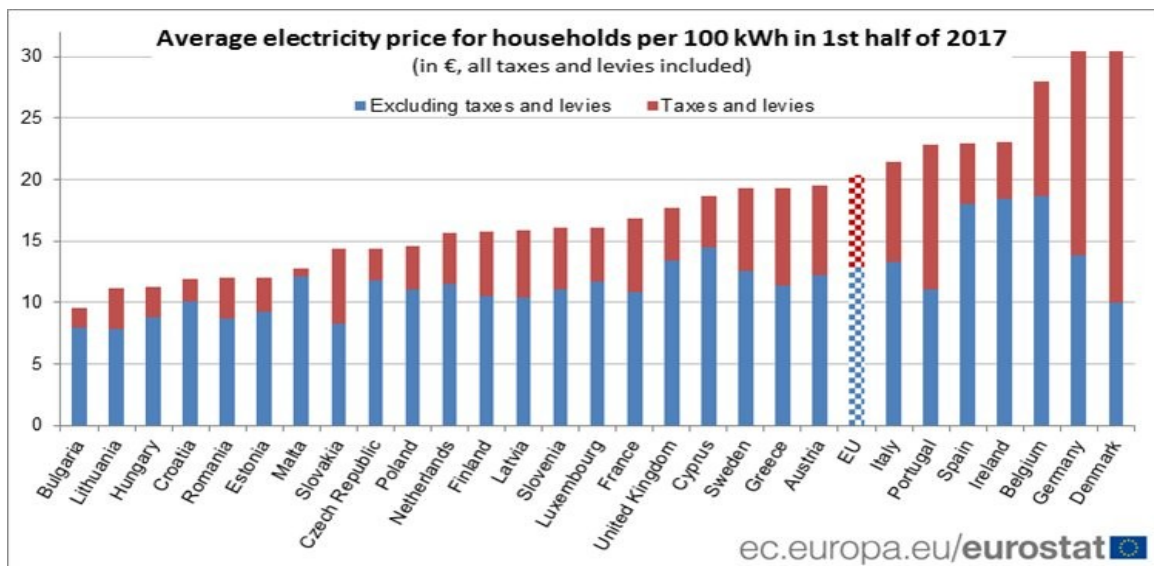


Figure 4: Average electricity price for household in Europe

Various meeting with each potential stakeholder presenting the GRASPINNO project overall information was organized in order to give context of the LL. Based on this,

CCIT and potential stakeholders identified as a relevant LL topic cost of electricity. The price of electricity is determined by two components. On the one hand, the regulated component is determined by the Government ("regulated market"), which sets the electric tolls, which cover the costs corresponding to transport, distribution, subsidies for renewable energies and amortization of the tariff deficit, in addition to other costs such as the social voucher. Under this modality the consumer don't know when the price change.

On the other hand, the liberalized component covers the cost of energy, and is set in the so-called CESUR auctions: quarterly auctions involving more than 20 national and international companies engaged in the generation and trading of electricity. On free market, in 2017 Spain had 646 enterprises to choose by particulars and enterprises by contract, every year is recommended to revise the conditions.

In addition, since 2015, came into effect the Spanish legal regulation to self-consumption: Royal Legislative Decree 900/2015 creating a tax on installation for self-consumption stopping renewable energy advances. This regulation in combination with continuously increase of electricity cost (marked by Government) is one of the most relevant topics discussed on different energy forums. It is worth clarifying that this issue has a very high political connotation, for this reason now, we have to focus on improvements from market solution leaving out political discussion.

Under this context the enterprises, public administrations and individuals can choose "best offer" contracting one of these energy marketer. One of the problems is that the benefit on price, during the first year of contract obligating, revise continually. This market is extremely competitive and every marketer is willing to "improve" the offer to gain more costumers. A good contract is not the only solution to the energy consumption management; this part is just economical, not always sustainable. Therefore, other energy management solutions and sharing of good practice is necessary to properly address problems of electricity prices and electricity consumption.

#### 4.1.4 Control or Manage Electricity Consumption Living Lab plan

##### 4.1.4.1 Objectives

The objective of the Control or Manage Electricity Consumption Living Lab is to improve energy management in private and public sector, and especially to:

- establish cooperation between public sector and private sector representatives to interchange knowledge and experiences to improve energy management with use of GRASPINNO Living Lab methodology and tools
- promote energy management solutions
- promote market solutions to manage electricity consumption
- to increase knowledge on own electricity consumption
- to increase knowledge on understanding of pricing components (invoice structure)
- to increase knowledge on impact of electricity consumption on energy management

##### 4.1.4.2 LL activities

Globally, the activities of Control or Manage Electricity Consumption Living Lab are:

- present a Living lab methodology as a solution for improve knowledge and practices on energy management.
- understanding the current state of electricity consumption in Spain presents technological solutions through out seminars, training and education courses
- collect good practices on energy management using the solutions proposed and presenting successful real cases to all participants
- promote the GRASPINNO unified platform, to support public procurement process on transversal way.
- evaluation of solution presented to obtain feedback and improvement recommendations on energy management. Elaborate a conclusion document and guides including:
  - How the context on electricity consumption affects energy management?
  - The benefits of solution for energy management

- Market solutions to manage electricity consumption
- Successful cases using this solutions on different kind of enterprises
- Collect information about problems of public and private sector and provide solutions
- Approches to use to install renewable energy source
- GRASPINNO tools, eGPP platform, database and LCC tool

#### 4.1.4.3 Stakeholders role and responsibilities

CCIT as the initiator and moderator of Living Lab is organizing meetings, educate and train sessions. The role of the rest of stakeholders is to collaborate, interchange knowledge and experiences. The stakeholders of LL are presented in the following table.

*Table 3: Control or Manage Electricity Consumption Living Lab Stakeholders*

Nr.	Stakeholder	Government/SMEs/Organisation	Role/Capacity
1	Chamber of Commerce, Industry and Services of Terrassa	Organisation	Leader of the Terrassa LL
2	UPC: Polytechnic University of Catalonia	Organisation	Competent Authority for GPP
3	Terrassa City Council Environment Services Department and <i>Parc Audiovisual</i>	Government	Authority for GPP development
4	AECA Group	SMEs	Development and promotion of innovative products and solutions.
5	LEITAT	Organisation Private non-profit association	Technological Institute
6	CREVIN S.A.	SME	Industrial sector



#### *4.1.4.4 Cost issues*

The costs for LL activities, such as cost of premises for meetings, printing will be provided within the anticipated GRASPINNO project budget. The tools for green public procurement will be available free of charge for interested stakeholders. The maintenance of the platform and tools will be ensured through the project funding and after project end throughout appropriate sponsorship scheme and/or minimum necessary registration fees, which will support and stimulate potential future operations of the LL.

#### *4.1.4.5 Profit issues*

No profits are expected from the activities of the Control or Manage Electricity Consumption Living Lab

#### *4.1.4.6 Risk issues*

The principal risk identified is how to successfully engage stakeholders, which have shown interest to participate in LL, but due to their day to day (business) activities, it is very difficult to fix dates with them for meetings. Also additionally, it is very difficult to pursue stakeholder to sign any kind of written documents, so signing the Declaration of Participation is presenting great challenges in establishing LL. Although some of stakeholders are less interested in signing any kind of written conquests, they are willing to participate at meeting and several of them participated at educate and train sessions, with what they shown their willingness to participate in LL. Also additionally the risk issue is to find appropriate person to sign the DoP, as from our experience it was hard to get the signature of "Legal Representative" because in some cases the is not directly linked to persons who will participate.

To motivate stakeholder to sign the declaration of Participation formalising their participation, CCIT organise different kinds of activities as conferences, workshops involving communication activities as press release. With this kind of actions, the Living Lab increase the interest between stakeholders and general public.

#### 4.1.4.7 Time plan

Table 4: Control or Manage Electricity Consumption time plan

	Connect	Educate and train	Implement	Improve	Evaluate	Disseminate
November 2017						
December 2017						
January 2018						
February 2018						
March 2018						
April 2018						
May 2018						
June 2018						
July 2018						
August 2018						
September 2018						
October 2018						

#### 4.1.5 Declaration of participation

The declaration of participation (DoP) in Control or Manage Electricity Consumption Living Lab was signed by 5 stakeholders (attached in **Appendix**). Stakeholders who signed the declaration of participation are described below:

- **Chamber of Commerce, Industry and Services of Terrassa (CCIT)** comprises of 12 municipalities and represents 30.000 companies (98 % of them SMEs). It covers expertise areas such as SMEs Internationalization, SMEs development, Managerial training and. Company creation consultancy and training.
- **AECA Group:** as the parent company, was founded in 1993 as a Mid Voltage electrical engineering, 20 years later AECA has become an international group. Its offer specialized engineering solutions in renewable energy, energy efficiency and water treatment under the turnkey concept.
- **CREVIN S.A.:** Founded in 1976 in Terrassa (Barcelona-Spain), develops and manufactures high quality tissue.
- **LEITAT Technological Center** founded in 1906, aims at Managing Technologies to create and transfer Social, Environmental, Economic and Industrial sustainable value for companies and entities through research and technology processes.
- **Terrassa Municipality: *Parc Audiovisual*:** offers more than 50.000 m2 with the all facilities: 4 sound stages of 1200, 600, 1260 and 411 m2, and access to production accommodation: make-up and hair rooms, dressing rooms, warehouses, production supplies, meeting rooms, offices...All facilities are equipped and ready for any type of production, filming, TV or commercial in a comfortable working space.. The studios are located at only 25 minutes from Barcelona with easy access from highway or public transport.

In addition, **UPC: Polytechnic University of Catalonia** decided to participate in LL but didn't sign the DoP. The UPC: Polytechnic University of Catalonia participates actively in LL, gives a lot of information about buildings, about the solution and proposing actions for the future. UPC: Politechnical University of Catalonia: Department: SEER: *research center on Renewable Electrical Energy Systems* that promotes Solar Campus with ESEIAAT students. Under Solar Campus project, UPC

collaborates with CCIT on Pilots development with 2 photovoltaics plants to be installed on 2 buildings, TR11 (Robotic Faculty and Library). Solar Campus is an initiative created by students of all the fields of engineering of the UPC in Terrassa that wants to convert the campus in a Smart Energy Campus, creating projects of renewable energies that help to improve the image and the efficiency of the university.

#### 4.1.6 Key Performance Indicators

In order to measure overall performance and effectiveness of LL and proposed solutions/opportunities assorted Key Performance indicators (KPIs) have been specified (presented in table below). These KPIs have been measured on the level of Living Lab coordinator while different set of indicators have been used on level of LL participants.

Table 5: Control or Manage Electricity Consumption Living Lab Key Performance Indicators (KPI)

Area	No.	Performance indicator name	Metric	Description of performance indicator
Potential stakeholders (identification phase)	1	Number of potential PAs	No.	The indicator measures the number of potential PAs contacted by LL initiator to be involved in LL activities.
	2	Number of potential SMEs	No.	The indicator measures the number of potential SMEs contacted by LL initiator to be involved in LL activities.
	3	Number of potential higher education and research organizations	No.	The indicator measures the number of potential higher education and research organizations contacted by LL initiator to be involved in LL activities.
	4	Number of potential business support organisations	No.	The indicator measures the number of potential business support organizations contacted by LL initiator to be involved in LL activities.
	5	Number of potential other organizations	No	The indicator measures the number of potential other organizations contacted by LL initiator to be involved in LL activities.
Participating stakeholders (connect phase)	6	Number of PAs	No.	The indicator measures the number of PAs involved in Living lab activities by signing the DoP.
	7	Number of SMEs	No.	The indicator measures the number of SMEs involved in Living lab activities by signing the DoP.
	8	Number of higher education and research organizations	No.	The indicator measures the number of higher education and research organizations involved in Living lab activities by signing the DoP.
	9	Number of business support organisations	No.	The indicator measures the number of business support organizations involved in Living lab activities by signing the DoP.
	10	Number of other organizations	No.	The indicator measures the number of other organizations involved in Living lab activities by signing the DoP.

Area	No.	Performance indicator name	Metric	Description of performance indicator
LL meetings	11	Number of individual meetings	No.	The indicator measures the number of individual/one-on-one meetings (for example between LL coordinator and other stakeholders, or between two stakeholders).
	12	Number of joint LL meetings	No.	The indicator measures the number of joint LL meetings (meetings held among all or almost all stakeholders).
	13	Number of participants on joint LL meetings	No.	The indicator measures the average number of participants per joint meetings.
	14	Number of meetings between LL coordinators	No.	The indicator measures the number of meetings organized between LL coordinators in case where more LL coordinators have been identified.
	15	Number of unique participants	No.	The indicator measures the number of unique (distinct, individual) participant (individual participant participating in two meetings is only counted once).
	16	Average duration of joint meetings	min	The indicator measures the average duration of joint meetings (in minutes).
Themes presented	17	Number of best practices	No.	The indicator measures the number of best practices (funding, procurement, energy savings, energy efficiency, building refurbishment etc...) presented within LL activities by LL coordinator or participants.
	18	Number of tools	No.	The indicator measures the number of tools (funding, procurement, energy savings, energy efficiency, building refurbishment etc...) presented within LL activities by LL coordinator or participants.
	19	Number of funding possibilities for green investments	No.	The indicator measures the number of funding possibilities for green investments presented within LL activities.

Area	No.	Performance indicator name	Metric	Description of performance indicator
Benefits gained	20	Co-creation of novel user-oriented solutions	Likert scale	The indicator measures if LL enables co-creation of novel user-oriented solutions.
	21	Strengthen the cooperation and trust between public and economic operators	Likert scale	The indicator measures if LL strengthen the cooperation and trust between public and economic operators.
	22	Strengthen cooperation among LL stakeholders	Likert scale	The indicator measures if LL support and strengthen cooperation among LL stakeholders.
	23	Strengthen stakeholders transnational cooperation and networking	Likert scale	The indicator measures if LL strengthen stakeholder's transnational cooperation and networking with other organizations (PA's, SME's, clusters etc...).
	24	Exchange experiences or concerns for green growth	Likert scale	The indicator measures if LL enables to exchange experiences or concerns for green growth among LL stakeholders.
	25	More positive attitude towards green sustainable growth	Likert scale	The indicator measures if LL enables more positive attitude towards green sustainable growth among LL stakeholders.
	26	Development and promotion of innovative products	Likert scale	The indicator measures if participation in GRASPINNO LL has enabled SMEs to better develop and promote innovative products.
	27	Improving knowledge and implementation of effective measures for energy management	Likert scale	The indicator measures if PA's, with participation in GRASPINNO LL, can improve their knowledge/understanding of energy management and can develop/implement effective measures.
	28	Partnerships in the field of green refurbishment of buildings and green public procurement	Likert scale	The indicator measures if PA's can benefit from different types of partnerships in the field of green refurbishment of their buildings and green public procurement.
	29	Effective policy recommendations for green energy innovation, green public procurement and energy refurbishment	Likert scale	The indicator measures if Policy makers, with participating in GRASPINNO LL, feel more competent in field of effective policy recommendations for green energy innovation, green public procurement and energy refurbishment.

Area	No.	Performance indicator name	Metric	Description of performance indicator
Knowledge	30	Knowledge on green policies (EU, national, local)	Likert scale	The indicator measures level of knowledge of LL stakeholder on EU, national and local green policies for eco-innovations and energy refurbishment of buildings before and after participating in GRASPINNO living lab activities.
	31	Knowledge on available mentoring mechanisms	Likert scale	The indicator measures level of knowledge of LL stakeholder on mentoring mechanisms for eco-innovations and energy refurbishment of buildings before and after participating in GRASPINNO living lab activities.
	32	Knowledge on funding possibilities for green investments	Likert scale	The indicator measures level of knowledge of LL stakeholder on funding possibilities for green investments, eco innovations and energy refurbishment of buildings before and after participating in GRASPINNO living lab activities.
	33	Knowledge on green public procurement (competence, skills)	Likert scale	The indicator measures level of knowledge of LL stakeholder on green public procurement before and after participating in GRASPINNO living lab activities.
	34	Knowledge on best practices	Likert scale	The indicator measures level of knowledge of LL stakeholder on best practices on funding, procurement, energy savings, energy efficiency, building refurbishment before and after participating in GRASPINNO living lab activities.
	35	Knowledge on GRASPINNO Living Lab concept	Likert scale	The indicator measures level of knowledge of LL stakeholder on GRASPINNO Living lab concept before and after participating in GRASPINNO living lab activities.
	36	Knowledge on GRASPINNO pilots actions in field of green energy	Likert scale	The indicator measures level of knowledge of LL stakeholder on pilot's actions in field of green energy before and after participating in GRASPINNO living lab activities.
	37	Knowledge on GRASPINNO eGPP tool (public procurement)	Likert scale	The indicator measures level of knowledge of LL stakeholder on GRASPINNO eGPP tool (public procurement) before and after participating in GRASPINNO living lab activities.



Area	No.	Performance indicator name	Metric	Description of performance indicator
ELECTRICITY CONSUMPTION	38	Number of identified good practices on energy management	No.	The indicator measures number of identified good practices on energy management by LL stakeholders (number of real cases presented).
	39	Number of collected problems regarding electricity consumption	No.	The indicator measures number of stakeholders' problems regarding electricity consumption (collected by LL coordinator).
	40	Number of seminars/training and education courses/study visits organized	No.	The indicator measures number of organized seminars/trainings and education courses on topic of energy management and electricity consumption by LL coordinator.
	41	Number of seminars/training and education courses/study visits planned	No.	The indicator measures number of planned seminars/trainings and education courses on topic of energy management and electricity consumption by LL coordinator.
	42	Knowledge on existing energy management solutions	Likert scale	The indicator measures if stakeholders have gained knowledge on existing energy management solutions during the Living Labs activities.
	43	Knowledge on market solutions to manage electricity consumption	Likert scale	The indicator measures if stakeholders have gained knowledge on market solutions to manage electricity consumption during the Living Labs activities.
	44	Understanding of electricity consumption	Likert scale	The indicator measures if stakeholders start to better understand the electricity consumption during the Living Labs activities.
	45	Understanding of electricity pricing components	Likert scale	The indicator measures if stakeholders start to better understand electricity invoice price structure.

## 4.2 Educate and train

Prior the education and train session a formal meeting between CCIT Living Lab initiator, Consultance department and AECA was organized, to establish which content should be presented to attendees and to define the training session contents according to the identified targets. The education and training sessions were organized with one-day event which was held at Chamber of Terrassa Headquarter on 22/02/2018. The event was divided to two sessions, the first education session which presented the Living Lab methodology and objectives for LL, and the training session with focus on GRASPINNO tools and pilots experience, followed by explaining the Pilots technical part including specific aspect of LL such as Spanish energy context, actual Legislation and "tax sun" clarifications, solution proposed to manage energy consumption based on IoT and best practices cases.

### 4.2.1 Educate stakeholders

The **Education session** was organized by CCIT in collaboration with one of the SMEs participants (AECA). Within the education session the main objectives of Living Lab introducing GRASPINNO methodology and tools were presented to the members and future potential members of Living Labs. The important conclusion coming from education session was importance of transferring experiences between from private sector to public sector. Private sector has various experience improving facilities and process to do their activities more effective. One of that experiences is on energy consumption, especially on electricity using the concept of "if you know how is your consumption, you can manage it". If public authorities learn about that experiences, using GRASPINNO mythology as a support, they can do improvement on practices and on building on a customized way.

### 4.2.2 Train stakeholders

The **Training session** was organised by CCIT - Quality and Environment department (GRASPINNO project coordinator) in collaboration with Business Consultancy and Development department. The training session was planned to explain the context of the electrify consumption in terms of prices and market solutions to achieve consumption savings. Additionally, training session was planned to teach how

GRASPINNO green public procurement solutions can help on buildings improvements. The purpose of training session was to include examples of improvements done by enterprises based on electricity consumption save. One relevant aspect is one enterprise of industrial sector and one technological centre give their cases as examples to be replicated on public building with GRASPINNO methodology support. The training session was devoted in two parts:

- In first part the GRASPINNO project context has been presented, supported by GRASPINNO e GPP. The eGPP platform were presented explaining the functionalities to each parts and the application on different kind of buildings renovation. Additionally, also LCC tool were showed presenting the case of CCIT pilot and UP pilot.
- In second part several business cases were presented by AECA GROUP, LEITAT and CREVIN.
  - o AECA GROUP presented the Spanish situation on electricity consumption and prices comparing with the European situation. Several topic has been addressed such as having correct contract for electricity supply, electricity power, etc. alongside with existing market solution for management of the electricity consumption using IoT concept. In this context several impact on the different kind of buildings or facilities was explained and especially it was highlighted that knowing the own consumption can ensure improvements to optimize energy consumption.
  - o LEITAT presented 4 buildings with different energy situation and the background of their work to improve their energy use and cost. Consumption on each part of buildings was explained in detailed, especially regarding the heat and electricity on each facility and of each building and different zones, explaining which information is available to work and to make decision on improvements. Several beneficial conclusions on the system support for manage electricity consumption were provided, among others that energy monitoring system allows to see how in real-time building behaves, detect incidents, identify improvement options, evaluate savings results, etc. ...It was highlighted that good communication is important between the energy manager and maintenance personnel, and also with the facility manager, that is important to establish periodic meetings between the actors involved and to ensure distribution of the energy cost by zones.

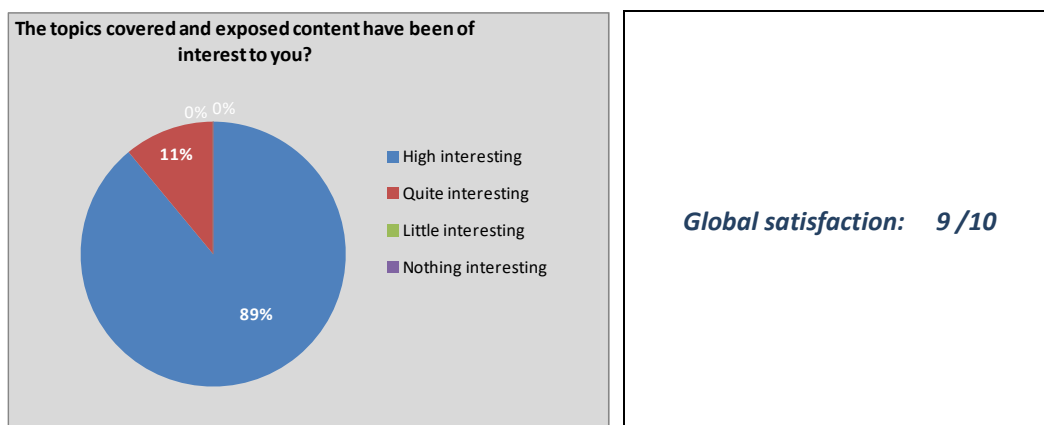
- CREVIN presented electricity contract and prices, the reasons for implementing a monitoring system and benefits. The CREVIN have implemented the same monitoring system as LEITAT, but has come to different kind of improvements to save on electricity consumption. Basically they focused on manage the distribution of the activities during the day and they didn't do works on building, only light systems changing traditional by Leds. As a conclusion, with a good monitor system the organisation (private or public) can know how their buildings and their activities impact on the energy behaviour and make decisions to improve gaining on energy efficiency.

Using this kind of systems presented by SMEs, the PA can orient the building renovation on a customize way and with GRASPINNO methodology they can do their procurement process more efficiently.



*Figure 5:* Living lab training session at Chamber of Terrassa Headquarter on 22/02/2018

Overall 10 organisations, entities and SMEs attended the session including two representatives of Consultancy department from CCIT, and have in majority found the presented topics being in high interest for them.



*Figure 6* Attendee satisfaction with training session, 22.2.2018, Chamber of Terrassa Headquarter

## 4.3 Implement

### 4.3.1 Process of implementing the Monitoring System

Control and Manage Electricity Consumption Living Lab focus on improving energy management through the knowledge of own consumption, proposing solutions to improve business activities. The LL focused on electricity consumption to promote improvement on energy management and to promote knowledge on this field because, as has been augmented at the beginning of the report, is a very relevant topic in Spain, for public and private sector.

On this field, the idea was to present one of the market solution, a Monitoring System that provides knowledge to manage the consumption to improve facilities and process and use it with the GRASPINNO unified platform.

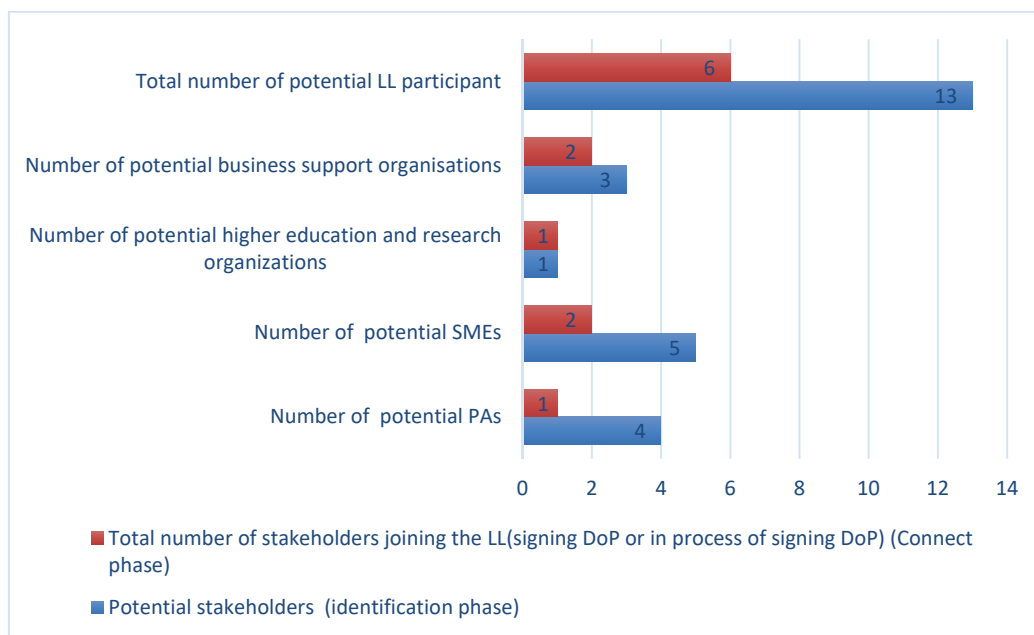
The objective of present Monitory System is to explain how this solution provides knowledge about consumption and after that, using this information to do improvements on buildings and/or in process. To do improvements on buildings, GRASPINNO project provide the Unified platform as a support tool. The implementation of this solutions consist on evaluate how this Monitory System can be integrated on the company or entity to do an energy management. The idea was use the solutions under a "demo" interface using real data. Several different examples of results from Monitor System to do practices on GRASPINNO platform. Additionally, the GRASPINNO Unified Platform was implemented by stakeholders concretely eGPP and DataBase, LCC as recommendation tool.

All members received solution proposed information about functionalities and demos, cost and time for real implementation. With that information, each member evaluates an implementation following a document guide provided by Living Lab coordinator. This guide includes:

- Information about software for energy consumption control
- Information related results
- Aspects to be analysed to propose improvements.

#### 4.3.2 Measurement of Key performance indicators

In order to measure overall performance and effectiveness of LL and proposed solutions/opportunities assorted Key Performance indicators (KPIs) have been specified. The results are as following from figure below.



*Figure 7 Stakeholders identified and contacted*

Several institutions from public sector and companies (SMEs) were contacted to participate in LL. Totally 13 potential participant were identified and finally 6 formalized the participation with 5 signing the DoP.

Many meeting were held with the different stakeholders, in total 6 meetings, among which 2 meetings involving all stakeholders, the rest were done on individual way. From CCIT, GRASPINNO project coordinator as a LL facilitator participated on all meetings, and Consultancy department collaborate on topic and connecting with the participants. The meeting duration average is 120 minutes, the majority were done on CCIT headquarters, while 3 meetings were done on stakeholder's offices.

To develop the Living Lab, two successful experiences were identified and used to evaluate the solutions and to proposed improvement and future actions. GRASPINNO unified platform, formed by 3 integrated tools was included on Educate and Training



phase, and a 4<sup>th</sup>. tool, concretely a software to monitor electrical consumption was presented as a part of solution proposed.

Concerning funding possibilities for green investments, one possibility has been considered; consist on support by the local authorities, concretely from municipalities.

To evaluate the **benefit of the participation on LL**, the participant filled questionnaire showing the following results in the table below. We can noticed that stakeholders strongly agree that by participating in LL they have strengthen the cooperation and trust among each other and other stakeholders, that SME can better develop and promote innovative products, while PAs can improve their knowledge/understanding of energy management and can develop/implement effective measures

*Table 6 Stakeholders benefit of the LL participation*

LL enables co-creation of novel user-oriented solutions	Agree
LL strengthen the cooperation and trust between public and economic operators	Strongly agree
LL support and strengthen cooperation among LL stakeholders	Strongly agree
LL strengthen stakeholders transnational cooperation and networking with other organizations (Pa's, SME's, clusters etc...):	Agree
LL enables to exchange experiences or concerns for green growth	Agree
LL enables more positive attitude towards green sustainable growth	Agree
SME's with participating in GRASPINNO LL can better develop and promote innovative products.	Strongly agree
PA's can improve their knowledge/understanding of energy management and can develop/implement effective measures	Strongly agree
PA's can benefit from the different types of partnerships in the field of green refurbishment of their buildings and green public procurement	Strongly agree
Policy makers gain more effective policy recommendations for green energy innovation, green public procurement and energy refurbishment	Agree



Concerning the **knowledge improved by participating** in Living Lab, the stakeholders manifested they improved knowledge on all items asked on questionnaires. All participant that have had previous knowledge on energy field, expressed they gained knowledge on green public procurement and on Living Lab methodology specially.

*Table 7 General knowledge improved by participating in LL*

	BEFORE	AFTER
Green policies (EU, national, local)	Good	Very Good
Available mentoring mechanisms	Good	Very Good
Funding possibilities for green investments	Good	Good
Green public procurement (competence, skills)	Good	Very Good
Best practices (funding, procurement, energy savings, energy efficiency, building refurbishment ..)	Very Good	Excellent
Living Lab concept	Good	Excellent
Knowledge on GRASPINNO pilots actions in field of green energy:	Good	Very Good
GRASPINNO eGPP tool (public procurement	Good	Very Good

Concerning the stakeholders' knowledge about energy management, most of them agreed that they gained knowledge on existing energy management solutions, market solutions to manage electricity consumption, understanding of electricity consumption, electricity consumption and electricity pricing components (invoice structure).

*Table 8 Knowledge gained by participating in LL*

Stakeholder gained knowledge on existing energy management solutions during the Living Labs activities	Agree
Stakeholder gained knowledge on market solutions to manage electricity consumption during the Living Labs activities	Strongly Agree
Stakeholder gained understanding of electricity consumption during the Living Labs activities	Strongly Agree
Stakeholders gained understanding of electricity pricing components (invoice structure) during the Living Labs activities	Strongly Agree

Good practices were identified, concretely 2 from private sector, considered as a very good example for the rest of participants. Under the electricity consumption topic, 2 problems were concretely identified, one of them is the process of the electricity and the impact on budget, and the second is the knowledge about what the entities can do to reduce that cost.

## 4.4 Improve

### 4.4.1 Generation of potential improvements of LL solutions

At this point of the process, the participants increased their knowledge on electricity consumption, prices and context and they knew one of the market solutions. This solution, based on manage using the knowledge on their own consumption, was proposed by one of the participants. The main objective of this part was to promote between stakeholders propose improvements, not directly and only on the solution proposed (Monitoring system), but on the way that the intuitions and enterprises can include this concept on their methodologies for do actions on the buildings to reduce consumptions. To collect improvements opportunities CCIT promoted actions:

1. Collect proposal from the stakeholders directly through the individual meetings
2. Collect impressions using a google form survey
3. The SME provider of solutions collect feedback from their customers to introduce as well
4. Collect information about cities that have subsidies to promote improvement on buildings oriented to energy management

To collect potential improvements several individual meetings have organized as seen from table below.

*Table 9 Living Lab Stakeholders and meetings done*

Stakeholder	Government/ SMEs/Organisation	Meetings/actions
<b>Chamber of Commerce, Industry and Services of Terrassa</b>	Organisation	Facilitator
<b>UPC: Polytechnic University of Catalonia</b>	Organisation	3 individual meetings
<b>Terrassa City Council Environment Services Department and Terrassa City Council Parc Audiovisual</b>	Government	3 individual meetings Authority for GPP development
<b>AECA Group</b>	SMEs	10 individual meetings in collaboration with consultancy department of CCIT
<b>LEITAT</b>	Private non-profit association	3 individual meetings
<b>CREVIN S.A.</b>	SME	2 individual meeting

***Improvements identified:***

About the solution, tools and methodologies:

- Promote the knowledge of the benefit of solutions based on IoT to all kind of organisations
- Promote the networking between enterprises who had implemented this system to motivate:
  - 1.- Private sector
  - 2.- Public sector

All coincide that the problem is the lack of knowledge about this kind of systems, adding the lack of knowledge about the actuality on energy policies.

About the funding to acquire these solutions:

- Promote another kind of contacts to public procurement process for PA
- Promote at local level a reduction on tax for determinate period to SME and little enterprises for do actions on infrastructures.
- 

About policies:

- Promote the knowledge on energy policies at local and regional level
- Promote the real knowledge about the “sun tax” because the majority of them have wrong information about the application.

As a conclusion, all feedback and information from stakeholders and potential users is focused on knowledge on this theme.

#### 4.4.2 Implementation of improvements

The implementation phase consists on:

- Fix the milestones of each improvement opportunity
- Estimate the term for implementation
- Evaluate the impact on Living Lab objectives as Low, Medium and High
- Evaluate the level of difficulty on implementation Low, Medium and High

To do a prioritisation is necessary to evaluate all concepts; all actions are possible to do in a future as a continuation. The following table is showing all improvements and necessary actions, estimations on impact on Living Lab objectives and level of difficulties.

*Table 10 Improvements Implementation prioritization*

On	MILESTONE	ACTIONS	Term	Impact on LL objectives	Level of difficulty
<b>Solution, tools and methodology</b>	Promote the knowledge of the benefit of solutions based on IoT to all kind of organisations	1. B2B meetings between potential users and provider.	Immediate	High	Medium
	Promote the networking between enterprises who had implemented this systems to motivate	2. Use the CCIT annual events to promote the networking between private and public sector	Annual planning	High	Low
	1.- Private sector 2.- Public sector	3. Create more Living Lab groups to work under this methodology on the energy management promotion	6 months	High	Medium
<b>About the funding to acquire this solutions</b>	Promote another kind of contacts to public procurement process for PA	4. Identify which kind of contacts there are available for PA in Catalunya (e.g. ICAEN- EPC contract) and evaluate how promote them	3 Months	Low	Low
	Promote at local level reduction on tax for determinate period of time to SME and little enterprises for do actions on infrastructures	5. Promote from CCIT as enterprises representative this kind of support. This actions have a big political dependency.	1 any	Medium	High
<b>About policies</b>	Promote the knowledge on energy policies at local and regional level	6. Promote actions with the official instute of energy in Catalonia	3 Months	Low	High

Promote the real knowledge about the "sun tax" because the majority of the and enterprises have wrong information about the application.	7. Idem than 1, 2 and 3	6 Months	High	Medium
--	-------------------------	----------	------	--------

All of them are potential actions to do to promote energy management, all are possible to implement on successful way. The most difficult to implement and to have successful result is the n°- 5 because have a big political implication. Other municipalities are working to implement this kind of support and CCIT are working to participate on them and to transfer, using the living lab conclusions, to other municipalities of the CCIT influence area

## 4.5 Evaluate

### 4.5.1 Evaluation of proposed LL solutions for energy management

Following the methodology developed by the University of Maribor, stakeholders evaluated the solutions (monitoring systems, improvements about funding and policies) proposed by Spanish Living Lab and especially how they effected on the level of knowledge on specifics topics. All six stakeholders received the questionnaire, only four answered them.

Most of the stakeholders evaluate that their knowledge, before participating in LL and using LL solutions, on understanding own electricity consumption, price structure, installation of renewable sources and benefits of market solutions is good. Majority of stakeholders are confident that they have very good knowledge on direct impact of regulations on renewable energy installation (Figure 8).

With the participation in LL and using LL solutions for energy management the stakeholder's knowledge on understanding own electricity consumption, price structure, installation of renewable sources and benefits of market solutions was improved from good to very good. Additionally, we notice that before participating in LL none of stakeholders had excellent knowledge in direct impact of regulations on renewable energy installation while after participating one of stakeholder claim their knowledge to become excellent. Alongside also more stakeholders claimed to have after participating in LL excellent knowledge on understanding own electricity consumption and benefits from management solutions (Figure 9).

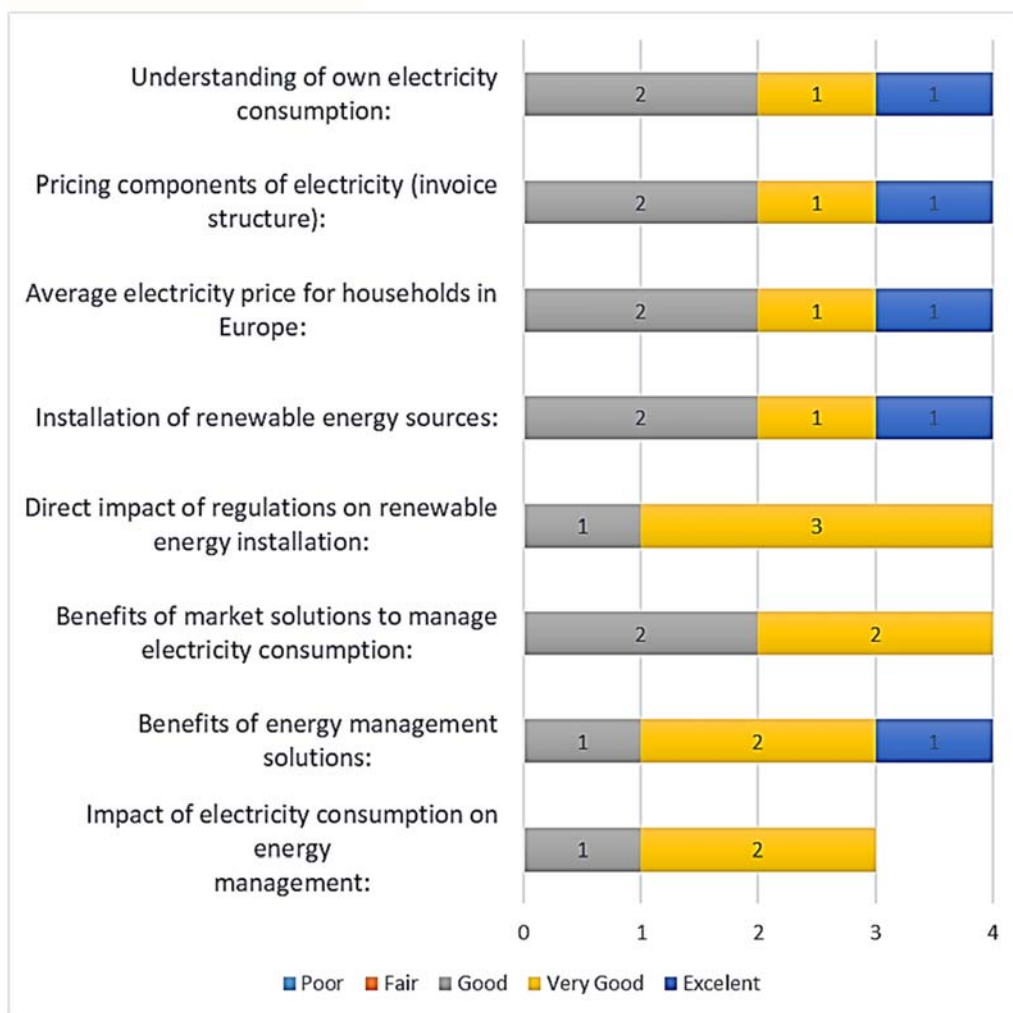


Figure 8 Knowledge on energy management and electricity consumption before participating in LL



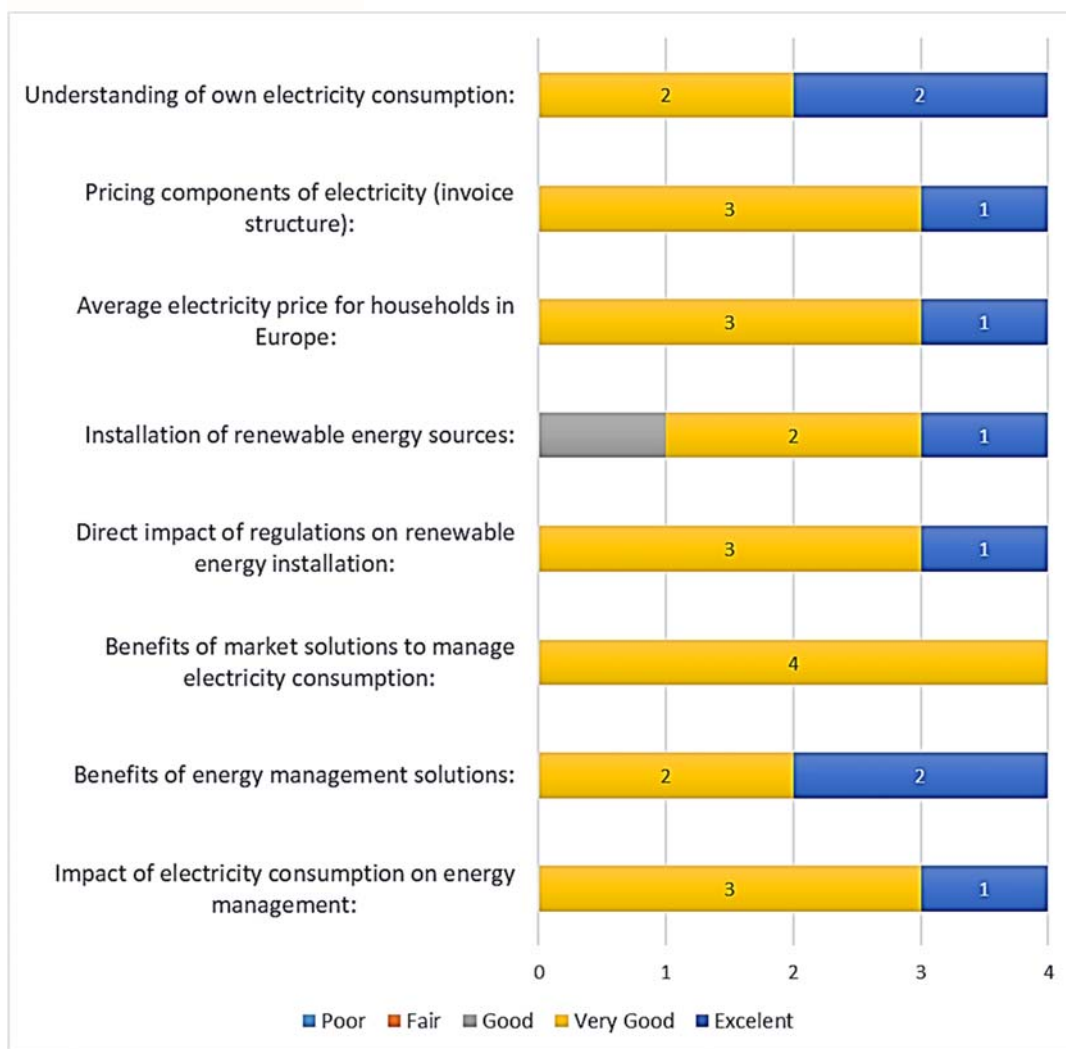


Figure 9 Knowledge on energy management and electricity consumption after participating in

#### 4.5.2 LL evaluation

Overall 4 stakeholders, 1 Pas, 1SMEs, 1 Higher education and research organisation and 1 Business support organisation, gave their opinion and shared their experiences about LL concept and their satisfaction and gained benefits.

Regarding the satisfaction of stakeholders with LL organization and operations, they were extremely satisfied with the relevance of the presented topics on LL meeting, and on the usefulness of the topics, speakers skills and competences, content and overall organization (Figure 10).

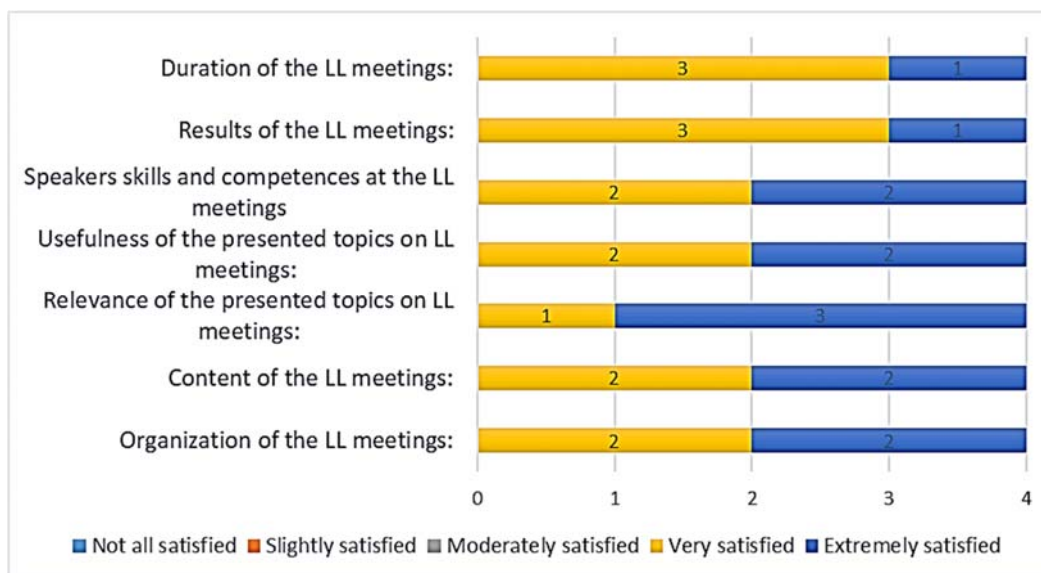


Figure 10 Stakeholders level of satisfaction

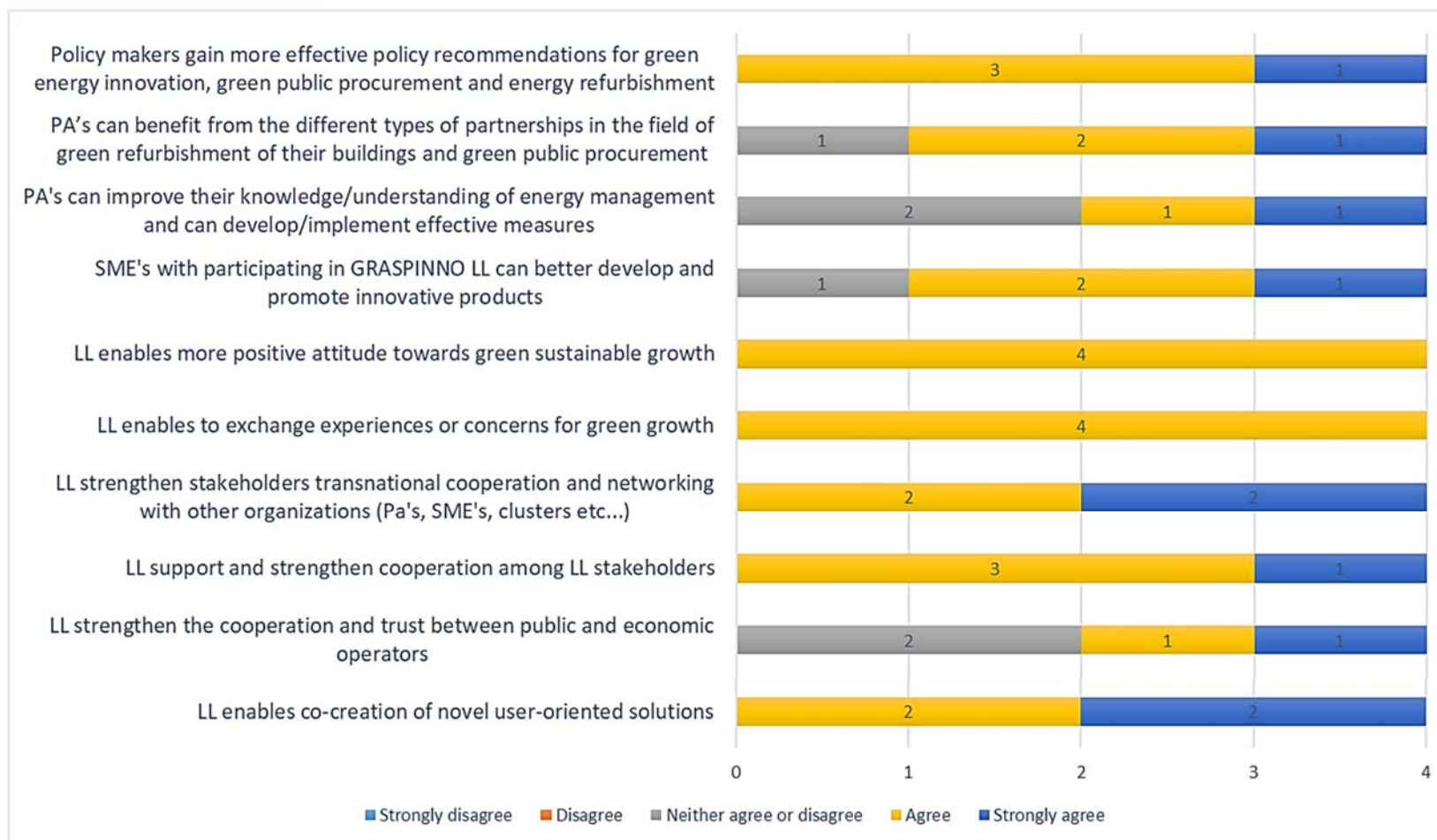
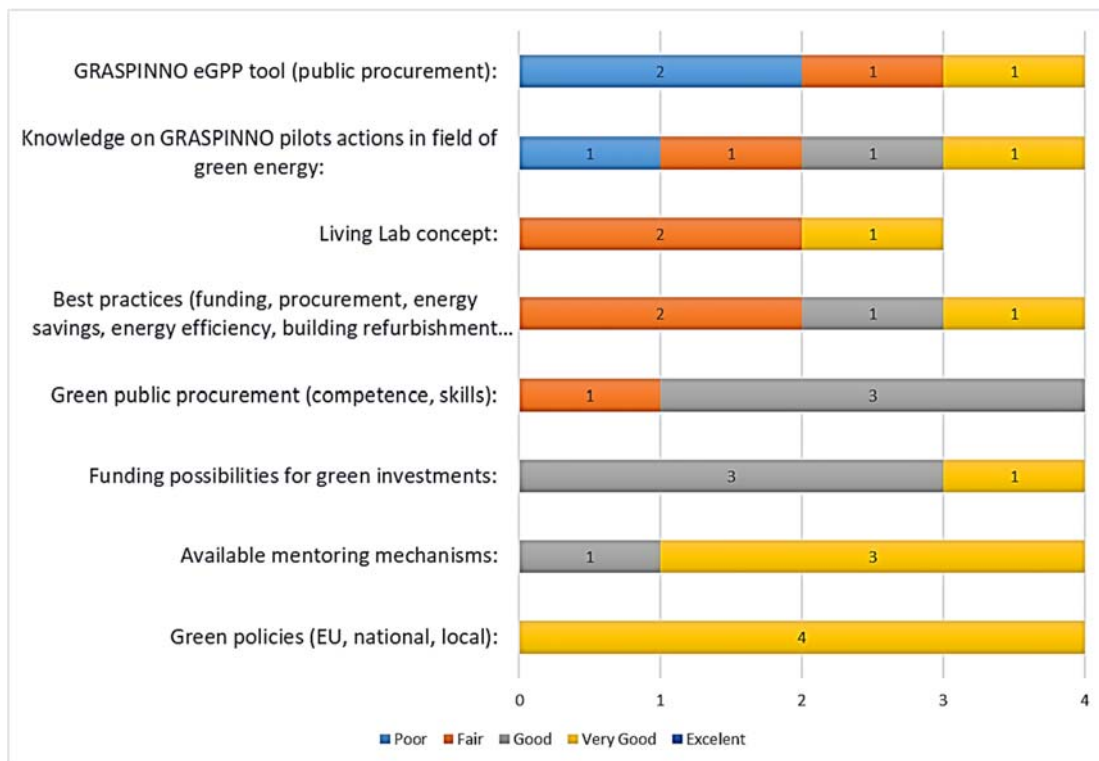


Figure 11 Benefits gained by participating in LL

As seen from figure 12 and 13 below, we can have noticed that on almost all topic stakeholders have improved their knowledge from fair/poor/ good to very good or in case of green policies even to excellent knowledge.



*Figure 12 Knowledge before participating in LL*

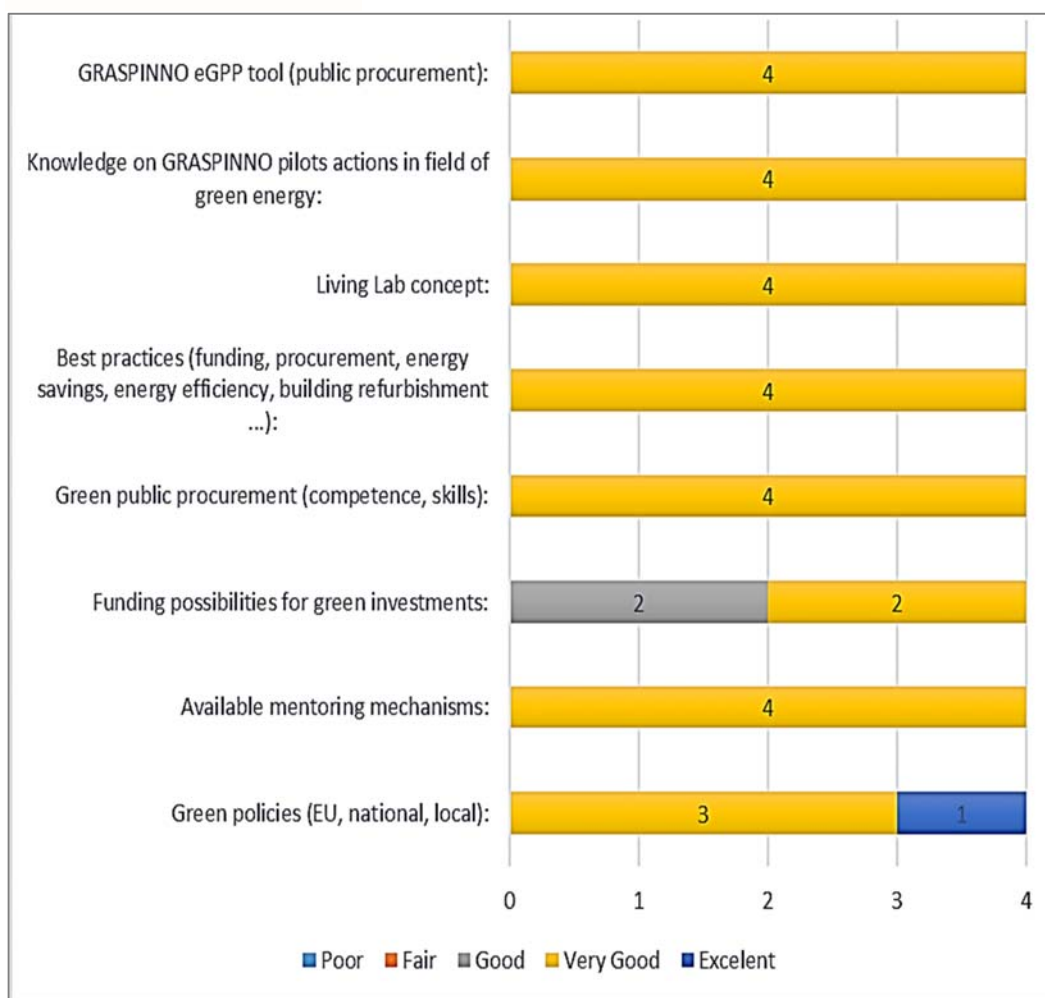


Figure 13 Knowledge after participating in LL

We can conclude participants very well appreciated the Living Lab. The participants mentioned they would participate on a Living Lab again. The Spanish LL were focused on electrical consumption, but during the process, GRASPINNO methodology, experiences on PILOT and GRASPINNO tools were presented. The electronic green public procurement was considered as well, as a very relevant point.

#### 4.5.3 Guidelines and recommendations

Spanish Living Lab results are focus on two aspects, knowledge and policies recommendations.

##### ***About knowledge:***

For all sectors, public and private who want to reduce costs on electricity consumption the best way is increasing the knowledge on their own infrastructure performance. Highlighting on how is the consumption in their buildings.

Living Lab methodology promotes the cooperation more closely between public sector and private sector. SMEs providers of solutions can offer their products to private and public sector and they can show successful good practices.

All parts gained knowledge on electricity consumption to improve their energy management on their institutions.

##### ***About policies recommendations:***

During the Living Lab developed, all participants coincide that the local authority have to support the improvements on energy management on buildings, privates and publics.

One action identified is to promote a change on local legislation, concretely on the tax that every enterprise has to pay, promoting a reduction on that if the enterprises do actions on buildings to reduce consumptions.

For public sector, one of the most beneficial opportunity is to do especial procurement procedures based on consumption saving.

To consolidate this recommendations, CCIT propose focus the dissemination part on this aspect.

About the sun tax, during the Living Lab, 2 events occurred, one of them is from European Commission who determinate is not legal, recommending Spain to eliminate. Spanish new government agree to eliminate that. In parallel, the Living Lab was a good opportunity to explain to the participants how affect this tax, what kind of installations, until now, this tax has not been applicate.

## 4.6 Disseminate

For the future dissemination and capitalization of Spanish Living Lab, it is definitely important to disseminate the Living Lab methodology and results including good practices, throughout open conferences, inviting the LL participants, but also other new stakeholders.

In collaboration with consultancy department of CCIT, will promote tips and post on social network to motivate stakeholders to use the energy management concept. Additionally, also the promotion of EPC contract model to public sector in collaboration with ICAEN (Energy Institute of Catalonia), model based on saving will be carried out. Especially on how to transfer the EPC contract model to private sector.

Future collaboration will be carried out with Rubi city council on a “sun” tax reduction, on local normative developing. The tax reduction will be promoted in Terrassa city council, estimating, if it is successful, this action can be transfer to the rest of municipality on CCIT area. Is a big challenge, but it would be very good way to promote improvements on buildings oriented to reduce costs in energy and to promote renewable energy installations.

## 5 CONCLUSIONS

The Spanish Living Lab, organized by CCIT focus on how to improve the energy management of stakeholders through the knowledge of their own consumption in their buildings by proposing different solutions to improve business activities. The name of the Living Lab Control or Manage Electricity Consumption express the concept that LL want to transfer, that is how to ensure solutions and reduce costs, with not only controlling the consumption, but with providing appropriate management, with what real improvements can be achieved.

CCIT as initiator have identified potential stakeholders to work on Living Lab from private and public sector and after several meetings, the Living Lab have constituted by 6 stakeholders. The group formed by members from Public Authority, University, SMEs (provider of solutions and industry), Business support organization allowed the interchange of visions from different points of view.

The Educate and Train phase, organized by CCIT, brought together representatives of private sector and public sector of various municipalities. Under this event, the attendees learned about GRASPINNO tools, sharing experiences on eGPP, and they learn about how the market solutions based on IoT can help on control and management electricity consumption in the company. This kind of solution is adequate to all kind of facilities, industrial and public building, for this reason the group formed by representative of both sectors was effective.

During the Living Lab, one of the themes discussed was the Spanish legislation on self-consumption as usually name "sun tax", the impact when someone, entity or person want to install a self-consumption plant. On that point, some relevant aspects have explained, clarifying the application of the regulation.

Is important to highlight, during the Living Lab development, all participants coincide that the local authority have to support the improvements on energy management on buildings, privates and publics proposing to do an action to promote a policy recommendation.

Another theme introduced is the possibility, in the beginning only for public sector, to do public procurements based on savings, a kind of contract promote by Catalan Institute of energy and transferrable to private sector.



The participant on Living Lab had the opportunity to get to know properly solutions to implement in their companies, providing improvements ideas and finally they had the opportunity to evaluate the solutions and the Living Lab. On the evaluation phase, the Living Lab methodology has evaluated with very good results for this reason, this kind of methodology can be transferable to continue and to another kind of projects. Living Lab methodology allowed the achievement of objectives promoting the interchange of visions between public and private sector

To continuing with Living Lab, dissemination and capitalization activities have identified as a results including: transferring of good practices, open conferences, and the promotion of change on local policies to promote the improvements in buildings oriented to energy management.

## 6 APPENDIX – Stakeholders Declaration of Participation (5 DoP)

## **Declaration of Participation** **in Living Lab Activities of the GRASPINNO Project**

The GRASPINNO project aims to strengthen innovation capacity of public and private sectors in MED region and to support smart and sustainable growth. The project will support green energy and eco-innovation networks/cluster and promote transnational cooperation by strengthening and adapting transnational network of eco-innovation actors. Through Living Labs, it will pursue behavioural change in favour of eco-innovation, green energy and green actors.

In line with the activities of the GRASPINNO project, the signatories hereby agree to participate in:

### ***eGPP Living Lab***

*which aim is to improve capacity of public building owners to manage energy efficacy moving towards almost-zero-energy buildings and strength the capacity of SME and other eco-innovation actors in the green energy market by ensuring wider uptake of green electronic public procurement.*

### ***Green Fund Living Lab***

*which aims to identify and promote funding and mentoring mechanisms and opportunities for green growth by ensuring tailored mentoring or financing to SMEs and PAs for eco-innovation actions.*

### ***Green Policy Living Lab***

*which aims to improve policies and SEAPs for green building energy refurbishment and to overcome barriers hindering the growth in green energy and energy refurbishment of public buildings by forming policy recommendations.*

With this signature of Declaration of Participation, the signatory decides to join the Chamber of Commerce of Terrassa GRASPINNO Living Lab and names a representative to communicate with the Living Lab regional organization:

LEITAT Technological Center  
(name and address of the organization)

C/ de la Innovació, 2 · 08275 Terrassa

JOAN PARRA  
(first and last name of legal representative)

(signature of legal representative)

(first and last name of the representative, phone number and e-mail)

Chamber of Commerce of  
Terrassa

Josep Prats Llopart



(Living Lab regional organization)

(Living Lab regional representative)

(signature)

(place and date)

**NOTE: This is a voluntary statement and does not imply any financial commitment or any other legally binding commitment.**

With this signature of Declaration of Participation, the signatory decides to join the Chamber of Commerce of Terrassa GRASPINNO Living Lab and names a representative to communicate with the Living Lab regional organization:

CREACIONES DE VELOURS INDUSTRIALES, S.A.

(name and address of the organization)

**crevin,s.a.**

Creaciones de Velours Industriales S.A.

CIF: A08393910

Pol. Ind. Santa Margarita

c/ Llobregat, 21

08223 TERRASSA (Barcelona) España

Tel. 00 34 93 784 11 66

MARIA CARMEN PÉREZ BEOTO

Name

(signature)

carmeperez@crevin.com

(first and last name of the representative, phone number and e-mail)

Chamber of Commerce of  
Terrassa

Josep Prats Llopart



(Living Lab regional  
organization)

(Living Lab regional  
representative)

(signature)

(place and date)

NOTE: This is a voluntary statement and does not imply any financial commitment or any other legally binding commitment.

## **Declaration of Participation**

### **in Living Lab Activities of the GRASPINNO Project**

The GRASPINNO project aims to strengthen innovation capacity of public and private sectors in MED region and to support smart and sustainable growth. The project will support green energy and eco-innovation networks/cluster and promote transnational cooperation by strengthening and adapting transnational network of eco-innovation actors. Through Living Labs, it will pursue behavioural change in favour of eco-innovation, green energy and green actors.

In line with the activities of the GRASPINNO project, the signatories hereby agree to participate in:

#### **eGPP Living Lab**

*which aim is to improve capacity of public building owners to manage energy efficacy moving towards almost-zero-energy buildings and strength the capacity of SME and other eco-innovation actors in the green energy market by ensuring wider uptake of green electronic public procurement.*

#### **Green Fund Living Lab**

*which aims to identify and promote funding and mentoring mechanisms and opportunities for green growth by ensuring tailored mentoring or financing to SMEs and PAs for eco-innovation actions.*

#### **Green Policy Living Lab**

*which aims to improve policies and SEAPs for green building energy refurbishment and to overcome barriers hindering the growth in green energy and energy refurbishment of public buildings by forming policy recommendations.*



## Declaration of Participation in Living Lab Activities of the GRASPINNO Project

The GRASPINNO project aims to strengthen innovation capacity of public and private sectors in MED region and to support smart and sustainable growth. The project will support green energy and eco-innovation networks/cluster and promote transnational cooperation by strengthening and adapting transnational network of eco-innovation actors. Through Living Labs, it will pursue behavioural change in favour of eco-innovation, green energy and green actors.

In line with the activities of the GRASPINNO project, the signatories hereby agree to participate in:

### **Control or Manage Electricity Consumption Living Lab**

*which aim is to create a group between public sector representatives and private sector representatives to interchange knowledge and experiences to improve energy management with use of GRASPINNO Living Lab methodology.*

With this signature of Declaration of Participation, the signatory decides to join the **Control or Manage Electricity Consumption Living Lab** GRASPINNO Living Lab and names a representative to communicate with the Living Lab regional organization:

PARC AUDIOVISUAL DE CATALUNYA, S.L. - CTRA. BU 1274, KM 1 ; 08225 TERRASSA  
(name and address of the organization)

CRISTINA BRANDNER GARCIA  
(first and last name legal representative)

(signature of representative)

+34 937875959  
phone number and e-mail

JORDI.HERNANDEZ@PARCAUDIOVISUAL.COM

Chamber of Commerce,  
Industry and Services of  
Terrassa

(Living Lab regional  
organization)

Josep Prats Llopart

(Living Lab regional  
representative)

(signature)

(place and date)

NOTE: This is a voluntary statement and does not imply any financial commitment or any other legally binding commitment.

## **Declaration of Participation** **in Living Lab Activities of the GRASPINNO Project**

The GRASPINNO project aims to strengthen innovation capacity of public and private sectors in MED region and to support smart and sustainable growth. The project will support green energy and eco-innovation networks/cluster and promote transnational cooperation by strengthening and adapting transnational network of eco-innovation actors. Through Living Labs, it will pursue behavioural change in favour of eco-innovation, green energy and green actors.

In line with the activities of the GRASPINNO project, the signatories hereby agree to participate in:

### ***eGPP Living Lab***

*which aim is to improve capacity of public building owners to manage energy efficacy moving towards almost-zero-energy buildings and strength the capacity of SME and other eco-innovation actors in the green energy market by ensuring wider uptake of green electronic public procurement.*

### ***Green Fund Living Lab***

*which aims to identify and promote funding and mentoring mechanisms and opportunities for green growth by ensuring tailored mentoring or financing to SMEs and PAs for eco-innovation actions.*

### ***Green Policy Living Lab***

*which aims to improve policies and SEAPs for green building energy refurbishment and to overcome barriers hindering the growth in green energy and energy refurbishment of public buildings by forming policy recommendations.*

With this signature of Declaration of Participation, the signatory decides to join the Spain GRASPINNO Living Lab and names a representative to communicate with the Living Lab regional organization:

**AECA ENERGIA SOLAR, SL**

\_\_\_\_\_  
(name and address of the organization)

Ramón Nicolau

\_\_\_\_\_  
(first and last name of legal representative)

  
\_\_\_\_\_  
(signature of legal representative)



nicolau@aecagroup.com

(first and last name of the representative, phone number and e-mail)

Chamber of Commerce and  
Industry of Terrassa

(Living Lab regional  
organization)

(Living Lab regional  
representative)

(signature)



Terrassa, 9/1/2018  
(place and date)

NOTE: This is a voluntary statement and does not imply any financial commitment or any other legally binding commitment.

## **Declaration of Participation in Living Lab Activities of the GRASPINNO Project**

The GRASPINNO project aims to strengthen innovation capacity of public and private sectors in MED region and to support smart and sustainable growth. The project will support green energy and eco-innovation networks/cluster and promote transnational cooperation by strengthening and adapting transnational network of eco-innovation actors. Through Living Labs, it will pursue behavioural change in favour of eco-innovation, green energy and green actors.

In line with the activities of the GRASPINNO project, the signatories hereby agree to participate in:

### **eGPP Living Lab**

*which aim is to improve capacity of public building owners to manage energy efficacy moving towards almost-zero-energy buildings and strength the capacity of SME and other eco-innovation actors in the green energy market by ensuring wider uptake of green electronic public procurement.*

### **Green Fund Living Lab**

*which aims to identify and promote funding and mentoring mechanisms and opportunities for green growth by ensuring tailored mentoring or financing to SMEs and PAs for eco-innovation actions.*

### **Green Policy Living Lab**

*which aims to improve policies and SEAPs for green building energy refurbishment and to overcome barriers hindering the growth in green energy and energy refurbishment of public buildings by forming policy recommendations.*

With this signature of Declaration of Participation, the signatory decides to join the Chamber of Commerce of Terrassa GRASPINNO Living Lab and names a representative to communicate with the Living Lab regional organization:

Chamber of Commerce, Industry and Services of Terrassa

\_\_\_\_\_  
(name and address of the organization)

**Josep Prats**





\_\_\_\_\_  
Name

\_\_\_\_\_  
(signature)

Marianella Pereira: [mpereira@cambraterrassa.org](mailto:mpereira@cambraterrassa.org) - +34 937339833

\_\_\_\_\_  
(first and last name of the representative, phone number and e-mail)

Chamber of Commerce of  
Terrassa

Josep Prats Llopart





\_\_\_\_\_  
(Living Lab regional  
organization)

\_\_\_\_\_  
(Living Lab regional  
representative)

\_\_\_\_\_  
(signature)

\_\_\_\_\_  
(place and date)

NOTE: This is a voluntary statement and does not imply any financial commitment or any other legally binding commitment.