

## **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: D.4.2 Findings from Living Labs**

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## Table of Contents

|  |    |
|--|----|
| 1. INTRODUCTION .....                    | 3  |
| 2. GRASPINNO LIVING LABS .....           | 4  |
| 3. BENEFITS AND KNOWLEDGE GAINED .....   | 10 |
| 4. CHALLENGES AND RISKS.....             | 23 |
| 5. LESSONS LEARNED .....                 | 27 |
| 6. RECOMMENDATIONS.....                  | 30 |
| 6.1 Living Lab recommendations .....     | 30 |
| 6.2 GRASPINNO tools recommendations..... | 33 |
| 7. CONCLUSIONS .....                     | 36 |

## List of tables

|   |    |
|---|----|
| Table 1: GRASPINNO Living labs description.....             | 6  |
| Table 2: GRASPINNO Living Labs solutions proposed .....     | 8  |
| Table 3: GRASPINNO recommendations for LL.....              | 32 |
| Table 4: Specific recommendations for GRASPINNO tools ..... | 35 |

## List of figures

|  |    |
|--|----|
| Figure 1: GRASPINNO Living Labs.....   | 4  |
| Figure 2: The type of GRASPINNO Living labs stakeholders.....                            | 9  |
| Figure 3: Benefits gained by participating in LL .....                                   | 11 |
| Figure 4: Knowledge of stakeholders before and after participating in LL.....            | 13 |
| Figure 5: Knowledge on eGPP topics before and after participating in LL.....             | 15 |
| Figure 6: Knowledge on funding topics before and after participating in LL.....          | 17 |
| Figure 7: Knowledge on mentoring topics before and after participating in LL .....       | 18 |
| Figure 8: Knowledge on green policy topics before and after participating in LL.....     | 20 |
| Figure 9: Knowledge on electricity consumption before and after participating in LL..... | 22 |
| Figure 10: GRASPINNO LL challenges and risks.....  | 23 |
| Figure 11: GRASPINNO LL lessons learned.....   | 29 |

## Abbreviations

|             |                                     |
|-------------|-------------------------------------|
| <b>DoP</b>  | Declaration of Participation        |
| <b>EE</b>   | Energy Efficiency                   |
| <b>ERDF</b> | European Regional Development Fund  |
| <b>eGPP</b> | electronic Green Public Procurement |
| <b>GPP</b>  | Green Public Procurement            |
| <b>LCC</b>  | Life Cycle Cost                     |
| <b>LL</b>   | Living Lab                          |
| <b>PA</b>   | Public Authority                    |
| <b>RES</b>  | Renewable Energy Sources            |
| <b>SME</b>  | Small and Medium sized Enterprise   |
| <b>TIP</b>  | Tender Package                      |

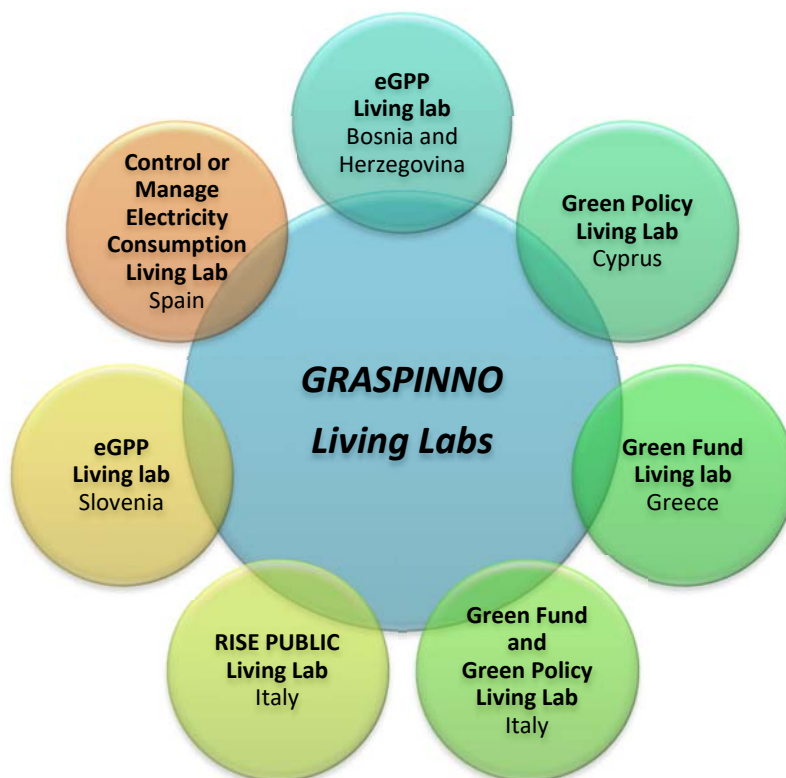
## 1. INTRODUCTION

The deliverable *D.4.2 Findings from Living Labs* summarizes main findings from implementation of seven Living Labs (LLs) under umbrella of GRASPINNO project. GRASPINNO project, co-financed by the European Regional Development Fund (ERDF), 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 that enables co-creation of novel user-oriented solutions. Living Lab approach implemented in GRASPINNO aims at changing the stance of actors and civil society toward green sustainable growth.

The main goal of GRASPINNO LLs is to develop new solutions and concepts in the field of innovative energy refurbishment and green public procurement by transferring the knowledge obtained within the project's pilot actions and exchanging experiences or concerns for green growth, especially including end-users, and so setting the base for further actions. The GRASPINNO Living Labs were established in six different countries: Greece, Italy, Slovenia, Spain, Cyprus and Bosnia and Herzegovina. All LLs have followed joint methodology consisting of six operational phases of Living Lab i.e. Connect, Educate and train, Implement, Improve, Evaluate and Disseminate. Although Living Labs have addressed different problems and challenges, such as green public procurement, green funding, green policy, electricity consumption, they all had a common aim - to co-create new solutions and to transfer knowledge for more green sustainable growth. Two main types of stakeholders in particular were targeted – public sector and product providers (especially Small and Medium sized enterprises (SMEs)). Involvement of 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, is especially important. Beside mentioned, mentoring/financing experts were involved to share their expertise in funding/mentoring opportunities, to invent/produce/use eco-innovative solutions in eGPP/building refurbishment.

## 2. GRASPINNO LIVING LABS

Altogether seven GRASPINNO Living Labs were established in six different countries: Greece, Italy, Slovenia, Spain, Cyprus and Bosnia and Herzegovina (as seen from Figure 1 **Error! Reference source not found.**).



*Figure 1: GRASPINNO Living Labs*

The GRASPINNO LLs addressed various topics such as electronic green public procurement, funding and mentoring, green policies, electricity consumption, energy management, and have tested different solutions as shown in Table 1, mostly eGPP tool and LCC tool within GRASPINNO unified platform.

Table 1: GRASPINNO Living labs description

| Country                | Living Lab Title  | Scope  | Solutions tested  | Initiator  | No. of DoP                        |
|------------------------|---|--|---|--|-----------------------------------|
| Bosnia and Herzegovina | eGPP Living Lab   | Increasing awareness of GPP and educating stakeholders on energy efficiency to improve capacity of public building owners in managing energy efficiency towards achieving almost-zero-energy buildings.                                      | eGPP tool<br>GRASPINNO<br>Unified Platform                      | - Department for Development and International Projects of Zenica-Doboj Canton                               | 6 PA<br>4 SMEs/private            |
| Cyprus                 | Green Policy Living Lab                                   | Transferring knowledge and exchange of experiences regarding green policies and GPP, making use of the eGPP tool as a public tool for green procurement.   | eGPP tool<br>LCC tool<br>GRASPINNO<br>Unified Platform          | - Department of Public Works   | 3 PA<br>1 SMEs/private<br>1 Other |
| Greece                 | Green Fund Living Lab                                     | Identification of opportunities and promotion of funding and mentoring mechanisms for green growth, ensuring tailored mentoring or financing to SMEs and PAs for eco-innovation actions.   | eGPP tool<br>GRASPINNO<br>Unified Platform                      | - University of Patras<br>- General Secretariat of Commerce and Consumer Protection<br>- ATLANTIS Consulting | 9 PAs<br>8 SMEs/private           |
| Italy                  | Green Fund and Green Policy Living Lab                    | Overcoming obstacles for energy refurbishment of public buildings, creation of formal or informal dialogue between stakeholders to find specific financial solutions for analysis, planning, financing and refurbishment of public buildings | LCC tool<br>GRASPINNO<br>Unified Platform                       | - Terre di Siena Lab<br>- Comunità Montana Alto Basento  | 24 PA<br>3 Other                  |
|                        | RISE PUBLIC – Energetic refurbishment of public buildings | Addressing the problem of refurbishment of public building for seismic safety and energy efficiency in line with the principle of circular economy.  | eGPP tool<br>GRASPINNO<br>Unified Platform                      | - Veneto Region<br>- Unioncamere del Veneto  | 4 PA<br>2 SMEs/private<br>1 other |
| Slovenia               | eGPP Living Lab   | Encouraging PAs, SMEs and other stakeholders to use green electronic public procurement tool.  | eGPP tool<br>GRASPINNO<br>Unified Platform                      | - University of Maribor  | 4 PA<br>3 SMEs/private            |
| Spain                  | Control or Manage Electricity Consumption Living Lab      | Improving energy management through the knowledge of own consumption, proposing a solution to improve business activities.   | eGPP tool<br>GRASPINNO<br>Unified Platform<br>Monitoring system | - Chamber of Commerce, Industry and Services of Terrassa   | 1 PA<br>2 SMEs/private<br>3 Other |

The ***e-GPP (electronic green public procurement) tool*** offers Public Authorities an easy way to gather green specifications that can be used during tender preparation. SMEs can search for Tenders and insert their Green Products. Registered users from Public Authorities (PAs) can easily prepare a Tender Package (TIP).

The ***LCC (Life Cycle Cost)*** tool can help their users to understand how to correctly interpret the results of a "green" contract from an economic point of view, carrying out specific evaluations of different products. The LCC tool was developed in line with the requirements of EU Directive 24/2014 on the implementation of the life cycle perspective in public procurement procedures according to the criteria or interest of organizations and different administrative levels (local/regional/national).

The ***GRASPINNO unified platform*** integrates the project tools and results at all sites across the participating MED countries. It integrates data base of eco-innovative products /services available in market, knowledge base, decision support tools, green specs/criteria to procurers of eco-innovation solutions, the eco-innovative LCC tool to aid public procurers select the most cost &and energy-efficient offered solution. It builds on complementary knowledge and adaptable experiences in green/sustainable growth from a transnational range of MED locations, to reach common unified strategies and increased impact of innovative clusters and networks in MED key eco-innovation sectors.

Within GRASPINNO LLs before mentioned existing tools for green public procurement and energy refurbishment have been upgraded with new features and new guides. Additionally, several new approaches for green public procurement, funding and mentoring, energy consumption control, help desk, mechanisms for removing obstacles for energy refurbishment, improved governance model in field of energy efficiency and renewable sources, were newly developed in GRASPINNO LLs (as seen from Table 2).

Table 2: GRASPINNO Living Labs solutions proposed

| Living Lab   | Solution proposed   |
|--|---|
| eGPP Living lab<br>Bosnia and Herzegovina                          | <ul style="list-style-type: none"> <li>- Improvements of the eGPP tool (time of entering the products, translations etc...)</li> <li>- Guide: <i>Approach to public procurements in the field of construction and fit-of process with the goal to improve energy efficiency</i> - the motives and possibilities to use "green" criteria, electronic and other innovative tools in green public procurements)</li> </ul>   |
| Green Policy Living Lab<br>Cyprus                                  | <ul style="list-style-type: none"> <li>- Improvements of the eGPP tool (minimum requirements for specific values, more products, translations etc...)</li> <li>- Green Criteria Guide</li> <li>- Improvement of LCC tool</li> <li>- Establishment of Help desk</li> </ul>   |
| Green Fund Living lab<br>(Greece)                                  | <ul style="list-style-type: none"> <li>- Improvements of the eGPP tool and GRASPINNO Unified Platform</li> <li>- Brochure with Guidelines for Funding and Mentoring mechanisms and best practices for promoting the green solutions</li> </ul>  |
| Green Fund and Green Policy Living Lab<br>Italy                    | <ul style="list-style-type: none"> <li>- Improvements of the LCC tool</li> <li>- Removing the obstacles for the energy refurbishment of public buildings</li> <li>- Improving the governance model in the field of EE/RES</li> </ul>  |
| RISE PUBLIC – Energetic refurbishment of public buildings<br>Italy | <ul style="list-style-type: none"> <li>- Improvements of the eGPP tool and LCC tool</li> <li>- Guide in Italian that addresses minimum environmental criteria for the award of design services for new construction, renovation and maintenance of buildings and for the design and operation of public administration construction works.</li> <li>- Guide in Italian that addresses minimum environmental criteria for construction for identification of the services supporting the chain of ready-mixed concrete produced with industrialized method.</li> </ul> |
| eGPP Living lab<br>Slovenia  | <ul style="list-style-type: none"> <li>- Improvements of the eGPP tool (automatic upload of products, search list of products, selection of criterions etc...)</li> </ul>   |
| Control or Manage Electricity Consumption Living Lab Spain         | <ul style="list-style-type: none"> <li>- Monitoring system to explain how this solution provides knowledge about consumption and after that, using this information to do improvements on buildings and/or in process.</li> <li>- Guides: Information about software for energy consumption control, Information related results, Aspects to be analysed to propose improvements</li> </ul>   |



Mainly public and private sector (especially SMEs) were involved as Living Lab stakeholders. Among public stakeholders, LLs also involved relevant policy making authorities 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. Among SMEs mainly product providers of green products were involved, most of them previously engaged in the project pilot actions. Beside mentioned, other types of stakeholders participated such as engineering organizations, consultants, support designers etc. Living Lab stakeholders per type are presented in Figure 2.

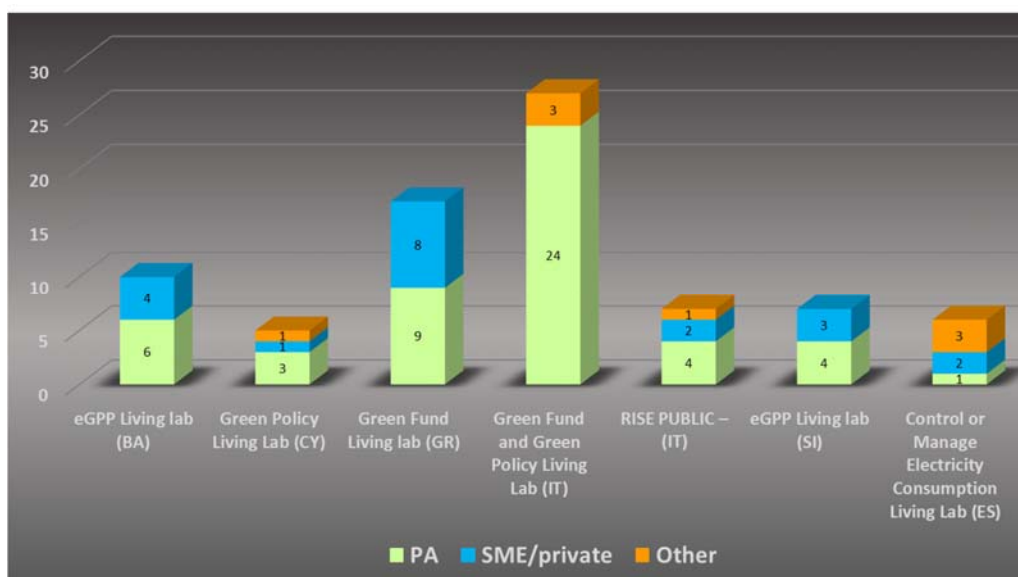


Figure 2: The type of GRASPINNO Living labs stakeholders

### 3. BENEFITS AND KNOWLEDGE GAINED

The overall performance of GRASPINNO LLs and their improved solutions (tools, guide for energy management, green refurbishment and green procurement, funding and mentoring etc...) were evaluated based on online survey. The main aim of survey, in which 86 GRASPINNO LLs stakeholders participated (PAs, SMEs and others), was to make a proper evaluation of GRASPINNO LLs and solutions contribution, mainly benefits gained and knowledge improved. The GRASPINNO LLs benefits and knowledge were evaluated according to the Likert scale, using the level of agreement for benefits (measured from strongly disagree to strongly agree) and level of knowledge before and after participating in LLs (measured from poor to excellent). For all GRASPINNO LLs, regardless to the topics addressed, we were able to evaluate a general benefit gained and which general knowledge on policies, mentoring, green public procurement, was improved. Beside evaluation of all GRASPINNO LLs, also the evaluation of group of LLs addressing same topics, such as for example green public procurement, was carried out to evaluate if the level of knowledge on specific topics (e.g. green public procurement, green procurement tools, green procurement policies etc...), was improved after participating in LLs.

Majority of GRASPINNO LLs stakeholders that participated in our survey (all together 86 fulfilled questionnaires'), agreed that by participating in GRASPINNO LL they have gained benefits such as opportunity to co-create novel solutions, strengthen cooperation, possibility to exchange experience/concerns and to develop more positive attitude towards green (sustainable) growth. The GRASPINNO Living Labs have brought various benefits for SMEs and PAs.

The highest share of stakeholders (around 35%) strongly agreed that the LLs can **improve PAs knowledge or understanding of energy management and can develop or implement effective measures**. Around 26 % share of stakeholders strongly agree that **LL enable to exchange experiences or concern for green growth** and the same share strongly agreed that **LL enable positive attitude towards green sustainable growth**. Around 90% of stakeholders agree and strongly agree that **LL enable to exchange experiences or concern for green growth**, and 88% of stakeholders agree and strongly agree that PAs **can benefit from different types of partnership** in the field of green refurbishment of their

buildings and green public procurement. The benefits gained for various stakeholders by participating in GRASPINNO LLs are presented in Figure 3.

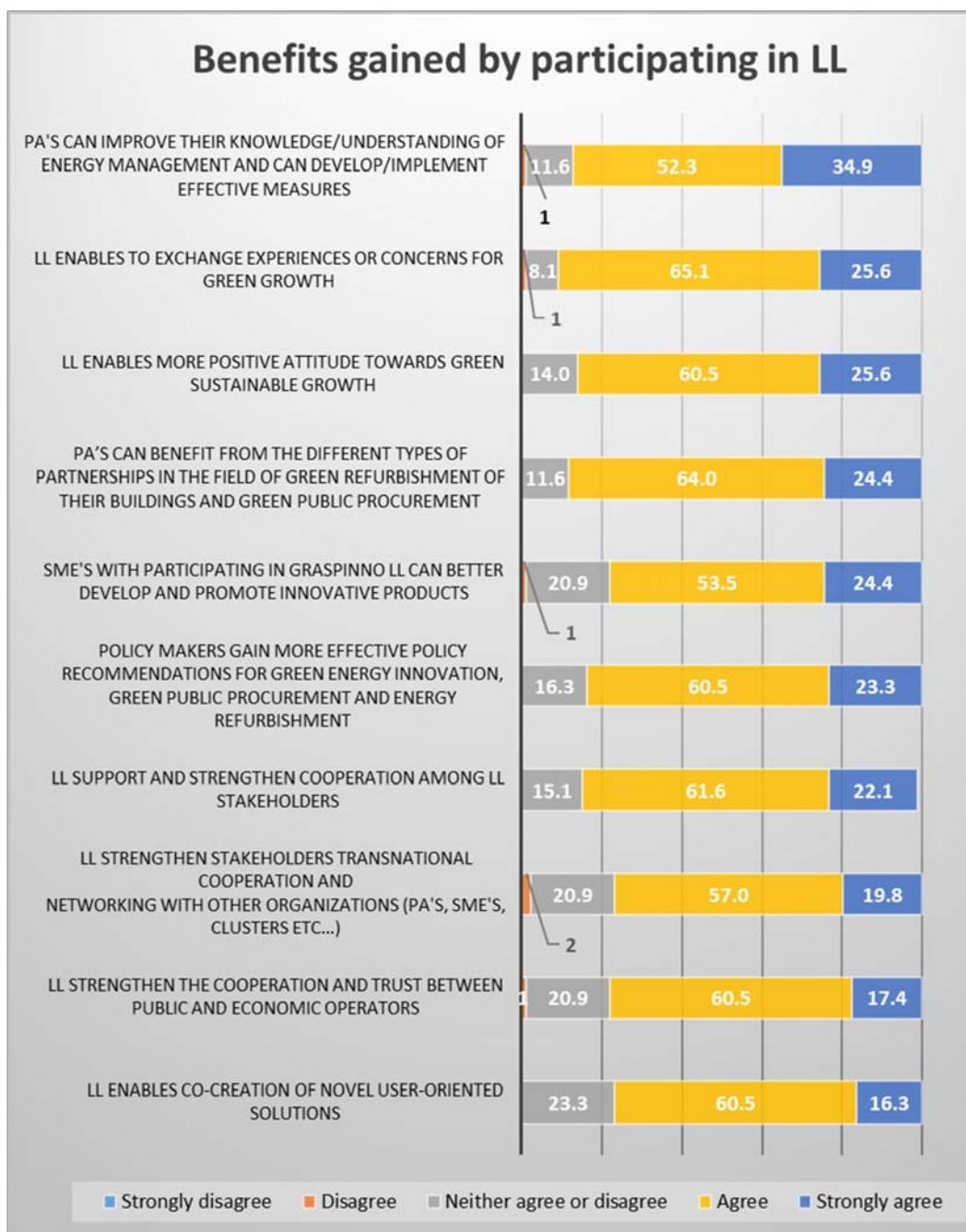


Figure 3: Benefits gained by participating in LL

**Before participating in the GRASPINNO LLs**, majority of the stakeholders had ***fair or good*** knowledge on green policies, mentoring and funding mechanisms and possibilities, green public procurement, best practices, Living Lab concept, GRASPINNO pilot actions and eGPP tool. Only small share (between 1% to 3%) of stakeholders claimed to have an excellent knowledge on available mentoring mechanism, GRASPINNO pilot actions and eGPP tool.

**After participating in the GRASPINNO LLs**, more precisely after finishing the first four phases of Living Labs set up, e.g. Connect, Educate and Train, Implement and Improve, the share of stakeholders having ***very good*** knowledge on before mentioned topic increased in some cases even up to 43%. While before, the share of stakeholders claiming to have an **excellent** knowledge was negligible, now have raised even up to 20% share of stakeholders for some topics such as GRASPINNO pilot actions and to 16% for eGPP tool and funding possibilities for green investments.

The stakeholders general knowledge on green policies, mentoring, funding, green public procurement, LL concepts, pilot actions and GRASPINNO tools, before and after participating in GRASPINNO Living Labs are presented in Figure 4.

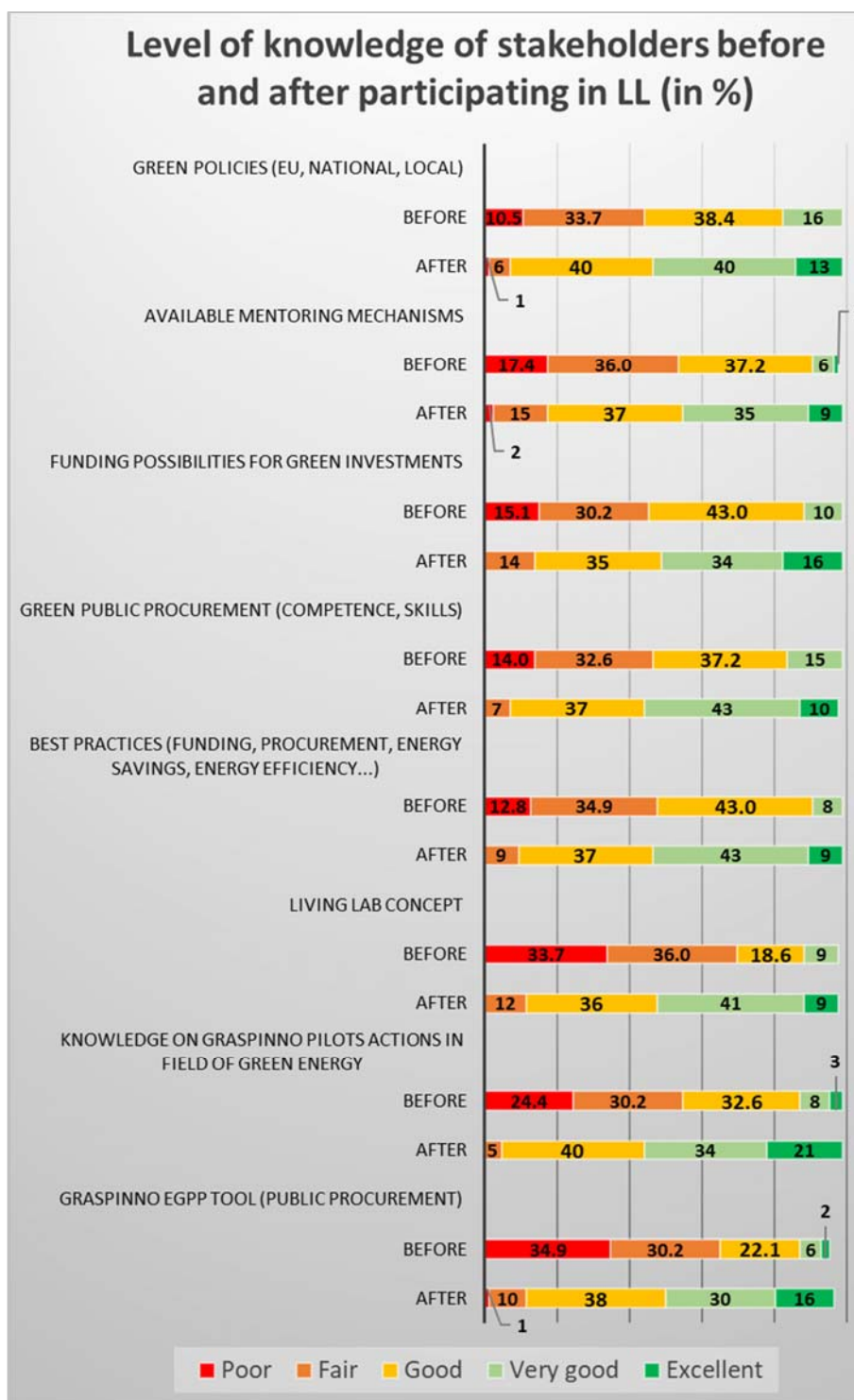


Figure 4: Knowledge of stakeholders before and after participating in LL

Within GRASPINNO LLs, two LLs were addressing the field of **green public procurement**: eGPP Living lab from Bosnia and Herzegovina and eGPP Living lab from Slovenia. Based on answers of 22 questionnaires, majority of them had ***fair or good*** knowledge on eGPP related topics **before** participating in LLs. **After** participating in LLs the share of stakeholders having ***very good or excellent*** knowledge on electronic green public procurement and criteria for energy refurbishment, best practices, environmental questions, implementation of energy refurbishment, raised notably. While before participating in LLs, none of stakeholders have claimed to have excellent knowledge on these topics, now a notable share of stakeholders can be observed for all topic. Especially a great share of stakeholders (around 30%) now have excellent knowledge on electronic green public procurement, use of green public procurement criteria and green best practices for green procurement, energy refurbishment of public buildings.

The stakeholder's knowledge on green public procurement before and after participating in eGPP LLs are presented in Figure 5.



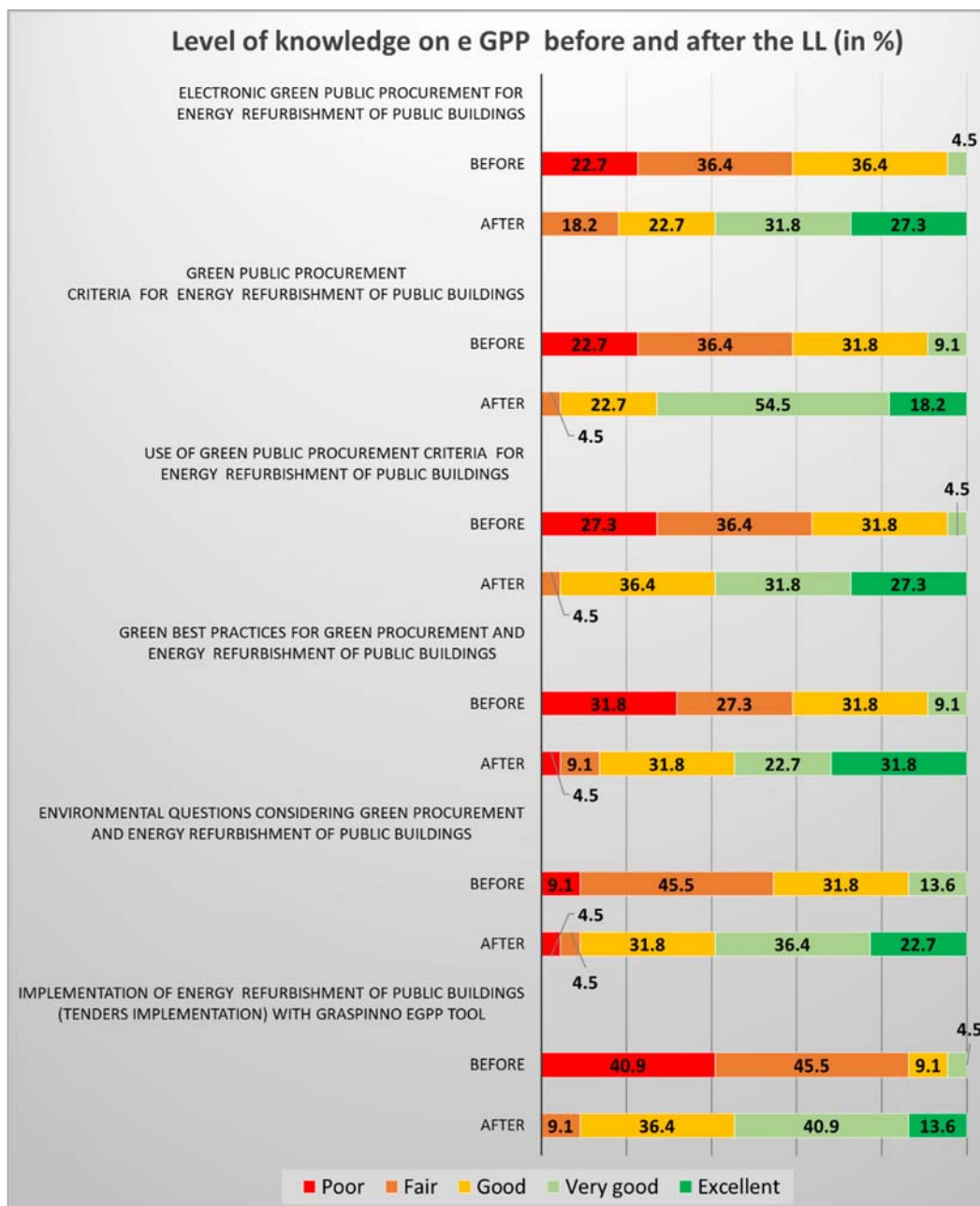


Figure 5: Knowledge on eGPP topics before and after participating in LL

Within GRASPINNO LLs, three LLs were addressing **funding topics**, i.e. Green Fund Living Lab from Greece, Green Fund and Green Policy Living Lab and RISE PUBLIC - Energetic refurbishment of public buildings from Italy. Based on 22 filled-in questionnaires, we can observe that majority already had **fair or good** knowledge on funding related topics before participation in LL. **After** participating in GRASPINNO LL, higher share of stakeholders claimed to have a **very good** knowledge on national and European funding mechanisms for eco-innovations and energy refurbishment of buildings, funding opportunities in energy market and good practices on funding (the share of stakeholders raised from previous 0 - 5% to 40 - 50%). Stakeholders have gained **excellent** knowledge in several topics, beside before mentioned also in application requirements and procedures for funding, latest funding opportunities, new financial mechanisms for green refurbishment and energy management, new types of partnerships for eco-innovations.

The stakeholder's knowledge on funding topics before and after participating in Green Fund Living lab is presented in Figure 6.



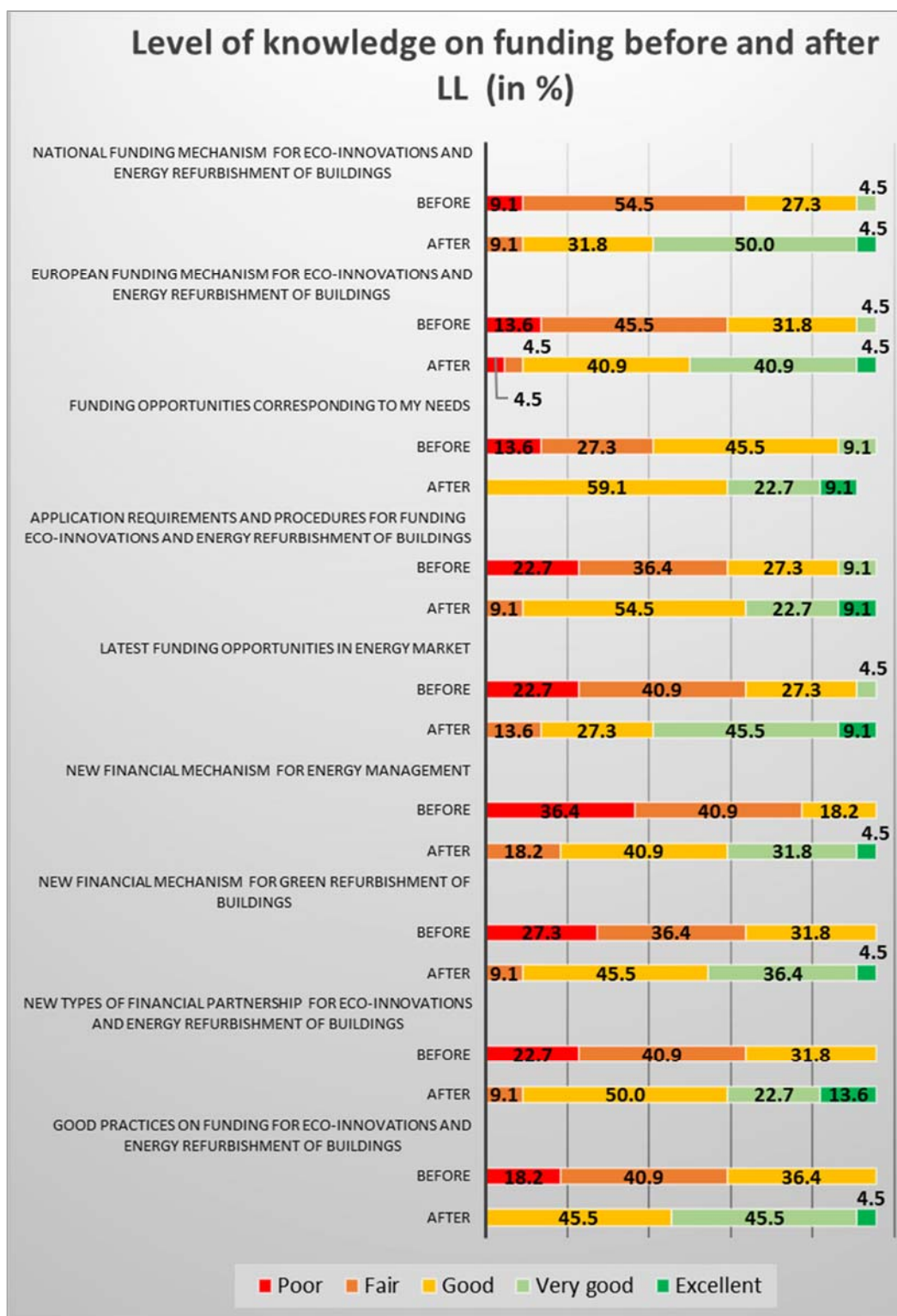


Figure 6: Knowledge on funding topics before and after participating in LL

Within GRASPINNO LLs, three LLs were addressing **mentoring topics**: Green Fund Living lab from Greece, Green Fund and Green Policy Living Lab from Italy, RISE PUBLIC - Energetic refurbishment of public buildings from Italy. Based on 22 filled-in questionnaires, the majority had ***fair knowledge*** on national and European mentoring mechanism and mentoring services, while ***good knowledge*** on application requirements and procedures for mentoring services, before participating in GRASPINNO LL. After participating in LLs, the share of stakeholders having ***very good knowledge*** on mentoring topics was raised, from previously 4,5% to 18% for European mentoring mechanisms and application requirements, or even up to 31,8% for national mentoring mechanisms. The stakeholder's knowledge on mentoring before and after participating in mentioned GRASPINNO LLs is presented in Figure 7.

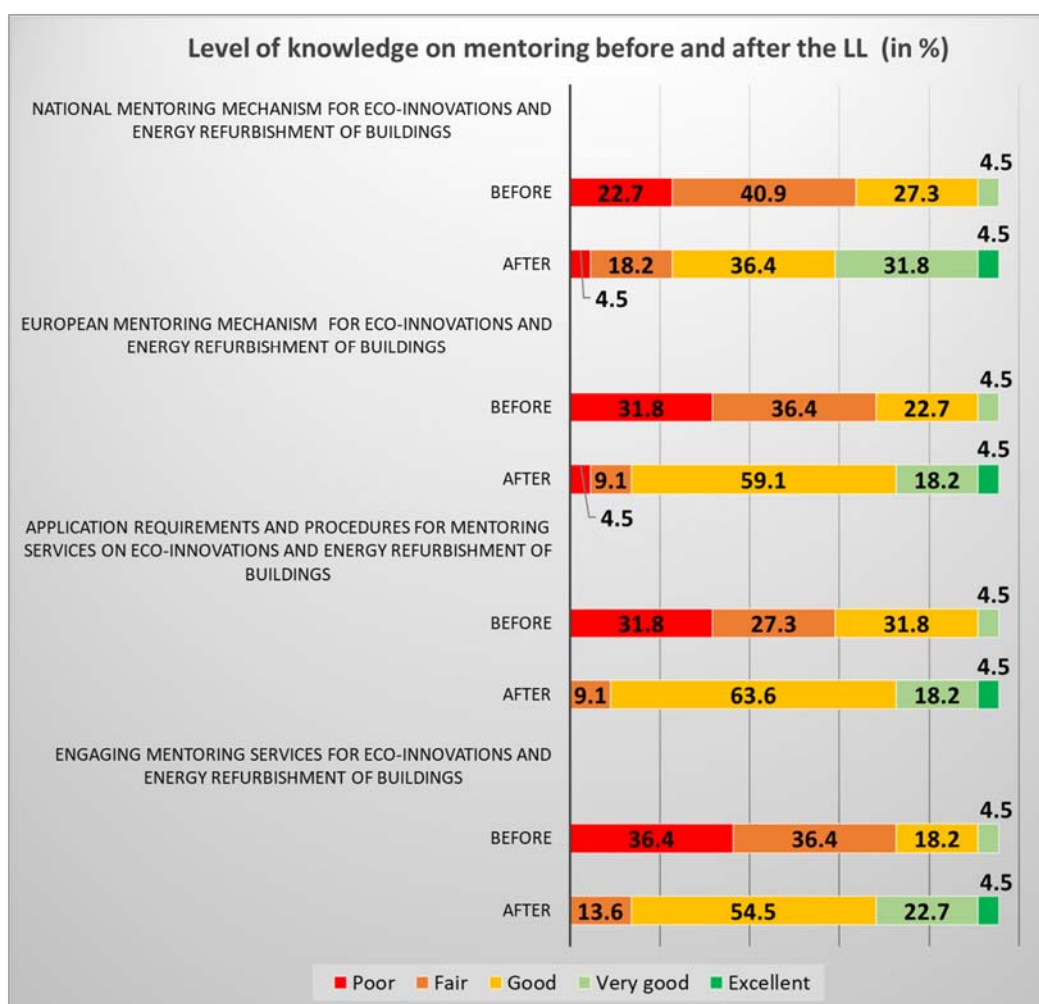


Figure 7: Knowledge on mentoring topics before and after participating in LL

Within GRASPINNO LLs, two LLs were addressing the field of **green policy**: Green Policy Living Lab in Cyprus and Green Fund and Green Policy Living Lab in Italy. Based on 38 filled-in questionnaires, we can observe that majority already had ***fair knowledge*** on policy energy goals of the EU, European green policies for eco-innovations and energy refurbishment, while ***good knowledge*** on national green policies for eco-innovations and energy refurbishment, green procurement policies, innovative policies on energy efficiency and renewable energy resources and sustainable energy action plans (SEAP), before participating in LLs. **After** participating in LL, it can be noticed that higher share of stakeholders claims to have ***very good knowledge*** on before mentioned topics and the share of stakeholders having an ***excellent*** knowledge on SEAP has raised significantly to 42,1 %.

The stakeholder's knowledge on green policy before and after participating in Living labs is presented in Figure 8.

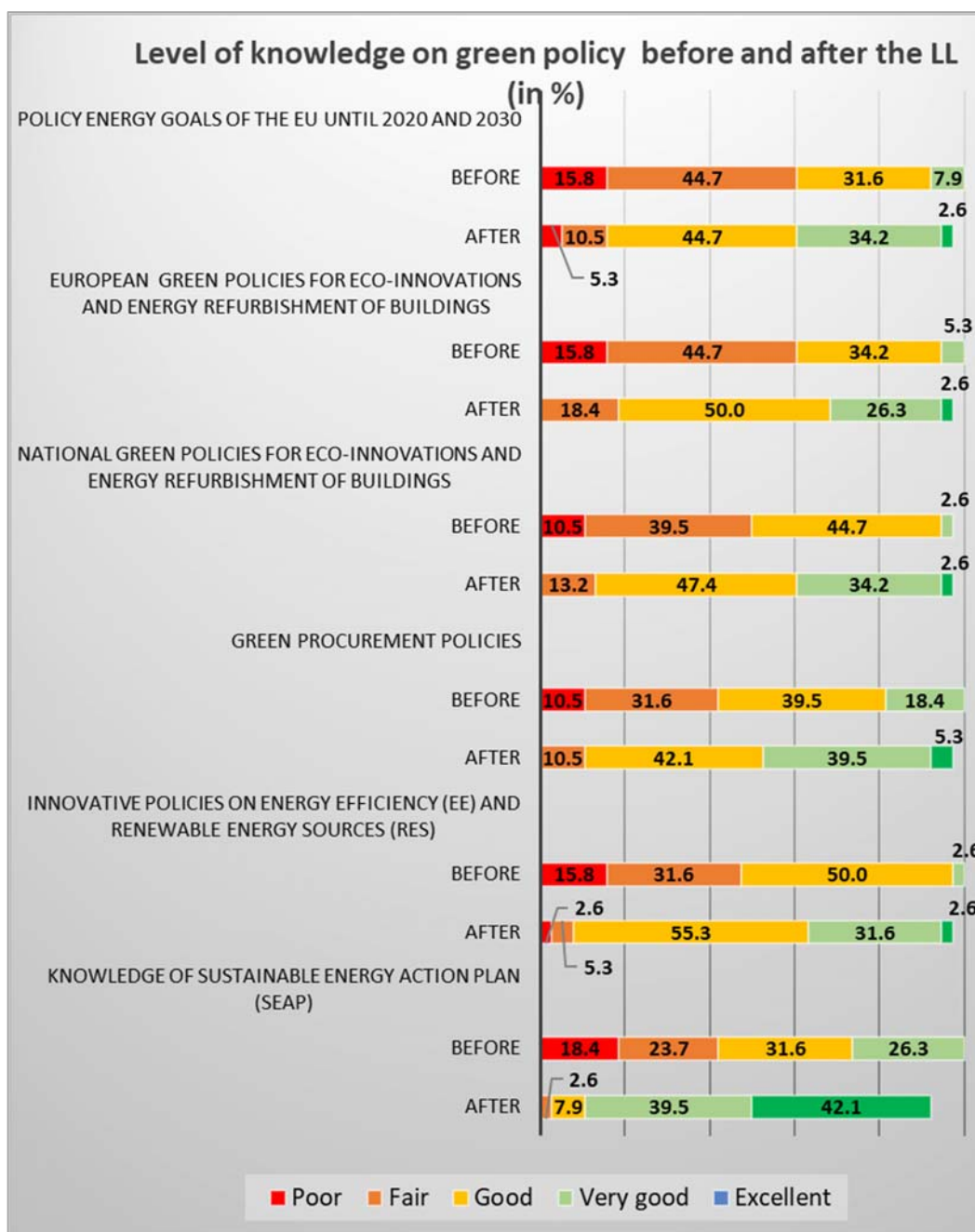


Figure 8: Knowledge on green policy topics before and after participating in LL

Within GRASPINNO, the Spanish Control or Manage Electricity Consumption Living Lab had addressed **electricity consumption**. All together 4 stakeholders were interviewed and majority of them had **very good** knowledge on impact of electricity consumption on energy management, benefits of energy management solutions, market solutions to manage electricity consumption and **good** knowledge on installation of renewable energy sources, average electricity price for households, pricing components and understanding of electricity consumption before participating in Living Lab. **After** participating in LL, the share of stakeholders having an **excellent** knowledge on before mentioned topic raised significantly. We can have noticed that after participating in Control or Manage Electricity Consumption Living Lab, almost half of stakeholders claim to have an excellent knowledge on benefits of energy management solutions and on understanding of own electricity consumption.

The stakeholder's knowledge on electricity consumption before and after participating in Living labs is presented in Figure 9.

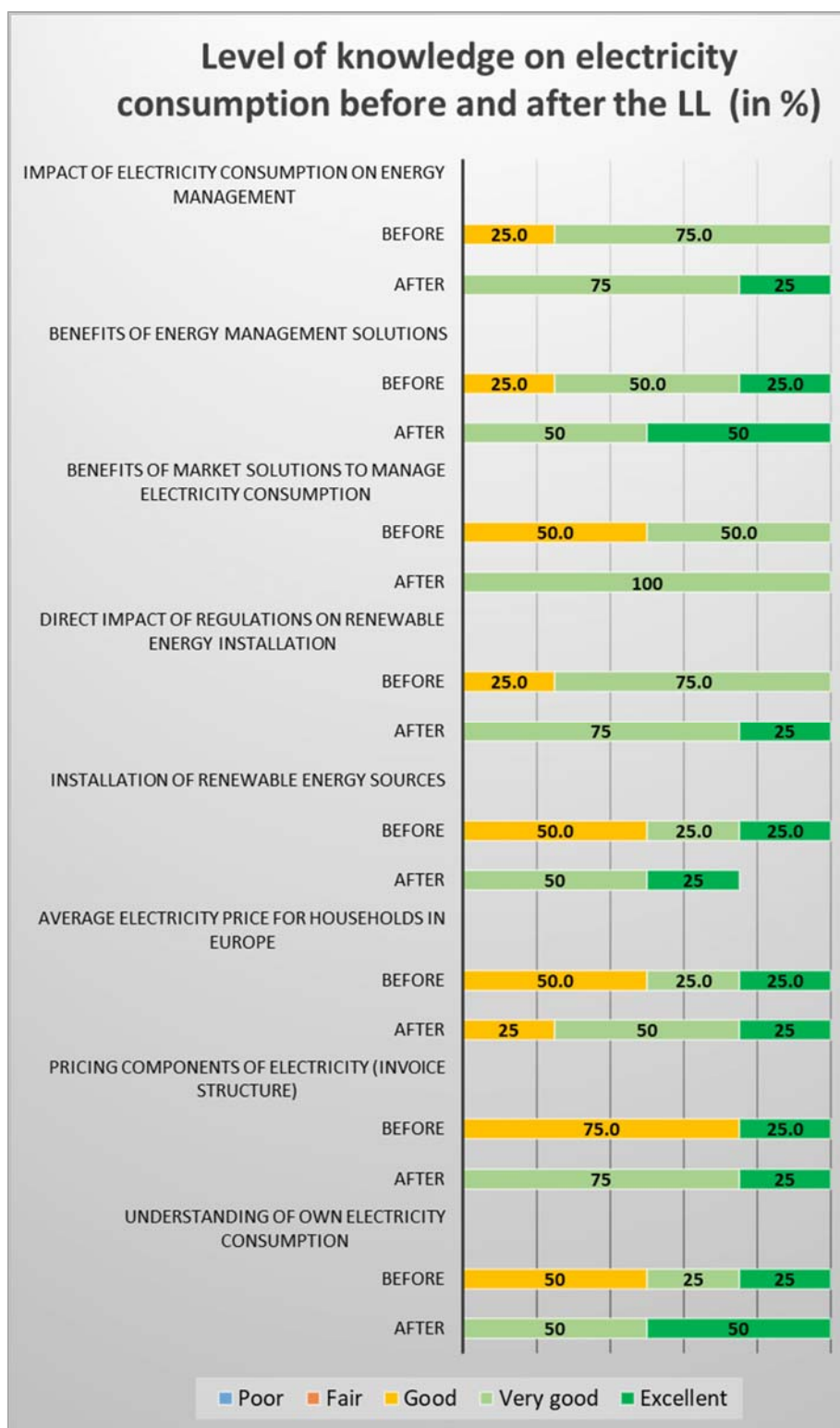


Figure 9: Knowledge on electricity consumption before and after participating in LL



## 4. CHALLENGES AND RISKS

Already in the process of planning the establishment of GRASPINNO LLs, several potential risks have been identified that could jeopardize the LLs implementation and their sustainability. Concerns, such as lack of stakeholders' interest, readiness to invest financial and human resources, time, knowledge, poor response, willingness to actively participate etc., have been identified as a major potential risks that could slow down or even prevent successful implementation of GRASPINNO LLs. Although the GRASPINNO LLs differ in their geographical coverage and solutions co-created, they have faced same challenges in process of their implementation summarized in Figure 10 and listed below.



*Figure 10: GRASPINNO LL challenges and risks*

- **Signing the Declaration of participation (DoP)**

Although it was assumed that by not requiring establishment of new legal entity for LL activities, but only asking for formal commitment (Declaration of Participation), the involvement of stakeholders should be straightforward, this was not so in practice. Persuading the stakeholders to formally declare their intents by signing the very light and transparent DoP proved to be a very time consuming activity. It was difficult to gain signatures from a legal representative of organisation for in most cases this was not the same person as the one actively engaged in LL activities. Therefore, additional activities such as conferences, workshops, presentations, press releases were necessary to motivate stakeholders. With this kind of actions, the Living Labs increased the interest of stakeholders and general public, in order to obtain officially declared interest in form of signed DoPs. Consequently, the first phase of connecting stakeholders was in most cases prolonged and the LL time plan needed to be revised. Although, interestingly several stakeholders have actively participated in LLs' activities as well as proposing new solutions, despite the fact that their participation was never formalized with signed DoP.

- **Time frame for establishment of the Living labs**

Although the methodology for setting up the GRASPINNO LLs have been found to be very efficient and clear, the time available for setting up the LLs within the project was too short. Available period for LLs activities within GRASPINNO was incompatible with the time required for the action of a large public organization, whose procedures can be rather long and rigid. Therefore, several phases of setting up the LLs demanded more time and personnel efforts as preliminary planned. This have led to reorganisation of activities and engagement of additional human resources.

- **Coordination of large number of stakeholders**

The coordination of stakeholders' meetings and activities, especially in cases where GRASPINNO LLs consist of large number of stakeholders, shown to be very time consuming. In these cases, not all LL's stakeholders were able to participate in joint meetings, therefore several separate one-on one meetings or more separate events needed to be organized.



- **Time unavailability**

Although the LLs addressed relevant topics and stakeholders have expressed great interest in participation, the limited availability have prevented active and constant involvement of some stakeholders. Due to day-to-day work obligations the stakeholders found it hard to commit to LL activities and additional efforts were invested in order to keep them committed and to coordinate activities and meetings to correspond to their time availability.

- **Stakeholders willingness**

The main obstacle with the GRASPINNO LLs establishment was the willingness of the organizations to participate in this form of cooperation. Even though all the relevant stakeholders are faced with similar challenges, at first they were hesitant to take part. This was somewhat expected and LL initiators overcame this obstacle by keeping in touch with the identified stakeholders and explaining to them the potential benefits from their participation in the LL process. The main obstacle that needed to be overcome was to persuade private companies to upload their products on the platform, as they didn't seem to trust Public Authorities that the platform will be actually used. To overcome this, the benefits of the platform were presented, the DoPs were shown to them and their concerns were discussed with the PAs.

- **Lack of experienced personnel**

Especially SMEs, but also PAs, are usually lacking experienced and trained personnel in the field of green public procurement, green funding and mentoring, energy management, electricity consumption etc... This required from LL indicator to perform more training and education activities or even one to one consultations to upgrade the level of knowledge of certain stakeholders and to ensure that the process of co-creating of new solutions could even begin.

- **Lack of financial resources**

Within the funds of GRASPINNO project, co-financed by the European Regional Development Fund, sufficient financial resources have been provided to carry out LLs activities, such as cost of organization for meetings, printing materials and engaging external experts to support understanding of green criteria, tools, green policies etc. Project funding ensured free access and maintenance of all tools. While this challenge has been appropriately addressed within the project funding resources, the risk

inadequate or non-existent funding can seriously jeopardize the sustainability of the LLs after the project end.

Several challenges and risks, such as long process of signing the declaration of participation, stakeholder's willingness and time restrictions, have been anticipated and appropriately managed, while others were unexpected, mainly the time period available for setting up Living Labs, which has shown to be too short. Due to the extensive topics addressed and in some cases large number of stakeholders engaged in LL, more time for a proper execution of LL activities was necessary as initially planned. Although engaging large number of stakeholders in LLs (15 and more per LL) is a great success, it also presented a great challenge of managing such a group of stakeholders, especially for day to day activities. Additionally, engagement of stakeholders in LLs activities also has shown to be a great challenge due to stakeholder's time restrictions, willingness to actively participate and lack of experienced personnel, which required from LLs initiator to devote more time for organizing meetings, training and education sessions. The main challenge which still remains is the challenge of providing funding of LLs after the GRASPINNO project ends and how to ensure continued cooperation of LLs stakeholders by sharing knowledge and co-creating common solutions.

## 5. LESSONS LEARNED

Several valuable lessons have been learned from establishment and implementation of GRASPINNO LLs, such as:

- Importance to **identify appropriate Living lab stakeholders** having time, willingness and finances to actively cooperate. A good preliminary research needs be carried out prior to LL initiation in order to identify a common problem or/and solutions. Preparatory activities for stakeholders' engagement need to be appropriately planned and timed and need to allow enough time for discussions on stakeholders' needs and problems.
- Importance to **engage the Living lab stakeholders** with face to face meetings according to their time and availability.
- Necessity to have an **active initiator of Living lab** who ensures a fluent communication and cooperation among Living lab stakeholders, but alongside also has sufficient human and financial resources and well-developed network of experts from Ministries, Chamber of Commerce, SMEs associations, clusters etc. The initiator should have an outline of the planned LL's activities right from the start in order to avoid conflicts and overlaps during the LL's lifetime.
- Importance to assign an **appropriate initiator** able to create links between enterprises and public administration while also promoting networking and exchange of knowledge among stakeholders.
- The organisation of an LL requires **dedicated staff** who are technically highly trained and, above all, capable of motivating stakeholders in the individual phases of the LL's life.
- **Participation of policy makers** in LLs that relates to the policy topics, ensures wider interest for participation of other stakeholders in LLs activities. In some cases, the institutional strength of LLs initiator seems to have a catalytic impact for approaching a great number of governmental authorities

who responded positively to participate in GRASPINNO LLs activities and events.

- Most of **stakeholders who previously participated in** GRASPINNO activities (events, open day, training, signing of several agreements, pilots, etc.), were interested to continue their activities by becoming LL members. Such stakeholders were easier to persuade to invest further efforts in training sessions and other LL activities.
- Stakeholders have been more motivated to participate in LL, if good practices in form of training and education sessions were done in **adequate and interesting way**. The training sessions provided to the stakeholders should be very practical and not just theory teaching.
- Active role of highly skilled **internal or external experts** in the field of EE and Public Procurement has proved to be very beneficial in process of improving the solution as experts were able to assist stakeholders with advice and instructions on possible improvements. In that way it was possible to identify which ideas for example were applicable within the domestic legislation and had potential to be realized and which not.

Main lesson learned from GRASPINNO LLs, summarized in Figure 11, has shown how important it is to identify common problem that all potential stakeholders can relate to and for resolving which they are willing to invest their time, resources and knowledge, as they clearly understand benefits arising from collaboration with others. Although this seems very simple and easy task, it is the far the most challenging one and requires not only a great (personal) efforts but also consumes a lot of time. Therefore, it is important that the initiator of LL is active and competent (e.g. has experiences, expertise, communication skills, is good organizer and most importantly has excellent networking skills) to define a good and solid partnership. This was well demonstrated in case of the GRASPINNO LLs addressing policy topics, where the participation of a policy makers in LLs have had a great influence on decision of others stakeholders to participate and have resulted in several new policies related guidelines.



*Figure 11: GRASPINNO LL lessons learned*

## 6. RECOMMENDATIONS

Within the GRASPINNO LLs, GRASPINNO tools such as eGPP tool, eGPP platform, LCC tool, and other tools were tested and upgraded, while several different guidelines were developed. From starting phase of connecting stakeholders in GRASPINNO Living Labs, throughout LL's phases of education and training, implementation, improvement and evaluation, several challenges were encountered and have led to valuable lessons learned. Based on knowledge and experience gained in GRASPINNO LLs, certain general and specific recommendations were made for future successful implementation LLs in the fields similar to green public procurement, energy management and refurbishment especially, if related to engagement of public stakeholders.

### 6.1 Living Lab recommendations

The setting up GRASPINNO LLs was proven to be a long process, which to be successful, demands sufficient time and resources. Therefore, a **realistic assessment of time needed** is necessary for each LL phase. Inadequate time plan not compatible with the needs of the stakeholders will lead to poor results. In case of GRASPINNO LLs, time dedicated to LL activities (six months in all) was proved to be insufficient as phases of LLs' have lasted longer as initially expected. Above all, when preparing the time plan and activities, it is essential that a group of **stakeholders** interested to actively cooperate in LL is **identified as soon as possible** at a very early stage of LL set up. The **potential benefits** of participation have to be presented to stakeholders, while the **subject of the LL** should be **highly interesting** for both, the public and the private sector. This is clearly linked to innovative issues (products or services) that need to be tested in a real environment before they are standardised.

When engaging stakeholders, it is worth considering the **appropriate size of the stakeholders' group** in relevance to the problem addressed. Although a larger number of diverse stakeholders brings an opportunity of a wide spread of knowledge and experience among stakeholders, the coordination can be time consuming. It is better to have a fewer but very well motivated stakeholders than formal adhesions

from individuals who do not participate in the activities of the LL due to lack of interest. Therefore, LL should consist of manageable group of stakeholders.

**For achieving sustainability of LL**, it is recommended to organize regular **meetings between the LL stakeholders** for exchanging experiences, knowledge and new ideas for green criteria, funding and mentoring issues, tools etc. but also experiences, advices and new business opportunities. Also, it is useful to **identify and address new and innovative topic** for each of the stakeholders' meeting. The meetings can be held in premises of the LL stakeholders so no or only minimal costs occur. The group of existing and potential LL stakeholders must be familiar with the LL activities and vitally interested for the LL results in order to promote and increase the usage of LL solutions (and GRASPINNO project in general). After project end **appropriate funding is necessary**, be it in form of participation fees, sponsorships or other funding mechanism in order to ensure LL's sustainable operation.

For achieving **sustainability of the GRASPINNO LLs promotion and awareness raising** on the importance and the benefits of greening the environment by offering and procuring green products and services among the stakeholders **is essential**. **External events** need to be exploited for **promotion of the LL and expansion of their activities through new contacts** and promotion of GRASPINNO tools. Furthermore, intensive and targeted dissemination of GRASPINNO results and findings with presentations on **various conferences, and articles in journals and magazines** should significantly increase the interest of stakeholders and thus to sustainability of Living Labs. This includes the promotion of GRASPINNO **Unified Platform** which integrates the project tools (eGPP, LCC tool etc.) and other project results.

No less important is the need to advocate **energy consumption awareness and virtuous behaviours**. This action is very important for dissemination of soft skills in the field of rational energy use.

It is clear that only with encouraging virtuous behaviour of all LL stakeholders, general public awareness can be raised with the aim of contribution to responsible thinking and behaviour for green sustainable growth.

Integrated green public procurement policy is required, which includes also **green taxation** in order to help to increase the shift to green products. The **market for green products** needs to be supported by a **wider and deeper awareness about the new rules on GPP** and by the existence of a sanctioning system. This could support GRASPINNO LLs aims for green sustainable growth.

Summary of main GRASPINNO recommendations for LL are presented in the table below.

*Table 3: GRASPINNO recommendations for LL*

| Area       | Reference   | Recommendations   |
|------------|---|---|
| LIVING LAB | Setting up Living labs                              | <ul style="list-style-type: none"> <li>- Plan sufficient time</li> <li>- Identify stakeholders in the very early stage</li> <li>- Address "hot topics" of interest of all participants</li> </ul>   |
|            | Stakeholders  | <ul style="list-style-type: none"> <li>- Form manageable group of stakeholders</li> <li>- Motivate to participate</li> <li>- Present potential benefits</li> </ul>  |
|            | Sustainability                                      | <ul style="list-style-type: none"> <li>- Regular meetings to engage LL stakeholders</li> <li>- Identify and address new and innovative topic</li> <li>- Appropriate sponsorship scheme</li> <li>- Promotion of GRASPINNO LLs (external events, articles etc...)</li> </ul>  |
|            | GRASPINNO LLs objectives (green sustainable growth) | <ul style="list-style-type: none"> <li>- Green taxation to encourage the shift to green products</li> <li>- Boost green market with wider awareness of the new rules on GPP.</li> <li>- Foster sustainable energy awareness and virtuous behaviour with disseminating soft skills for rational use of energy</li> </ul> |



## 6.2 GRASPINNO tools recommendations

### GRASPINNO Unified Platform

Living Lab members and stakeholders involved in GRASPINNO were very keen to use the tools provided within GRASPINNO, however strong support from project partners was needed. User friendly manuals and step-by-step instructions would be welcomed. New materials and results achieved should be provided, best and worst practice cases would be helpful. The platform can ensure further exploitation of the knowledge gained in the GRASPINNO project and GRASPINNO LLs. Therefore, all the guides, training materials (Training material to be used in LLs – addressing mentoring and funding, e GPP, LCC and SEAP) and roadmaps will be uploaded to the platform.

### eGPP tool

Regarding the use of **eGPP tool for electronic green public procurement**, stakeholders found it easy to gain skills and knowledge needed for tool usage. The tool was found to be very useful however some improvements were recommended:

- much bigger number of products need to be entered into the database,
- a certificate of credibility (Quality, technical characteristics of the product, performances etc...) needs to be part of individual product information or products need to be officially verified by an officially recognized team of experts.
- more countries to be included;
- various products (not only products related to energy efficiency) are to be added to database.

More precisely, it was suggested to **upload more products** in order to eGPP become reliable tool for market analysis and assessment of the level of green performance of the products (including associated budget savings) that Can be realistically expected when preparing tenders. The range of products and the set of **green criteria must be extended** on the way that they will also consider features such as energy consumption, CO2 emissions etc... To motivate SMEs for use of e GPP tool, it is crucial to **minimize the time needed for entering the products and to enable automatic upload/import to database** (manual upload of each individual product is too time consuming). Beside including new products, features and criteria,

**products should be regularly revised**, for that a team of experts should be established to provide control over registered products in e GPP platform.

The tool needs to be translated into national languages in order to reduce the input time and increase the usability of it. Additionally, the e GPP tool should be **updated, based on new laws, rules and green procurement criteria**. Minimum requirements for specific values should be changed in order to reach standards of green criteria. At the same time, it is important that public authorities became familiar with the eGPP tool as well as with GPP policies and practices in general. This can ease the eGPP tender evaluation process for this will eliminate the need for premium ranking of products (green considerations will already be integrated in the product price).

#### **LCC tool**

Although several examples of good practices and green policies were presented, in relation to both the eGPP and the LCC tool, the LL stakeholders still do not feel confident enough to use the tools independently. A more **detailed, user friendly manual** for the tools, especially for the LCC tool and the calculations is needed. Therefore, an existing guides and **manuals for usage of LCC tool** should be provided and uploaded into eGPP platform. It would have been useful to provide additional best practices related to the LCC, even in other sectors (public works, waste management, etc.) given that the public procurers are in the most of the cases operational in a wide range of sectors. For this the GRASPINNO Training material: Module 2 "An innovative way to use eGPP in the EE of the Public Buildings", which includes a deep focus **on LCC ex ante and ex post evaluation**", can be used. Ultimately, it is recommended to provide **more extensive promotion of the eGPP platform and LCC calculator**.

#### **Guides, guidelines and recommendations**

Guides, guidelines and recommendations developed within the GRASPINNO LLs, although they already include several examples of good practice, should **include more examples to make green procurement clearer** and to be better used by stakeholders in their institutions/companies. The guidelines and recommendations need to be shared not only on GRASPINNO unified platform and project website but also with various organizations and professionals involved in public procurement

procedures. The proposed guidelines also have to be **disseminated** to SMEs. One of the possible ways to help the sustainability of the LL results, is continuous **updating of the existing guidelines documents**. More laws, rules, funding and mentoring mechanisms have to be added so that the documents always up to date. Summary of the main recommendations on GRASPINNO tools are presented in the table below.

*Table 4: Specific recommendations for GRASPINNO tools*

| Area            | Reference                              | Recommendations   |
|-----------------|--|---|
| GRASPINNO TOOLS | GRASPINNO Unified Platform             | <ul style="list-style-type: none"> <li>- Promote the benefits of GRASPINNO unified platform</li> <li>- Update with recent materials and results</li> <li>- Provide user manuals</li> </ul>  |
|                 | eGPP                                   | <ul style="list-style-type: none"> <li>- Include more products</li> <li>- Ensure creditable certificate for products</li> <li>- Automatic uploading of products data</li> <li>- Translations to local languages of end-users</li> <li>- Updating with new laws, rules and green criteria</li> <li>- More extensive promotion</li> </ul> |
|                 | LCC TOOL                               | <ul style="list-style-type: none"> <li>- More best practices related to the Life Cycle Cost</li> <li>- More detailed manual</li> <li>- Disseminate training material on use of LCC tool as ex ante and ex post evaluation tool</li> </ul>   |
|                 | Guides, guidelines and recommendations | <ul style="list-style-type: none"> <li>- More good practices</li> <li>- Share on GRASPINNO Unified Platform, organisation networks, SMEs</li> <li>- Update guidelines frequently</li> <li>- Add new laws, rules, funding and mentoring mechanisms</li> </ul>  |

## 7. CONCLUSIONS

GRASPINNO Living Labs enable close cooperation of public and private sector, provide deep understanding of stakeholder need and encourage stakeholders to co-create new knowledge and solutions by exchanging experiences in the field of green public procurement, mentoring and funding, green policies and energy management. Such co-creation and transfer of knowledge and experiences can result in new solutions and tools for greener sustainable growth. With close cooperation the stakeholders became more aware of potential strategies, opportunities and possible actions to be taken and can thus become more effective and efficient. The seven Living Labs, following joint GRASPINNO methodology, have enabled the achievement of project objectives together with interchange of visions between public and private sector and should thus be used as an approach for co-creation of novel user-oriented solutions.

The establishment of GRASPINNO LLs brought benefits to PAs, SMEs and Policy Makers in form of co-creation of novel solutions, strengthening cooperation and/or in form of different types of partnership, possibilities to exchange experiences, to develop and promote innovative products, to understand energy management, to co-create innovative measures and policy recommendations, and to develop positive attitude towards green (sustainable) growth.

Although knowledge and understanding of themes addressed in GRASPINNO LLs varied significantly, the assessment has shown that through participation in Living Labs all stakeholders have improved their knowledge on green public procurement, funding and mentoring possibilities for green investments, GRASPINNO eGPP tool, energy management and electricity consumption.

It can be noted that majority of stakeholders (for various reasons) expressed positive attitude towards Living Lab participation and would welcome the opportunity to continue with their involvement or would be interested to participate in different LL. Most of them would also recommend participation in LL to others, mostly to public authorities and small and medium-size enterprises. The main reasons for future cooperation is increased knowledge on GPP/eGPP, funding possibilities and green market, eco-innovations, regulations and case studies on energy savings.

After successful setup of GRASPINNO Living Labs the main challenge remains achieving appropriate dissemination and sustainability of LLs. Dissemination activities therefore should focus on communicating the LLs results and addressing the issues and gaps raised during the LLs activity, thus enhancing the knowhow and uptake of GPP practices within public organizations and encouraging the use of the e-GPP tool. Living Lab sustainability should be ensured through promotion of green public procurements, funding and mentoring, green policies and energy management to other potential stakeholders, raising awareness about the importance of the green procurement and their importance and advantages due to many environmental questions raised nowadays. Stakeholders, together with experts, consider awareness raising as the most powerful way for increasing usage of green criteria in public procurement. Raising awareness and information about all benefits that PAs and SMEs can ensure to the society with use of energy efficient materials and procedures, is the best way to introduce and sustain green energy consumption after the project end.

The LLs stakeholders will ensure further LLs activities by organizing periodical meetings, operational committees, events and workshops in their premises. The LLs' results will also be published on blogs, portals and presented on conferences. Furthermore, the LLs' sustainability will be ensured only if relevant players are involved (e.g. Ministries, National Authorities and Agencies) in order to ensure dissemination as wide as possible. And finally benefits of such a unique and innovative collaboration should result in sufficient financial resources to be ensured, either in form of sponsorship or membership scheme, or supported by national or EU funding.