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

eGPP Living Lab, Slovenia

Prepared by University of Maribor

Date: (31/07/2018)

Univerza v Mariboru

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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 eGPP Living Lab in Slovenia aims on wider uptake of green electronic public procurement by increasing procurement directorate, public authorities and SMEs knowledge and usage of eGPP, sustainable energy and energy efficient materials.

The eGPP Living Lab in Slovenia LLs consist of different actors, such as SME's mainly innovative companies, Public Authorities (Pas), decision and policy makers and is:

- actively involving them in the process of green public procurement, public building refurbishment, public lightning, eco-innovation,
- establishing an interaction among them;
- transferring to actors and other interest's stakeholders GRASPINNO knowledge and pilot results in field of green energy

Various benefits arise for stakeholders participating in eGPP Living Lab in Slovenia Lab. The SMEs which will receive training on eGPP (electronic Green Public Procurement) and funding opportunities for eco-innovative products, will most likely

benefit from improved understanding of the public sector needs on energy efficiency of buildings and will be able to better develop and promote their innovative products. The PAs will enhance their innovation capacities and knowledge on green refurbishment and electronic public procurement and will be able to develop more effective energy management moving towards almost zero-energy buildings. The PAs will be able to upgrade, validate and adopt green public procurement through knowledge base, decision support tools and e-procurement systems (eGPP). Regional, national and European decision and policy makers will benefit from gaining effective policy recommendations for green energy innovation, green public procurement and energy refurbishment and will be able to improve their policies and Action Plans (AP) for energy refurbishment while also influencing key stakeholders in eGPP and green building refurbishment.

2 INTRODUCTION

The Deliverable 4.4.1 Report on GRASPINNO Living lab 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 used in setting up the Living lab, while the second part presents an overview of actual setting up of the eGPP Living Lab in Slovenia.

In part I, the general description and definition of Living Labs is given together with detailed approach on setting up GRASPINNO Living Labs. The set-up of GRASPINNO Living Lab consists of 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 conclusions to encourage other interested stakeholders to approach to innovation in field of green energy by adopting Living Lab approach.

In the part II, the setup of eGPP Living Lab in Slovenia following the GRASPINNO Living lab methodology is presented. This report is a standalone report and feeds report D4.4.2 Findings from Living labs (together with other GRASPINNO Living Labs reports) where the main conclusions and recommendations deriving from all living labs 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.

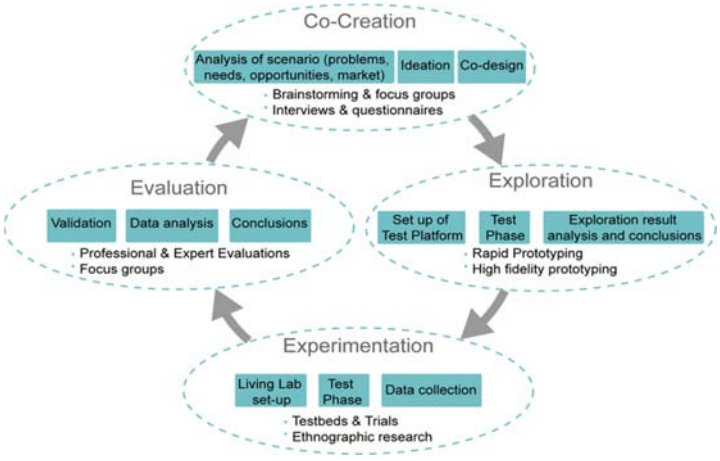


Figure 1: A visual representation of the Living Lab process (Vicini, Bellini, Sanna, SMART 2012)

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.

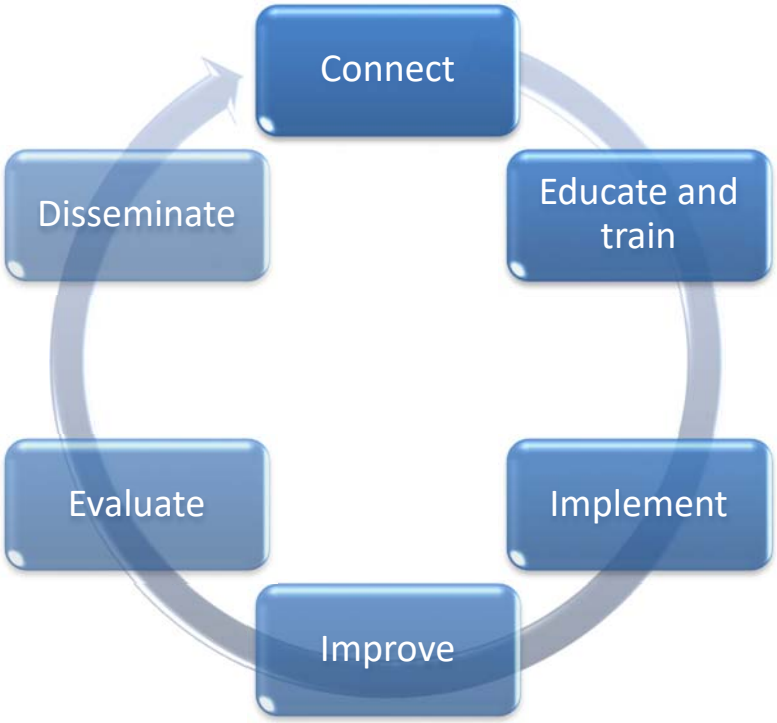


Figure 2: GRASPINNO Living Lab approach

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 eGPP LIVING LAB IN SLOVENIA

4.1 Connect

4.1.1 The leader of eGPP Living lab in Slovenia

The initiator of the Slovenian living lab: eGPP Living Lab (LL) is Faculty of Energy Technology, University of Maribor (UM FE). Faculty of Energy Technology is one of the youngest members of University of Maribor providing students' knowledge and experience in areas such as Hydropower, Thermal energy, Nuclear energy, Alternative Energy and Universal Energy. Faculty aims at excellence, comprehensiveness, interdisciplinary, symbiotic relationship between education and scientific research, internationalization and cooperation with the local economy. Faculty is located nearby the Nuclear power plant Krško, hydro power plants on Sava river and the biggest Slovenian thermal power plant in Šoštanj, giving faculty an advantage to build research cooperation with industry. Besides providing consultation to industry, faculty has been active in many European research projects and with those achieving higher energy efficiency throughout establishment of living labs.

UM FE as the leader of the Slovenian LL motivates stakeholders to actively engage in LL activities, arrange meetings/workshops/training courses, correspond to stakeholder needs or requirements, coordinate preparation of the LL plan, DoP, reports (with assistance of all stakeholders), ensure that activities are carried out within the time plan.

Table 1: List of contact persons

Contact Person	Contact Details
	Organization: Faculty of Energy Technology, University of Maribor
Mr. Sebastijan Seme	**Tel: 00386 31 730 060** **Email:** sebastijan.seme@um.si
Mr. Gregor Srpčič	**Tel: 00386 40 520 511** **Email:** grega.srpcic@um.si
Mr. Klemen Sredenšek	**Tel: 00386 31 363 832** **Email:** klemen.sredensek@um.si

4.1.2 Potential Slovenian LL stakeholders

Several potential stakeholders have been contacted over e-mails, telephone and on side to side meetings. All together 12 stakeholders have been addressed, 4 small and medium enterprises (SMEs) and 8 public authorities (PAs). Of contacted SMEs, 2 SMEs are engaged in computer business, 1 SME is engaged in sales of energy efficient windows and doors and 1 SME is active on the field of green and sustainable energy. Public authorities are municipalities, a kindergarten and Ministry of the environment and spatial planning. Contacted stakeholders are shown in figure 3.

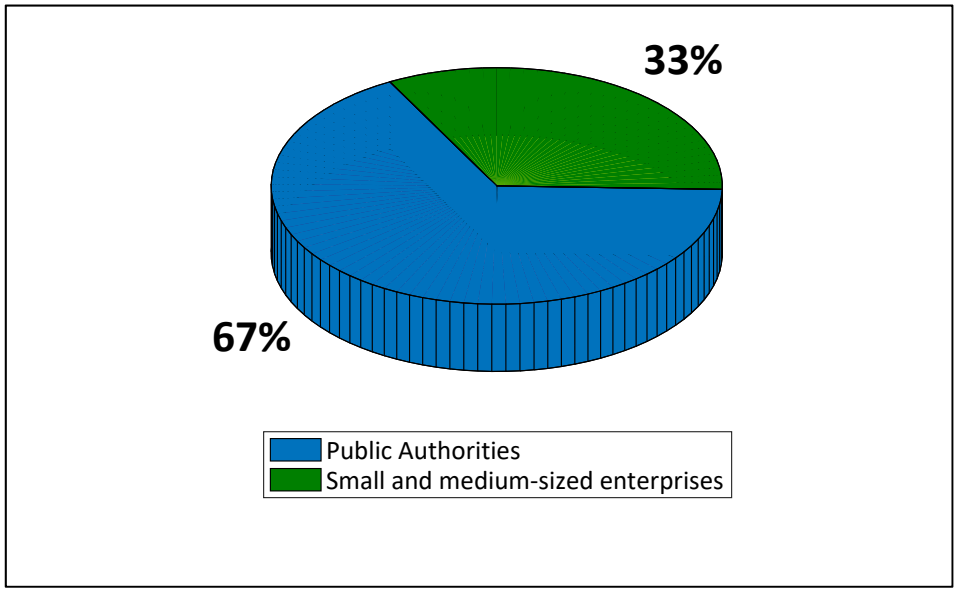


Figure 3: Potential LL stakeholders in Slovenia

The potential LL stakeholders in Slovenia have been identified according to their area of business and according to the potential benefits they could gain with joining the Slovenian living lab.

4.1.3 The Slovenian Living lab scope

Despite the fact that Slovenia has a fairly well-developed regulatory and policy framework for public procurement, a significant gap persists between the rules on paper and actual practices due to a series of structural challenges. Slovenia has an

ambitious agenda for strengthening public administration, which in turn should have a positive impact on public procurement. E-procurement is another area that can be greatly strengthened in Slovenia.

The identified theme for establishing an eGPP Living Lab was the new Green Procurement Regulation (GPP), which became valid on 1. 1. 2018. The Slovenian Public Procurement Act is intended to improve Slovenian public procurement and, in turn, increase the participation of (foreign) tenders. According to the Public Procurement Act, the contracting authority orders goods, services or constructions that, in comparison with ordinary goods, services and constructions throughout the life-cycle have less impact on the environment and provide savings in natural resources, materials and energy and have the same or better functionality.

Although in Slovenia the green public procurement is set in place and legalized, the level of its implementation varies among public authorities. Additionally, the PAs and also SMEs, are still less in favour of electronic public procurement and are still using paper version tender implementation.

The eGPP Living Lab purpose is to encourage PAs, SMEs and other stakeholders to use green electronic public procurement by transferring the knowledge obtained within the project's pilot's actions and to exchange experience or concerns for green growth, especially including stakeholders as end-users.

4.1.4 eGPP Living Lab plan

4.1.4.1 LL objective

The main goal of eGPP Living Lab in Slovenia is ensure wider uptake of green public procurement. This will be achieved through educating and training them about energy efficiency, energy management and electronic green public procurement tool (eGPP) and providing counselling about modern energy efficient materials, building furniture, energy efficient lighting and machines, energy efficiency renovation of buildings.

The eGPP Living Lab will actively involve different stakeholder in the field of green public procurement, public building refurbishment, public lightning, eco-innovation,

funding and mentoring, policy recommendations and establish interaction among them that will enable the transfer of knowledge, experiences and results, which will benefit stakeholders.

4.1.4.2 LL activities

The main activities of eGPP Living Lab in Slovenia are:

- To raise awareness of current state of new Green Procurement Regulation (GPP) in Slovenia thorough out seminars, training and education courses.
- Collect good practices on green procurement, public buildings green refurbishment and public policies for eco-innovation.
- Provide individual meetings and counselling, to exchange experiences and good practices in the field of green public procurement and eco-innovation among interested stakeholders.
- Promotion of eGPP as a meeting point where private and public sector can cooperate in the field of green public procurement, public buildings green refurbishment and eco-innovation.
- Implementation and improvement of tools for green public procurement such as eGPP tool and LCC tool.

4.1.4.3 Stakeholders role and responsibilities

The role of stakeholders will be to cooperate in the LL activities, such as meeting attendance, eGPP tool testing, problem suggestions, questions, etc. Leader of the LL will be the Faculty of Energy Technology, University of Maribor who will organize the meetings and provide solutions to other stakeholders.

Table 2: Slovenian Living Lab Stakeholders

Nr.	Stakeholder	Government/SMEs/Organisation	Role/Capacity
1	Faculty of Energy Technology	Organisation	Leader of the Slovenian LL
2	Ministry of the environmental and Spatial Planning	Government	Competent Authority for GPP
3	Krško municipality	Government	Authority for GPP development
4	Kindergarten Čebelica - Šentjernej	Organization	GPP user
5	ZEL-EN , Ltd.	SME	RES company
6	Kres , Ltd.	SME	Development and promotion of innovative products
7	Ertis s.p.	SME	Development and promotion of innovative products

4.1.4.4 Cost issues

The costs for LL activities, such as cost of premises for meetings, printing materials and engaging external expertise to support implementation of green criteria and tools, will be provided within the anticipated 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 Slovenian eGPP Living Lab.

4.1.4.6 Risk issues

Several potential risks arise that could jeopardise the performance of the LL. The first is the lack of time of interested stakeholders to participate in LL activities, as several of them are involved in their day to day business. The mentioned risk is connected to the fact that especially SMEs, but also PAs, are lacking (experienced and trained) staff for the field of green public procurement. On the other hand, the lack of financial resources in this stage does not represent a major concern, as activities that are planned can be executed within the project framework. Although, the risk of lacking the appropriate funding mechanisms can seriously jeopardize the sustainability of the LL after the project ends. Considering all risks mentioned above, an extensive effort has been made to identify stakeholders which are already in some extent engaged in green public procurement and are willing to invest their time and energy to develop better solutions in the field of green public procurement. To motivate stakeholders, face to face meetings will be provided according to their time and availability. Several good practices will be transferred in form of training and education sessions in the most attractive way as possible. After the project ends, the funding of LL activities will be organized with appropriate sponsorship schemes.

4.1.4.7 Time plan

Table 3: Time frame of the eGPP Living Lab set up

CONNECT	Start: 20/11/2017
	End: 20/12/2017
EDUCATE AND TRAIN	Start: 1/1/2018
	End: 30/1/2018
IMPLEMENT	Start: 1/2/2018
	End: 30/4/2018
IMPROVE	Start: 1/4/2018
	End: 30/5/2018
EVALUATE	Start: 1/6/2018
	End: 30/6/2018
DISSEMINATE	Start: 1/8/2018
	End: 31/10/2018

4.1.5 Declaration of participation

The declaration of participation (DoP) in eGPP Living Lab was signed by 7 stakeholders. eGPP LL aims to improve capacity of public building owners to manage energy efficacy moving towards almost-zero-energy buildings and strengthen the capacity of SMEs and other eco-innovation actors in the green energy market by ensuring wider uptake of green electronic public procurement. Stakeholders who signed the declaration of participation are described below:

- **Faculty of Energy Technology:** Faculty of Energy Technology is one of the youngest members of University of Maribor. The Faculty operates at two locations, in Krško and Velenje. Both locations are the largest energy pools in Slovenia, with Nuclear power plant Krško and hydro power plants on Sava river and the biggest Slovenian thermal power plant in Šoštanj, Velenje.
- **Ministry of the environmental and Spatial Planning:** In the area of environmental protection, the strategic long-term policies and objectives of the Ministry are focused on preventing or reducing the consequences in areas that pose a threat to sustainable development.
- **Krško municipality** lies in the south-east part of Slovenia, where the Sava valley widens up into the vast Krško field. Krško is now the central town of Posavje region and the central town of the municipality.
- **Kindergarten Čebelica - Šentjernej:** In June 2012, the Čebelica kindergarten became an independent kindergarten with the decree establishing a public educational institution called Čebelica Kindergarten.
- **Company ZEL-EN Ltd.,** was established in 2011 with the main objectives for long-term development in the content area of energetics sector, to strengthen field of R&D in energetics in Slovenia and knowledge exchange between the economy and development institutions.
- **Company Kres Ltd.,** works in the field of information technology. The company was founded in 1991 with the aim of installing and maintaining computer systems and process automation.
- **Company Ertis s.p.**, has evolved from a classic computer hardware provider to the current form of engineering for small and medium enterprises, and more demanding home users.

The signed Declaration of Participation are in the Appendix.

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 4: Living Lab Key Performance Indicators (KPIs)

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
eGPP	38	Number of public tenders processed	No.	The indicator measures the total number of public tenders which were carried out while fully or partially using the eGPP platform.
	39	Number of products processed	No.	The indicator measures the total number of products which were inserted in eGPP platform.
	40	Number of services processed	No.	The indicator measures the total number of services which were inserted in eGPP platform.
	41	Number of PA registered in eGPP platform	No.	The indicator measures the total number of PA registered in eGPP platform.
	42	Number of SME registered in eGPP platform	No.	The indicator measures the number of SME registered in eGPP platform.
	43	Average time to enter 1 product	min	The indicator measures the average time spent by end user to enter the product into eGPP platform (in minutes).
	44	Average time to enter 1 service	min	The indicator measures the average time spent by end user to enter the service into eGPP platform (in minutes).
	45	Average time to publish 1 tender	min	The indicator measures the average time spent by end user to enter the tender specification and publish it on eGPP (in minutes).
	46	Number of operational errors per tender/product service entry	No.	The indicator measures the number of errors detected while using the eGPP (problems with login, malfunctioning links, problems with entering data etc.…).
	47	Number of necessary corrections	No.	The indicator measures the number of necessary corrections reported by end users of eGPP (not functioning links, mistakes in language etc.…).

4.2 Educate and train

4.2.1 eGPP Living Lab stakeholder education

The stakeholder's education was held at the Institute of Energy in Krško on 12.1.2018 to provide stakeholders with knowledge and understanding of available tools and methodologies for energy management, green refurbishment, green procurement.

The Directorate of the Environment from Ministry of the Environmental and Spatial Planning of Slovenia introduced a new Green Public Procurement of 2018, which offers more flexibility, contains environmental criteria, more items and services. The new GPP also came into effect with the following objectives: aspects of the circular economy, taking into account costs throughout their lifetime, establishing an environmental management system, public buildings, etc. For example: certification schemes must be taken into account in the construction of buildings, thus increasing the entire investment. The key environmental impacts of public procurement were also presented, such as: loss of forests - purchase of timber products legally and sustainably cut, greenhouse gas emissions - selection of low-emission products and services, unsustainable agriculture - selection of products from organic production, etc. At EU level, the GPP is developed within circular criteria, ordering new products that are better in terms of life expectancy, new business concepts - rent instead of purchase.

The stakeholders were also provided with assistance through the Ministry of Public Administration (MPA) and networks of experts who answer all their questions. They can also help themselves with the handbook "Buying Green!", published by the European Commission which is available on their web site and shown in figure 4.

Figure 4: Buying green! – A handbook on green public procurement (GPP)

Stakeholders responded positively to the course, although they highlight some features and issues that still need to be improved. For example, the municipality of Krško explained that new tenders finance only 20% of the investment, which is not too encouraging and covers only the value added tax. The goals will be achieved with larger investment stake, where investments will be repaid in less than 10 years. Despite constant changes and amendments to legislation, the public procurement system in Slovenia is still too complicated and often ineffective. The main problem in the implementation of public procurement contracts is the resolution of disputes. For example, the implementation of construction and engineering contracts is one of the riskiest forms of cooperation between contractual partners.

Figure 5: eGPP Living Lab stakeholder education Krško

4.2.2 eGPP Living Lab stakeholder training

The training of stakeholders, was held at the Institute of Energy Technology in Krško on 12. 1. 2018, stakeholders were able to gain skills on how to use the GRASPINNO eGPP platform and eGPP tool. The use of eGPP tool was demonstrated for SMEs and PAs. While the demonstration of the tool for SMEs was mainly focused on using the tool for searching public tenders and entering products, the demonstration for PAs was focused on how to carry out public procurement, find appropriate products and use integrated LCC and conversion tools.

The training course was led by Gregor Srpčič from Faculty of Energy Technology, University of Maribor. Firstly, the graphic user interface (GUI) and main functionalities of the eGPP platform for SMEs were introduced to stakeholders. Stakeholders tried to search for key elements, products and tenders. Also the meaning of different key elements and its criterion values were explained on a specific case. Next the stakeholder had to enter a product into the platform (e.g. a portable computer). They had to choose a proper category of the product, add its features, full description, key elements and services, as shown in Figure 6 and 7. After the fulfillment the product was visible on the list of products as shown in figure 8.

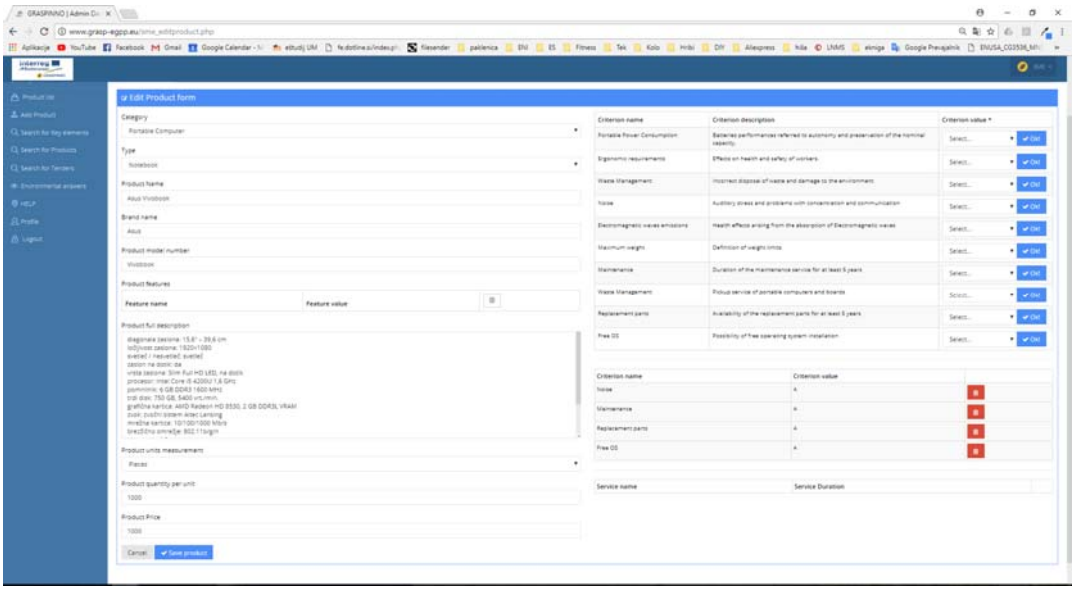
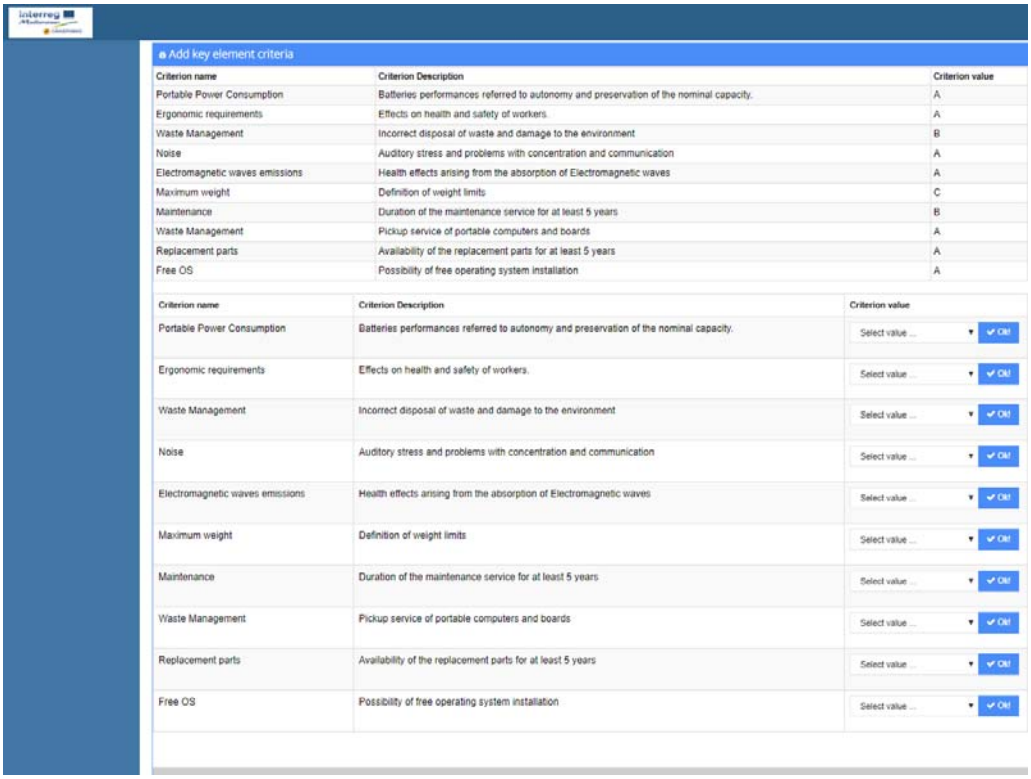


Figure 6: Adding a product



Add key element criteria

Criterion name	Criterion Description	Criterion value
Portable Power Consumption	Batteries performances referred to autonomy and preservation of the nominal capacity.	A
Ergonomic requirements	Effects on health and safety of workers.	A
Waste Management	Incorrect disposal of waste and damage to the environment	B
Noise	Auditory stress and problems with concentration and communication	A
Electromagnetic waves emissions	Health effects arising from the absorption of Electromagnetic waves	A
Maximum weight	Definition of weight limits	C
Maintenance	Duration of the maintenance service for at least 5 years	B
Waste Management	Pickup service of portable computers and boards	A
Replacement parts	Availability of the replacement parts for at least 5 years	A
Free OS	Possibility of free operating system installation	A

Criterion name	Criterion Description	Criterion value
Portable Power Consumption	Batteries performances referred to autonomy and preservation of the nominal capacity.	Select value ... Ok!
Ergonomic requirements	Effects on health and safety of workers.	Select value ... Ok!
Waste Management	Incorrect disposal of waste and damage to the environment	Select value ... Ok!
Noise	Auditory stress and problems with concentration and communication	Select value ... Ok!
Electromagnetic waves emissions	Health effects arising from the absorption of Electromagnetic waves	Select value ... Ok!
Maximum weight	Definition of weight limits	Select value ... Ok!
Maintenance	Duration of the maintenance service for at least 5 years	Select value ... Ok!
Waste Management	Pickup service of portable computers and boards	Select value ... Ok!
Replacement parts	Availability of the replacement parts for at least 5 years	Select value ... Ok!
Free OS	Possibility of free operating system installation	Select value ... Ok!

Figure 7: Adding key element criteria

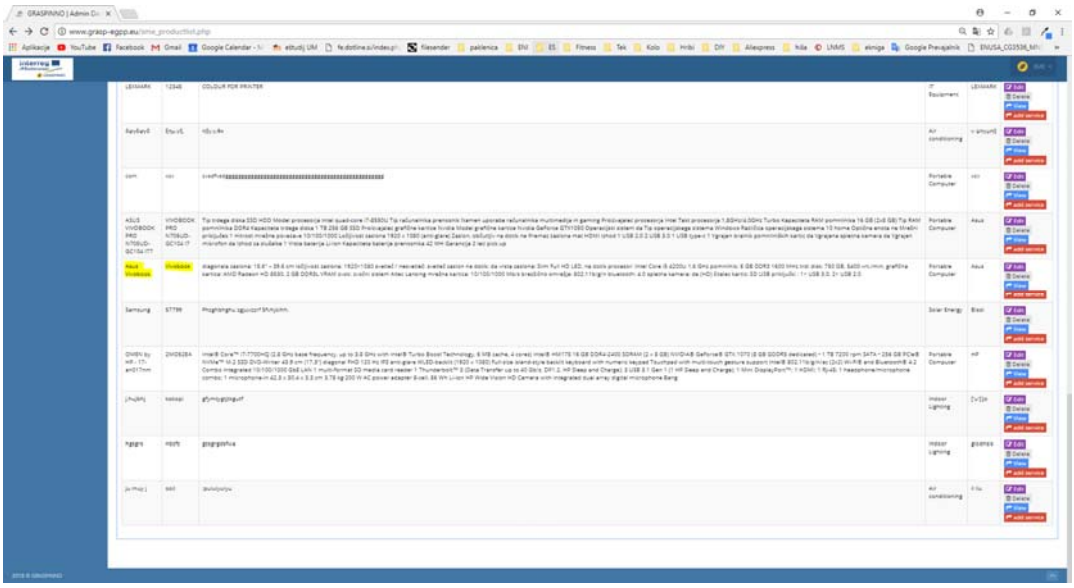


Figure 8: Searching for products

Stakeholders quickly gained skills and knowledge to use the tool, due its simplicity. They found it very useful, but they also suggested that products should have a credible certificate about the information of the manufacturer's product. In our opinion the most important complaint was that entering products manually is very time consuming and useless, since even small companies have thousands of different products. Entering them manually into the eGPP platform would take enormous amounts of time. They suggested that all companies have xml or Excel databases of their products and that it would be a great feature if they could easily upload their products, together with its characteristics only by importing them from their databases.

In the second part the eGPP GUI and functionalities intended for PAs were introduced to our stakeholders. The most important part of the second part of the training was the use of the eGPP tool. Stakeholders search for a tender, which was previously uploaded by us (Figure 9). They also publish a tender and create a tender information package (TIP). The result of entering the TIP was the product they previously entered in the first part of the training (Figure 10). They also got to use the LCC tool on a specific case (LED bulbs vs. filament lamp; Figure 11) and tried the conversion table.

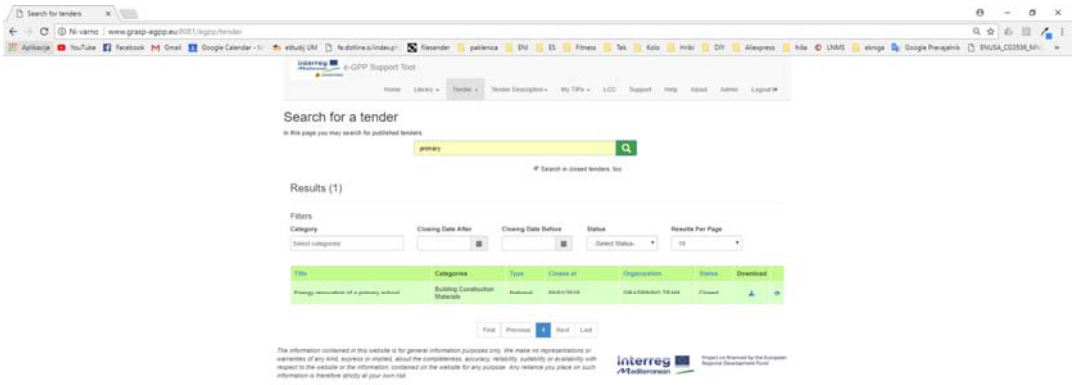


Figure 9: Exploring tenders

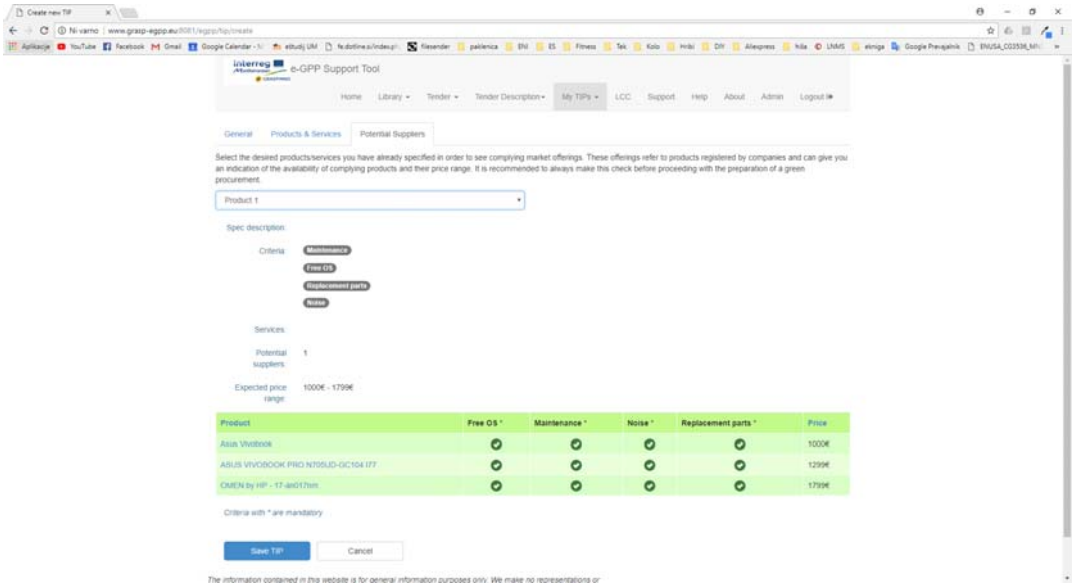


Figure 10: Potential suppliers

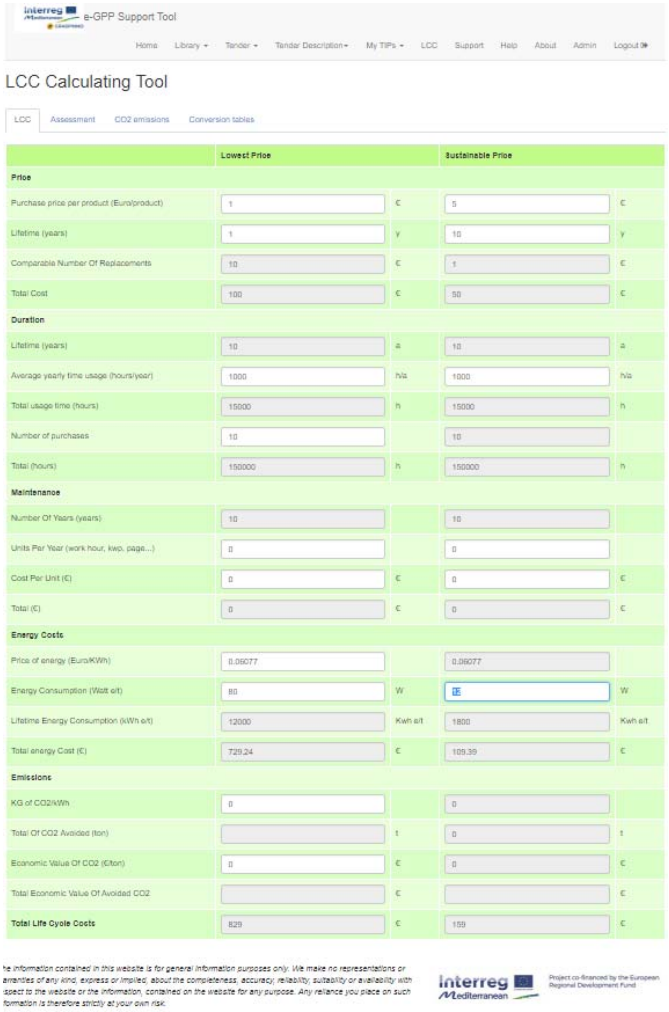


Figure 11: LCC tool

4.3 Implement

4.3.1 Process of implementing the eGPP tool

In the previous step of establishing LL (4.2 Educate and train) we provided stakeholders with knowledge and understanding of available tools (eGPP, LCC, etc.). In this next step the implementation of the selected tool (eGPP) was carried out, according to the implementation plan. Given that stakeholders who implement the eGPP tool are small and medium-sized enterprises (SMEs), their implementation will include the following actions:

- adding products (from their database),
- adding key elements for products (for products without key elements) and
- searching for tenders (added by the public authorities).

During the implementation phase, the stakeholders will also search for improvements of the eGPP tool, which will be presented in the next chapter (4.4 Improve).

Two stakeholders (Kres Ltd. and Ertis s.p.) showed their interest in the participation in the implementation of eGPP tool. Their goal was to find out if the tool is well-designed for their use and whether it needs any additional improvements. Considering that both stakeholders are companies with computer equipment and website design, we assume that they'll give very accurate results about the functionality of the eGPP tool.
At the early beginning of the phase, stakeholders were briefly informed how to search and add the product and/or key elements. After the completion of the additional training, the stakeholders carried out the entire implementation of the tool within one month. Each of the stakeholders entered at least 30 products (PC, Lap-tops, printers, etc.) and 5 additional key elements. No additional help was needed during the implementation. The stakeholders were grateful for the opportunity to use the tool, as they saw it well-designed with minor improvements. The entire implementation took place according to the following implementation plan:

- 01/02/2018 – agreement on the implementation of eGPP tool,
- 20/02/2018 – additional training,
- 01/03/2018 – start of implementation,

- 15/03/2018 – implementation overview,
- 30/04/2018 – end of implementation.

4.3.2 Measurement of Key performance indicators

In resolving the questionnaire, the University of Maribor as a Slovenian eGPP initiator identified the following results.

The average duration of the joint meeting was 240 min, with an average attendance of 14 participants per meeting. At the meeting we, often discussed themes on funding possibilities for green investment, best practices and tools in field of funding procurement, energy savings, energy efficiency and building refurbishment. In our opinion, stakeholders who participated in LL, gained benefits from improved knowledge and understanding of energy management, development and promotion of innovative products and concerns for green growth. Their knowledge was most upgraded in the field of green policies (EU, national, local), green public procurement (competence, skills), living lab concept and GRASPINNO eGPP tool (or any other electronic public procurement tool). During the implementation, stakeholders entered around 60 products with an average product input time of 6 min and 8 operational errors per product. Table 5 shows that by participating in Living Lab the stakeholders gained a lot of benefits. Figure 12 shows stakeholder's knowledge gained by participating in LL.

Table 5: Benefits gained by participating in Living lab.

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

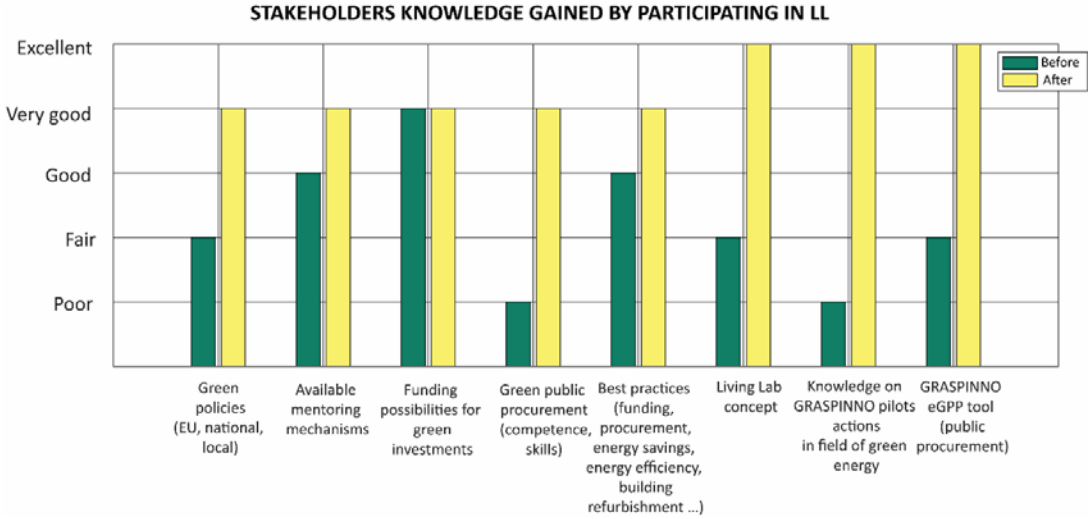


Figure 12: Stakeholders knowledge gained by participating in LL.

Figure 12 shows that before the Living lab, the majority of stakeholders had "poor" or "fair" knowledge in green policies, GPP, Living Lab concept, knowledge on GRASPINNO pilot actions in field of green energy and in GRASPINNO eGPP tool. After the participation in LL they improved their knowledge in all fields to "very good" or even "excellent".

As an LL initiator, we have a great interest in further cooperation and we hope to get a larger number of SMEs in the future. After the completion of the project, LL's follow-up activities will be provided by events on the topic of GPP and various promotions within the University of Maribor.

4.4 Improve

4.4.1 Generation of potential improvements of e GPP tool

In the improve phase of LL, stakeholders were actively engaged in the improvement process of tools for electronic Green Public Procurement with aim to collect from them feedback for adoption of solutions for green public procurement to their actual needs.

The Slovenian Living Lab initiators motivated stakeholders in any way to participate in the improvement of the e GPP tool. Theirs innovate ideas and solutions could be used for the development of the new version of the e GPP tool. The initiators helped the stakeholders to better identify the problems/improvements. At first, two stakeholders from computer companies participated in the improvement phase. Their task was to find out/determine, to potential solutions of the e GPP tool. After the improvement of the e GPP tool (see Table 6), all other stakeholders were asked to review the improvements that were provided by computer companies. A list of all improvements has been sent to them, in order to determine if the e GPP tool needs the described improvements. Table 6 shows the improvements chosen by most stakeholders.

Table 6: Description of the problems and improvements.

Number	Description of the problem	Description of the improvement
1.	Missing criterion for certain products	Each product should have at least 3 basic criterion by default.
2.	After completing the "*Add product*" form, all fields are deleted, due to minor error in the form.	The program should mark the wrong field (e.g. with red), without deleting the entire form.
3.	The product with the same name but different type cannot be added. (e.g. HP Lifebook A557 and HP Lifebook U748). It confirms that such product already exists and the program deletes the entire form.	There should be no rejection if the product is the same type/brand. The program should reject the form only if brand name and model number are the same.
4.	The program finds the products and displays them in a search list. After the selection of the specific product, the search list disappears, when pressing the "backwards" button.	The search list of products should be displayed after clicking the "backwards" button.

5.	The criterions must be added separately, otherwise only the selected one is confirmed and others are deleted.	There should be only one button to confirm all the criterions, or a button for each criterion in which others are not deleted.
6.	The search list has no functions/filters.	The search list should be supplemented with search filter (new/old, price up/down, date up/down, etc.).
7.	Manual input of products takes a lot of time.	The data should be automatically uploaded from xml or excel database (of the user) to the eGPP platform.

Table 6 is also supported with pictures from 13 to 18, for improvement number 1, 4, 5, 6 and 7. Fig. 19 presents the number of proposes per improvement.

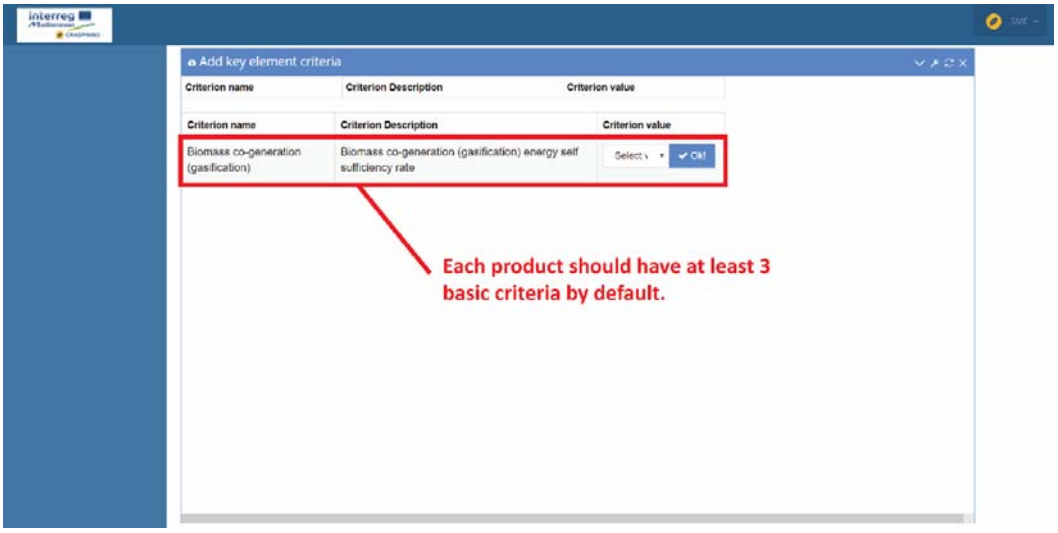


Figure 13: Improvement number 1.

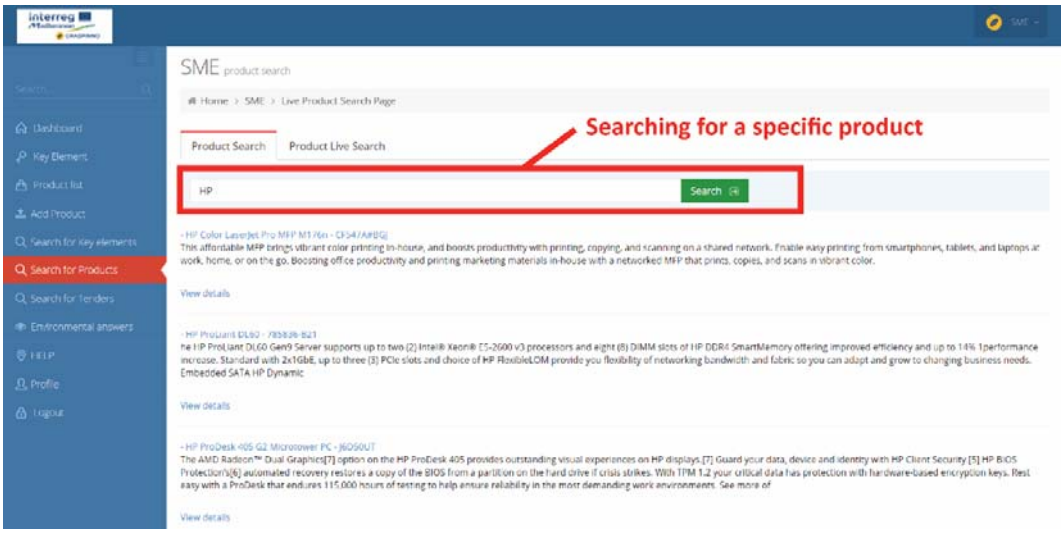


Figure 14: Improvement number 4 (part 1)

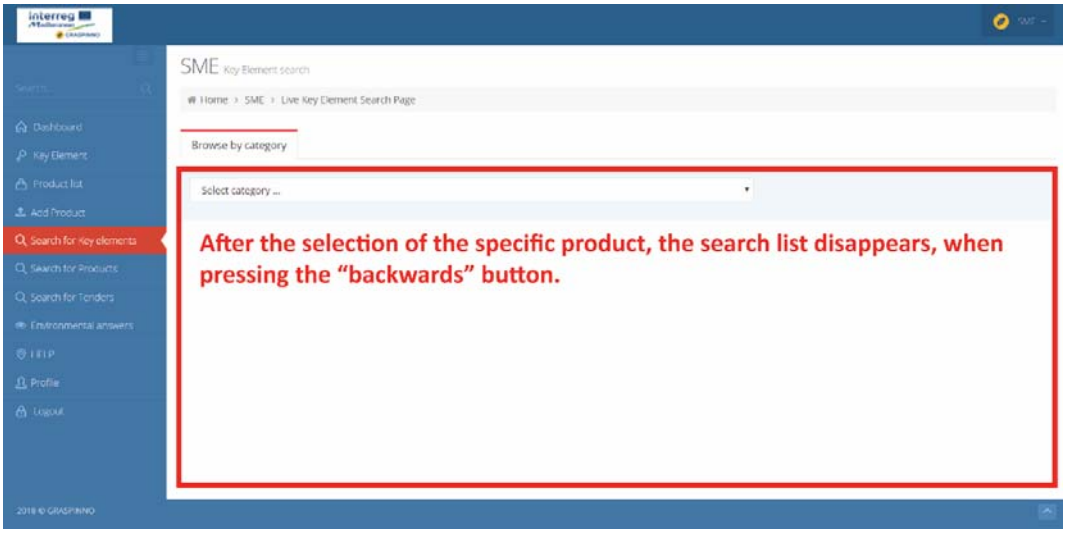


Figure 15: Improvement number 4 (part 2).

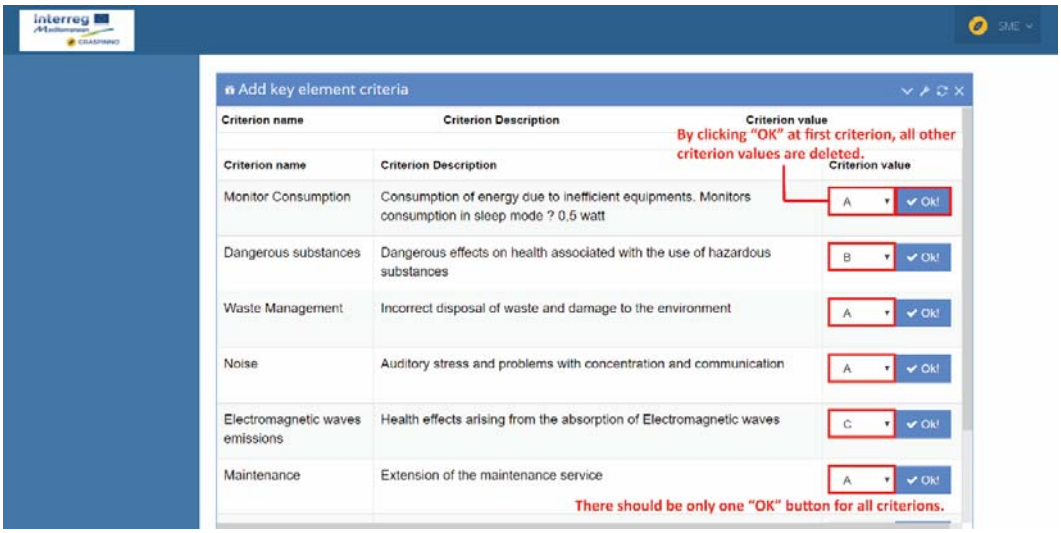


Figure 16: Improvement number 5.

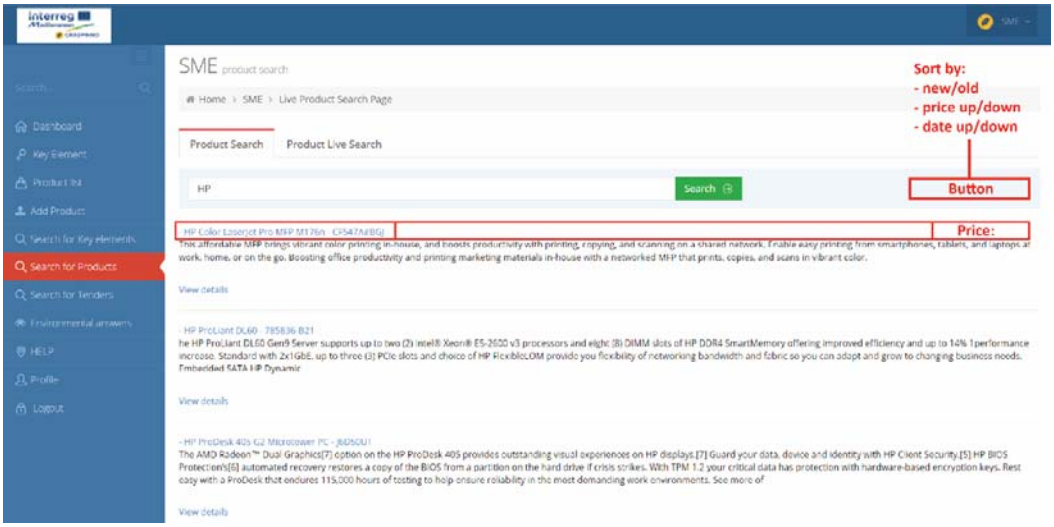


Figure 17: Improvement number 6.

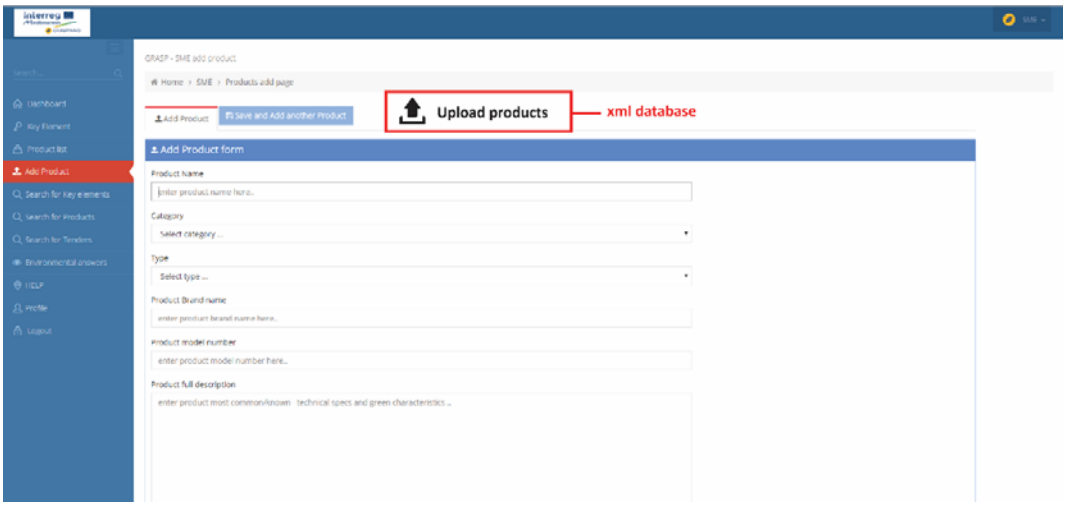


Figure 18: Improvement number 7.

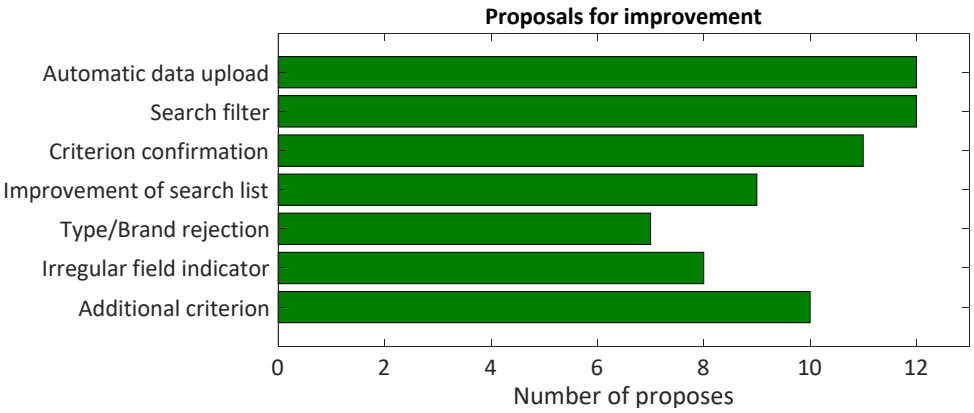


Figure 19: Stakeholders proposals for improvement.

4.4.2 Implementation of e GPP tool improvements

The implementation of e GPP tool improvements includes the use of new ideas/improvements in the e GPP tool in order to increase its efficiency and usage. Given the number of proposed improvements from stakeholders, only a certain number of the most important improvements were selected for the implementation (presented in Table 7).

Table 7: The accepted improvements

Number	Description of the improvement	Selection of improvement
1.	Each product should have at least 3 basic criterion by default.	NO
2.	The program should mark the wrong field (e.g. with red), without deleting the entire form.	**YES**
3.	There should be no rejection if the product is the same type/brand. The program should reject the form only if brand name and model number are the same.	**YES**
4.	The search list of products should be displayed after clicking the "backwards" button.	**YES**
5.	There should be only one button to confirm all the criterions, or a button for each criterion in which others are not deleted.	NO
6.	The search list should be supplemented with search filter (new/old, price up/down, date up/down, etc.).	**YES**
7.	The data should be automatically uploaded from xml or excel database (of the user) to the eGPP platform.	**YES**

Table 7 shows that the selected improvements are those that increase the efficiency and use of the tool itself. The improvement that this tool really needs is automatic upload of products. With these selected improvements, this tool could be improved to the level of a professional tool, that could be used for further promotions not only in Slovenia, but in other European countries as well.

4.5 Evaluate

4.5.1 e GPP evaluation

The goal of this chapter is to create an analysis of the use of e GPP tool and platform. According to the evaluation methodology prepared by the University of Maribor, stakeholders evaluated the use of e GPP tool with the help of online questionnaires. The questionnaire was sent to all (7) stakeholders that signed the DoP. Figures 20 and 21 shows the level of knowledge on electronic Green Public Procurement topics before and after the living lab participation.

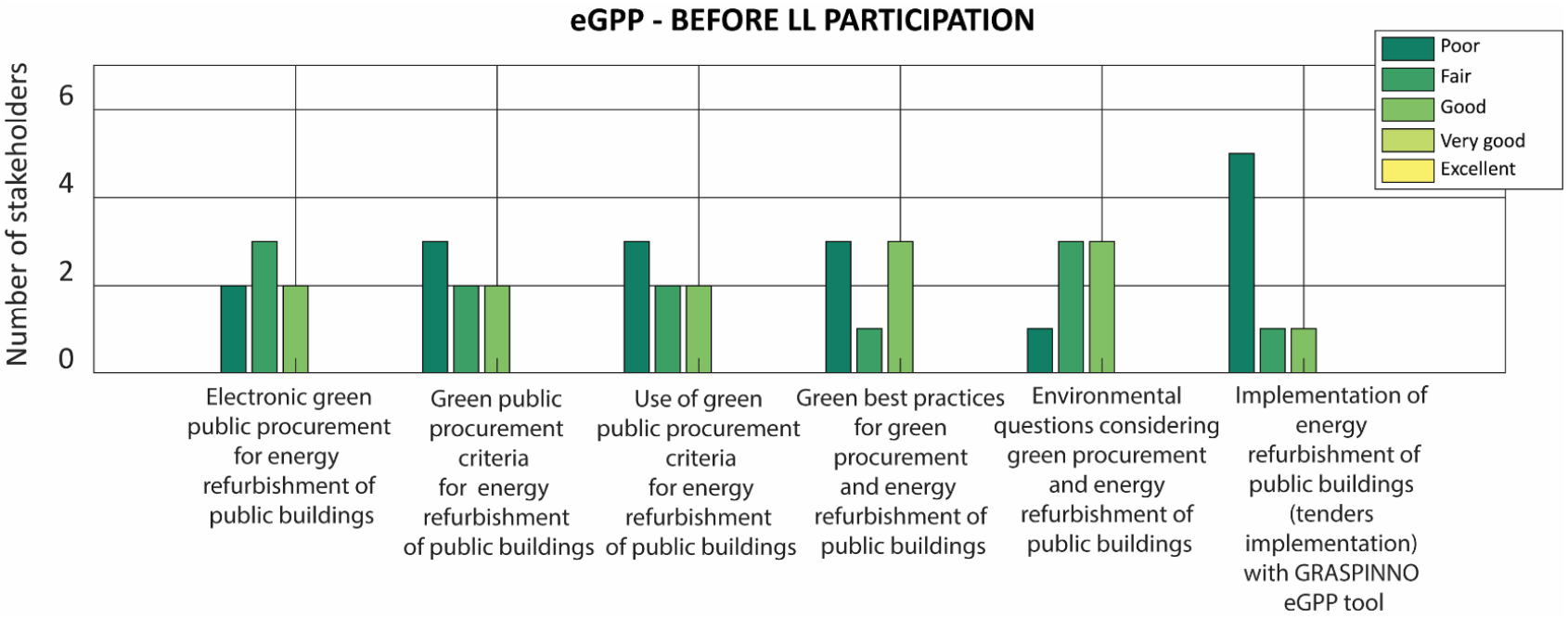


Figure 20: The level of knowledge on eGPP topics before the LL participation

Project co-financed by the European Regional Development Fund

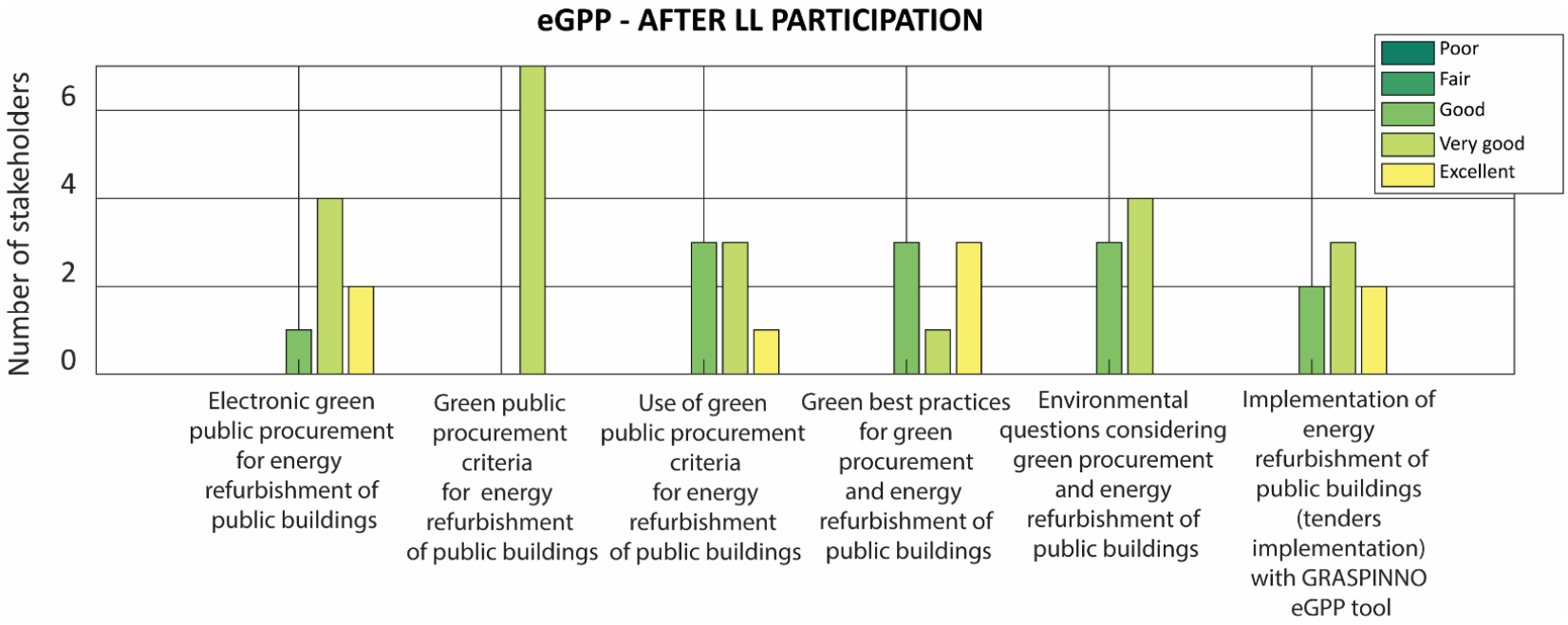
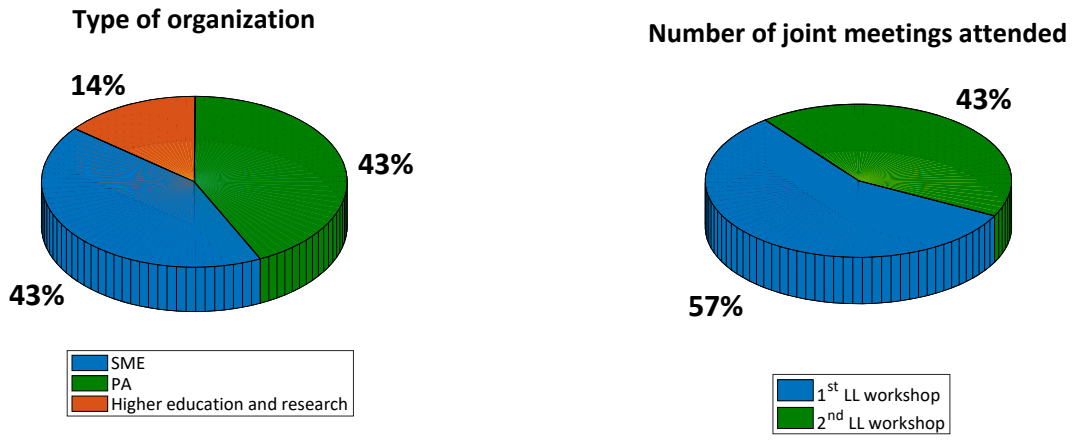


Figure 21: The level of knowledge on eGPP topics after the LL participation.

The comparison between the level of knowledge on electronic green public procurement before and after the participation in living lab shows that the most of the participants improved their knowledge in the field of GPP criteria for energy refurbishment and its usage from ''poor'' or ''fair'' to ''very good'' or even ''excellent''. At least they were acquainted with the implementation of energy refurbishment of public buildings with GRASPINNO eGPP tool.

4.5.2 eGPP Living Lab evaluation

According to the evaluation methodology prepared by the University of Maribor, stakeholders evaluated the overall performance of living laboratory with the help of online questionnaires. Figure 22 presents the type of organizations and number of joint meetings attended by stakeholders.



a) b)

Figure 22: a) Type of organization, b) number of joint meetings attended.

Figure 22 – a shows that Public Authorities (43%) and Small and Medium-sized Enterprises (43%) represent the majority of all stakeholders (86%), while only a small proportion (14%) represent the higher education and research organizations. Figure 22 – b shows that

approximately, half of all stakeholders attended both living lab workshops. Figure 23 shows the level of the stakeholder's satisfaction for the workshops that were organized within the Slovenian Living Lab.

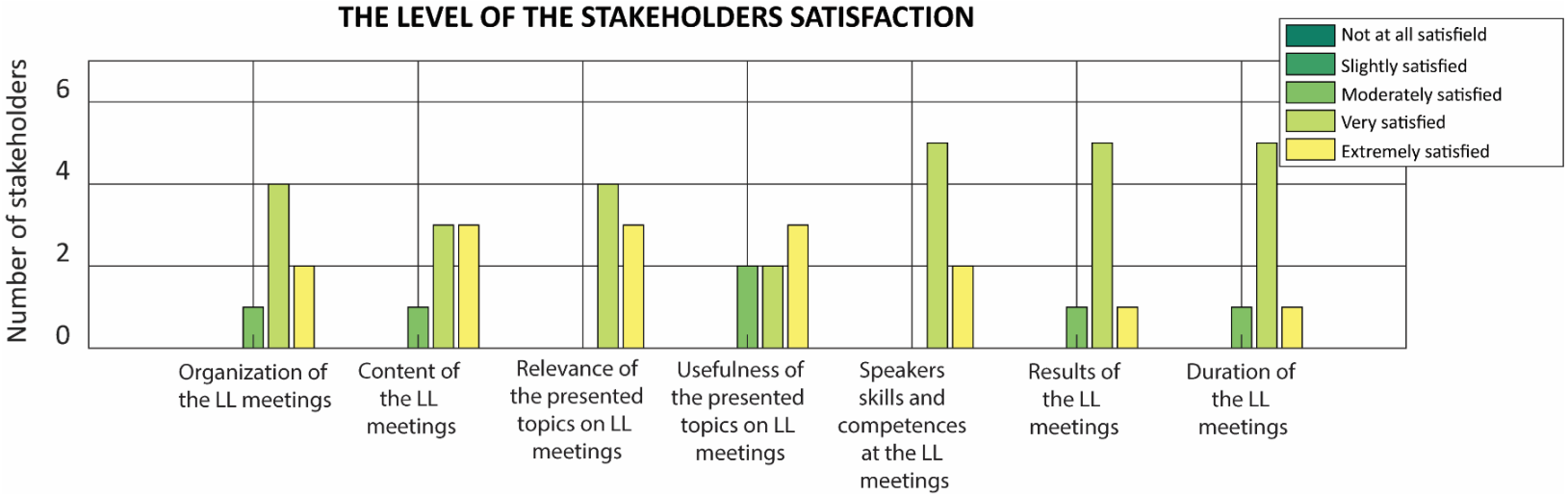


Figure 23: Level of satisfaction.

The results in Figure 23 show that the majority of the participants were "very and extremely satisfied" with the Living Lab in all ways. Only three participants answered that they were "moderately satisfied" with the usefulness of the presented topics on LL meetings and the duration of the LL meeting. Overall, none of the questions were answered with a negative answer. Figure 24 presents the benefits gained by participating in e GPP Living Lab.

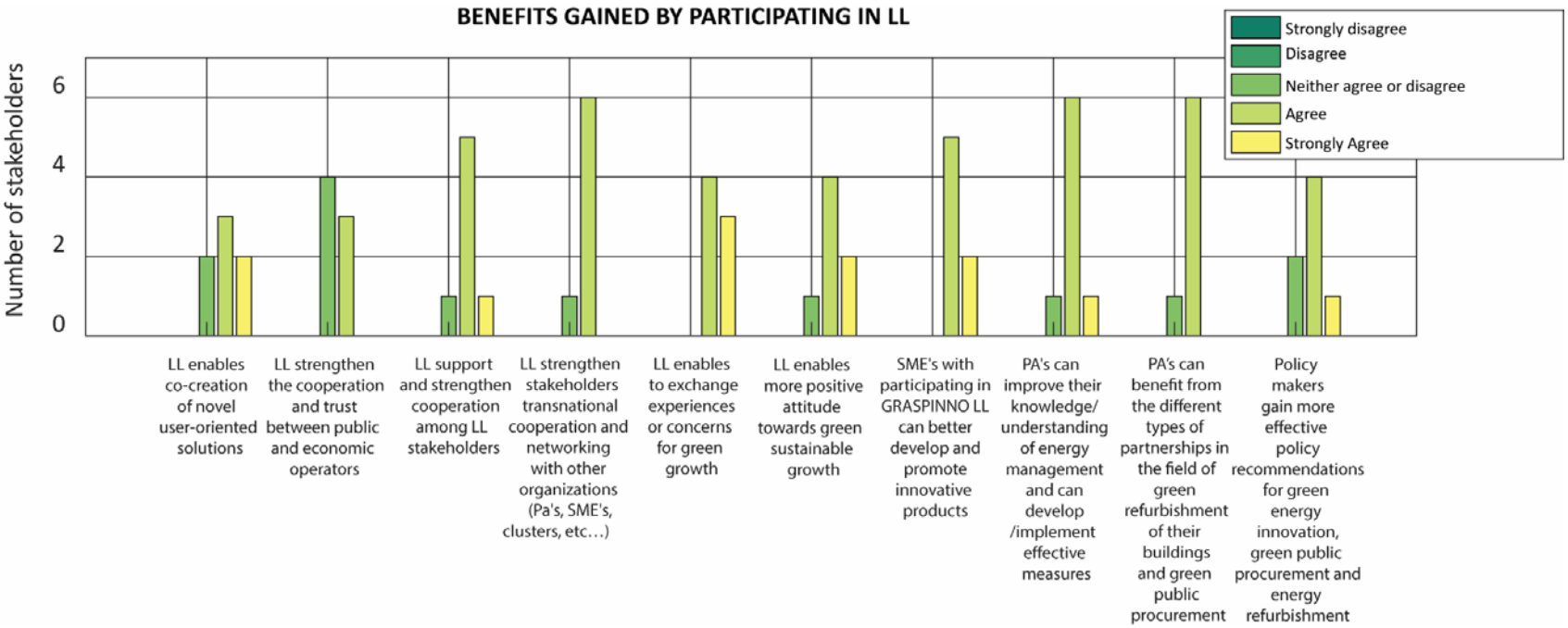


Figure 24: Benefits gained by participating in e GPP Living Lab.

The results from Figure 24 shows that almost all participants agree that they gained some kind of benefits from participating in Slovenian Living Lab. Almost one third of the participants "strongly agree" that with participating in LL co-creation of novel user-oriented solutions is enabled, while the other third "agree" and the last third answered that they "neither agree or disagree". More than half of the participants agreed that "LL strengthen the cooperation and trust between public and economic operations", while the rest of participants answered that

they "neither agree or disagree" with the question. Overall, none of the questions were responded with a negative answer. The Figures 25 and 26 presents the participants knowledge before and after the participation in Living Lab.

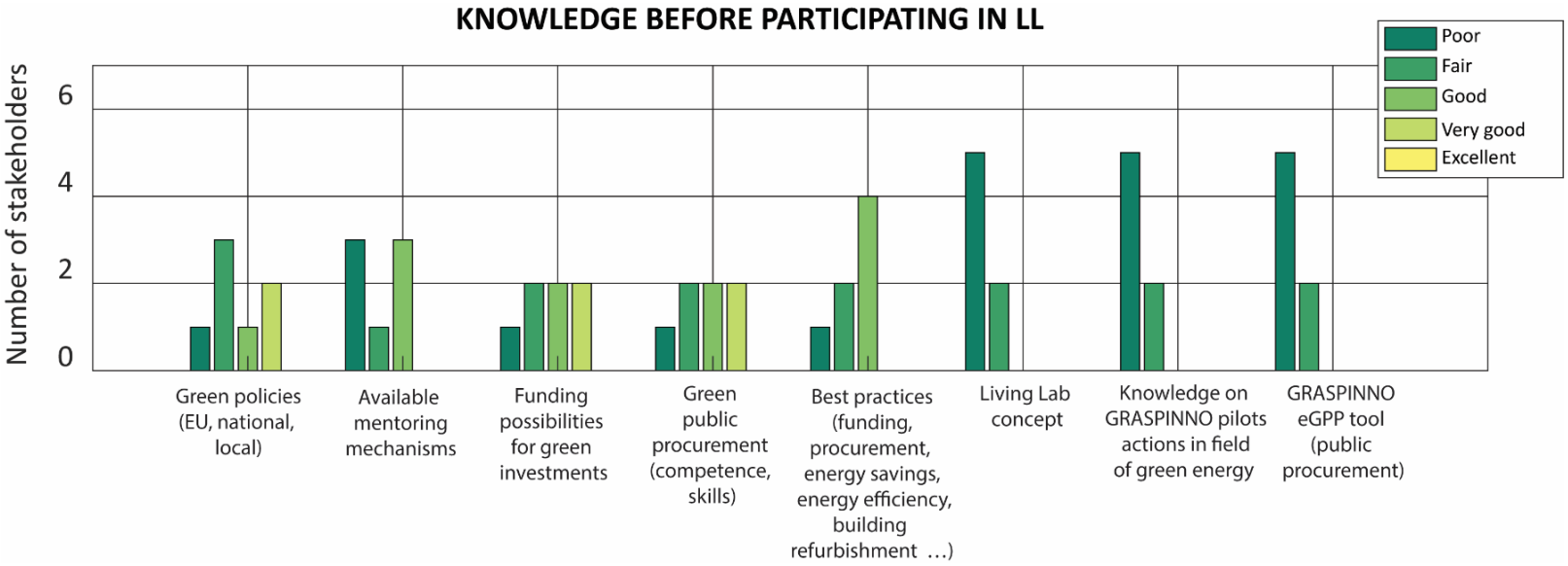


Figure 25: Knowledge before the participation in the e GPP Living Lab.

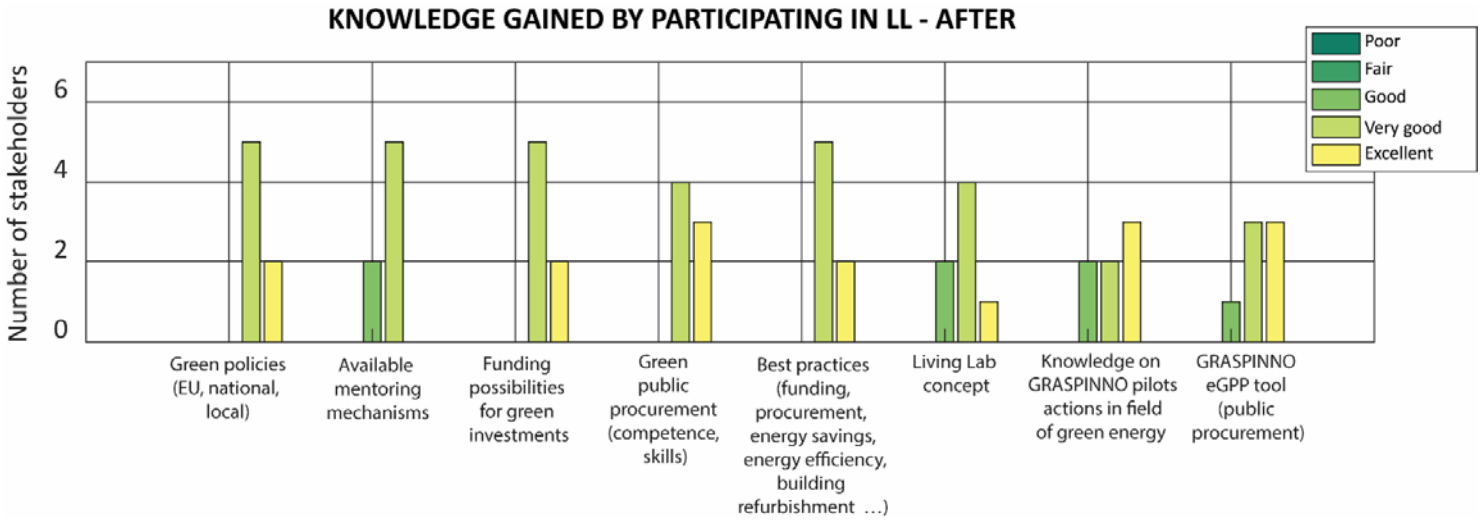
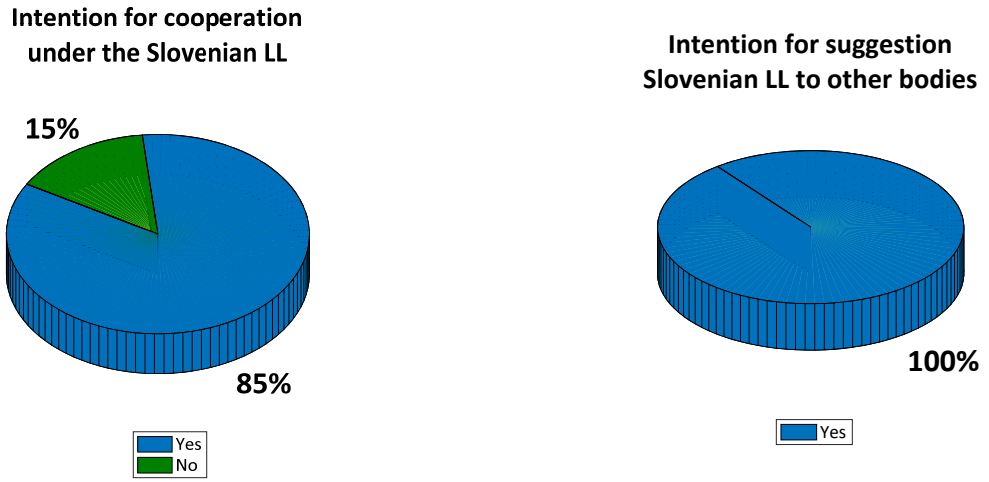


Figure 26: Knowledge gained by participating in the e GPP Living Lab.

The analysis of knowledge before (Figure 25) and knowledge gained after (Figure 26) participating in Living Lab shows stunning results. Most of the participants answered that by participating in Living Lab they improved their knowledge in green policies, funding possibilities, GPP, LL concept and GRASPINNO e GPP tool from ‘’poor’’ or ‘’fair’’ to ‘’very good’’ or even ‘’excellent’’.



a) b)

Figure 27: a) Intention for cooperation, b) intention for suggesting LL to others bodies.

Figure 27 – a shows that 83% of all stakeholders who fulfilled the questionnaire are willing to continue the cooperation under the Slovenian Living Lab. Figure 27 – b shows that all of stakeholders who fulfilled the questionnaire are willing to suggest the Slovenian Living Lab to others.

In the last question, the participants were asked how would they ensure the existence of Living Lab activities after the project. Some of them responded that they will organize events, meeting and workshops for electronic Green Public Procurement even after the project end. Others replied that they would ensure the existence of eGPP Living Lab topic also with promotions (of any kind).

4.5.3 Guidelines and recommendations

The stakeholders that participated in the Slovenian e GPP living lab gave some recommendations and guidelines for future improvements and sustainability of established Living Labs. The results of Living Lab evaluation showed that living lab in Slovenia was well-designed and organized. However, certain stakeholders made the following comments regarding the e GPP tool itself.

First, the e GPP tool must be improved with the proposals given by stakeholders in the improvement phase of this report. The e GPP tool should be reviewed by experts in the field of ICT and GPP. Their findings could further improve the efficiency, sustainability and use of the tool. Since in Slovenia for the time being the tool for electronic green public procurement is not yet in use, the eGPP tool can help to initiate or to promote the introduction into the e-procurement system. However, according to the opinion of the Ministry of the Environmental and Spatial Planning, there are still many unresolved problems that need to be improved. The tool must be upgraded, based on laws, rules and mentoring mechanisms. The implementation of upgraded e GPP tool would encourage both public institutions and small and medium-sized enterprises to use energy-efficient materials.

In Slovenia, various companies (such as: construction companies using sustainable construction or electricity distribution companies), which promote green energy and energy efficiency of buildings, could participate in various events or workshops to present e GPP tools and e GPP platform. With such promotion, the public would be able to improve their knowledge about the importance, benefits and advantages of green public procurement. These kind of events could be an opportunity to promote the activities and knowledge gained in the LL, expending LL's actions, finding new contacts and address new innovative topics for next stakeholders workshops/meetings.

4.6 Disseminate

The dissemination procedures specified in this phase present the ambition to achieve an efficient and challenging spread of new knowledge and to further communicate the LL concept. The major focus of the dissemination framework is therefore to ensure that the LL's objectives, activities and results are widely disseminated to the appropriate target communities, at appropriate times, via appropriate methods, and that those who can contribute to development, evaluation, uptake and exploitation of the outcomes can be identified and encouraged to participate.

The Slovenian Living Lab initiators will promote the LL activities, results and findings on the events taking place at the Chamber of Commerce and Industry of Slovenia. At the events, we will get in touch with companies that promote green energy, energy efficiency and sustainable construction and later attend their events/meeting in order to promote the eGPP tool and eGPP platform. The idea is that companies could spread the eGPP tool and guidelines among their customers. The entire promotion will be supported by the Ministry of Environment and Spatial Planning, which will provide new stakeholders with professional training on the new green public procurement system in Slovenia. The LL members will also be presenting articles at various conferences with different topics in order to promote the overall activities, results and findings of the LL. The Living Lab results will also be disseminated on different events that are listed below:

- Green Tech Forum BLED – GTF
- International trade fair Celje 2018
- International conference CIGRE 2019
- International TECHEXPO fair – Celje 2019
- Fair of construction, energy, utilities and crafts – MEGRA 2019

5 CONCLUSIONS

Slovenia has a fairly well-developed regulatory and policy framework for public procurement, but still a significant gap persists between rules on paper and actual practices, due to a series of structural challenges. Electronic procurement and especially electronic Green Public Procurement is another area that can be greatly strengthened in Slovenia. Therefore, the eGPP Living Lab intent to present the eGPP tool to the Slovenian public procurement directorate, public authorities and, small and medium-sized enterprises to **increase knowledge and usage of eGPP**, sustainable energy and energy efficient materials.

In the educate and train phase, the Slovenian Living Lab with the help of the Ministry of environment and spatial planning organized the 1st workshop for electronic green public procurement (eGPP). The workshop brought together 12 potential stakeholder from various companies and public organizations, who were educated in green public procurement in Slovenia, best practices for GPP, energy refurbishment of public buildings and eGPP tool. The stakeholders who have decided to sign the declaration of participation were later on trained on how to use the GRASPINNO eGPP platform and eGPP tool. The use of eGPP tool was demonstrated for SMEs and PAs. While the demonstration of the tool for SMEs was mainly focused on using the tool for searching public tenders and entering products, the demonstration for PAs was focused on how to carry out public procurement, find appropriate products and use integrated LCC and conversion tools. The plan for implementation phase was to **gain stakeholders feedback** and comments on functionality of eGPP tool, which were used in the improve phase. In the improvement phase the stakeholders **successfully identified the improvements** that need to be taken into account in order to upgrade eGPP tool to a professional level. **The most important improvement that this tool needs is automatic upload of products data**, as it reduces the input time. In the 2nd workshop, the stakeholders were introduced with the accepted improvements that will be taken into account by eGPP software designer. In the evaluation phase the stakeholders evaluated the eGPP tool and the overall evaluation of the Living Lab. The results were above average and very encouraging, since they **improved their knowledge** in basically all fields. The stakeholders were also **very satisfied** with the Living Labs organization, content and results. The final part of the Living Lab approach is the dissemination phase. The Living lab dissemination phase plays a key

role for the achievement of the overall objectives and is an integral part of our project. The dissemination plan is to promote the LL's activities, results and findings on various events, meetings and workshops across Slovenia.

6 APPENDIX - Stakeholders Declaration of Participation (7 DoP)

Izjava o sodelovanju
v živem laboratoriju projekta GRASPINNO

Cilj projekta GRASPINNO je izboljšati znanje javnega in zasebnega sektorja pri upravljanju energetske učinkovitosti zgradb. Z inovativnimi rešitvami zelenega naročanja projekt omogoča doseganje prihrankov energije ter spodbuja učinkovitejšo prenovo javnih zgradb v okviru pametnih mest in skupnosti. Osem živih laboratorijev vzpostavljenih v projektu bo pripomoglo k doseganju vedenjskih sprememb v korist ekoloških inovacij in zelene energije.

Skladno z aktivnostmi projekta GRASPINNO podpisniki soglašajo, da bodo sodelovali v:

"Živem laboratoriju za zeleno javno naročanje "eGPP Living Lab"

katerega cilj je izboljšati znanje javnega sektorja pri upravljanju energetske učinkovitosti zgradb in doseganju skoraj nič energijskih zgradb ter hkrati spodbuditi majhna in srednja podjetja k aktivnem sodelovanju na trgu zelene energije.

S podpisom izjave o sodelovanju izjavljam, da se pridružujem "Živem laboratoriju za zeleno javno naročanje "eGPP Living Lab" in imenujem predstavnika za komuniciranje z regionalno organizacijo:

ZEL-EN, RAZVOJNI CENTER ENERGETIKE, D.O.O.
(Ime in naslov organizacije)

DOMEN ZORKO
(Ime in priimek zakonitega zastopnika)

(Podpis zakonitega zastopnika)

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Univerza v Mariboru
Fakulteta za energetiko
(Regionalna organizacija)

izr. prof. dr. Sebastijan Seme
(Regionalni predstavnik)

(Podpis)

VRBINA, 12. 1. 2018
(Kraj in datum)

OPOMBA: To je prostovoljna izjava in ne predstavlja nobene finančne obveznosti ali katere koli druge pravno zavezujoče obveznosti.

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Ministrstvo za okolje in prostor RS
(Ime in naslov organizacije)

Tanja Bolte
(Ime in priimek zakonitega zastopnika) (Podpis zakonitega zastopnika)

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Univerza v Mariboru
Fakulteta za energetiko **izr. prof. dr. Sebastijan Seme**
(Regionalna organizacija) (Regionalni predstavnik) (Podpis)

Sebastijan Seme

KRŠKO, 12.1.2018
(Kraj in datum)

OPOMBA: To je prostovoljna izjava in ne predstavlja nobene finančne obveznosti ali katere koli druge pravno zavezujoče obveznosti.

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OBČINA KRŠKO, CKŽ 14, 8270 KRŠKO
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mag. MIRAN STANKO
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izr. prof. dr. Sebastijan Seme
(Regionalni predstavnik)

Sebastijan Seme
(Podpis)

KRŠKO, 12.1.2018
(Kraj in datum)

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ERTIS Center Simon Srpčič s.p.
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Simon Srpčič
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izr. prof. dr. Sebastijan Seme
(Regionalni predstavnik)

Sebastijan Seme
(Podpis)

Vrbina, 12.01.2018
(Kraj in datum)

OPOMBA: To je prostovoljna izjava in ne predstavlja nobene finančne obveznosti ali katere koli druge pravno zavezujoče obveznosti.

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KRES d.o.o.
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Fakulteta za energetiko
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izr. prof. dr. Sebastijan Seme
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Krško, 12. 1. 2018
(Kraj in datum)

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VRTEC ČEBELICA ŠENTJERNEJ
(Ime in naslov organizacije)

ANA SRPČIČ
(Ime in priimek zakonitega zastopnika)

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Univerza v Mariboru
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KRŠKO, 12.1.2018
(Kraj in datum)

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