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in the energy sector

Deliverable 3.1

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Initial Analysis of the barriers to investments in innovative RES

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EXECUTIVE SUMMARY

This report is a deliverable of the XPRESS project that focuses on the initial analysis of the drivers and barriers to invest in innovative RES based on 27 case studies in ten European countries. The report begins with a literature review which addresses previous studies on Green Public Procurement (GPP) and SME engagement in public procurement. The report identifies and demonstrates the drivers and challenges to implement GPP based on previous literature. The report also presents the state-of-art studies on SME engagement in public procurement.

The case studies are carried out in ten European countries, namely Belgium, Denmark, Germany, Italy, Norway, Portugal, Slovakia, Spain, Sweden, and the United Kingdom. Each case report is based on the analysis of the current status of the sustainability strategies and energy related strategies adopted by public authorities (PAs) and SMEs, the PA's public procurement strategy, the status of the PA engagement and SME engagement, and the drivers and barriers for GPP and the involvement of the SMEs in public procurement. The case studies aim to address how different municipalities/regions in Europe are using public procurement to achieve RES (related) objectives and to what extent they succeed in involving SME in these cases.

Based on our case study, we find that in terms of *the extent that municipalities/regions are applying innovative green public procurement to achieve RES related objectives*:

- Most municipalities have clear plan to achieve RES related objectives, and some of them have achieved their RES objectives via green public procurement.
- Many SMEs perceive that they have not been well-informed or are not aware about the support provided by municipalities towards their participation to green public procurement.
- Therefore, there is a clear mismatch between the objectives of the municipalities and the perception of the SMEs.
- Minimizing the winning price of the GPP is still the main criterion adopted by public authorities, or in some case, the only criterion.
- In some municipalities, making green purchases and emphasizing environmental criteria in their procurements have become a common practice.
- Some municipalities have already included a pre-tender dialogue in their procurement
- Some other municipalities are aware of the benefits of the pre-tender dialogue and have plan to put it in place but so far they are currently limited by legal restrictions.

In terms of *to what extent SMEs are engaged in green public procurement* in the 27 cases, we find that:

- A large amount of PAs have SMEs as their suppliers even if they don't have a specific strategy for SME involvement.
- PAs do not favor SMEs, as the same time, they do not favor large firm either, they conduct their procurement on the basis of their evaluation criteria. Therefore SMEs could win the tenders if they can provide better offers than the large firms.
- In some case, SMEs have more opportunities if the PAs favor the local suppliers.



We have also identified many *factors that drive or hinder green public procurement*:

- The political will at both national and local level can be a critical driver for GPP.
- The interaction among different actors can facilitate the learning between the procurers and suppliers.
- The pre-tender dialogue among PAs and suppliers is an effective platform for them to exchange information and knowledge.
- The PAs knowledge and awareness about GPP, and their awareness about procurement could be an effective instrument to promote sustainable development with the potential to drive the implementation of GPP.
- Some small municipalities have limited purchasing power and capacity.
- Price sensitive PAs and the financial constraints can be a barrier to GPP
- Limited suppliers for green solutions make it difficult for the PAs to choose them.
- PAs are often limited by legal restrictions when implementing GPP.

Lastly, we find many critical perceived success factors and barriers related to SME friendly GPP:

- Public procurement process can be frustrating to SMEs.
- SME-friendly public procurement policies and strategies are critical for SMEs participating in public procurement.
- The visibility of SMEs and communication between SMEs and PAs are critical for SME engagement in GPP.
- Market dialogue between SMEs and PAs can increase the visibility of SMEs and can increase their interest to participate.
- Digitalization, lack of knowledge and expertise in procurement procedures, and management problems faced by SMEs in a cooperatively owned company can act as barriers to SME participation to GPP.



1. Introduction

This report is a deliverable of the XPRESS project that focus on the initial analysis of the drivers and barriers to invest in innovative RES based on 27 case studies in ten European counties. In doing so, it targets:

- (1) To demonstrate the current status of public procurement practices;
- (2) To identify the level of engagement of SMEs in public procurement;
- (3) To provide suggestions and recommendations for a better understanding of the factors driving the engagement of SMEs in public procurement from both the public authority and SME perspectives.

The potential users of the results of the XPRESS case studies are policy makers at EU, national and local level, academia, and enterprises. The data from collected cases will support the achievement of the XPRESS project objectives by mapping current practices of green public procurement in different municipalities/regions and identifying the driving factors that promote or prevent SME engagement in green public procurement. These insights will strengthen the (conceptual) foundation of the project and provide the basis for main assumptions about the challenges with and opportunities for stimulating RES uptake through SME friendly GPPs.

This report will contribute to the promotion of GPP and to the progressive elimination of barriers to investments in renewables. The project will benefit from the actions undertaken by the EU to foster Clean Energy for European countries and via the various funding programmes designed to help businesses, regions, and countries successfully implementing RES projects such as the European Structural and Investment Funds (ESIF) and the European Fund for Strategic Investments (EFSI).

The research questions to be addressed in the case studies are:

- (1) How municipalities and regions are applying innovative green public procurement to achieve RES related objectives
- (2) To what extent SMEs are engaged in green public procurement
- (3) Drivers and barriers to green public procurement as perceived by both suppliers and purchasers
- (4) The critical success factors and barriers perceived by local authorities and SMEs on involving SME in public procurement.

As part of the XPRESS primary source data, the collected information from the case studies will serve the XPRESS objectives by mapping current practices of green public procurement in different municipalities and regions while identifying the factors driving SME engagement in green public procurement. These insights can strengthen the (conceptual) foundation of the project while stimulating RES uptake through SME friendly GPP.



XPRESS strategy for data collection



Figure 1: the XPRESS strategy for data collection

This study will map the planning and preparation of the purchase, any pre-tender activities and the tender process. Both ongoing and completed purchases via public procurement will be considered. The case study will primarily rely on interviews with representatives from the public purchasers, selected suppliers, other relevant third parties, observations and existing literature review (Yin, 2014)¹.

The case studies for this report were carried out in ten countries, namely Belgium, Denmark, Germany, Italy, Norway, Portugal, Slovakia, Spain, Sweden, and the United Kingdom. A total of 27 cases were conducted, distributed across countries as follows:

Country	Case studies conducted
Belgium	2
Denmark	2
Germany	2
Italy	4
Norway	2
Portugal	2
Slovakia	3
Spain	3
Sweden	4
United Kingdom	3

Table 1: Number of case studies conducted by country

¹ Yin, R.K. (2014) Case study research. Design and Methods. 5th edition, Sage.

All the interviews follow the interview guidelines presented in the Appendix, in order to achieve a coherent and consistent structure in all case studies. The interview guidelines are designed to derive the results from the case studies and to identify common and unique features in each country.

This report represents the initial results from case studies, therefore, it consists of a brief literature review followed by a description of the actual cases and a summary of the results.

The analysis will be further exploited to obtain suggestions and recommendations for a better understanding of the factors driving the engagement of SMEs in public procurement from both the public authorities' and SMEs' perspectives, and further analysis will be presented in Deliverable 3.2.



2. Literature review

This chapter presents a review of previous studies that are relevant for the scope of the XPRESS project. The aim of the literature review is to build a basis for further research and provide an overview of the state-of-the-art. The following two research perspectives will be addressed:

- Drivers and barriers to green public procurement.
- Drivers and barriers to innovative SMEs involvement in public procurement.

2.1 Drivers and barriers to green public procurement

Drivers	Barriers
<p>Political will</p> <ul style="list-style-type: none"> i. Public authorities that implement GPP ii. Legislation with political continuity iii. Top management support and commitment iv. Environmental criteria in procurements <p>Interaction among different actors to facilitate a learning process</p> <p>Collaboration between policy makers, regulators and suppliers</p> <p>Knowledge and awareness about GPP</p> <p>Public employees attend training programs on GPP to increase knowledge and awareness</p> <p>Purchasing power of the procurers</p> <ul style="list-style-type: none"> i. Purchasing power and capability of the purchasing department ii. Purchasing strategy iii. Collaboration across municipalities 	<p>Financial barrier</p> <ul style="list-style-type: none"> i. Budget constraints ii. Relative high cost of green products <p>Legal aspects</p> <ul style="list-style-type: none"> i. Lack of government legislation ii. Loopholes in the legal system iii. Ambiguity <p>Procurers and suppliers</p> <ul style="list-style-type: none"> i. Short-term oriented procurers ii. Lack knowledge and expertise iii. Lack of suppliers

Political will at the national and local level as drivers

Public authorities who implement GPP legislation with political continuity enable both policy makers and practitioner to take measures on contributing the delivery of green products, based on a study on sustainable public section procurement on green production in the food sector².

² Smith, J., Andersson, G., Gourlay, R., Karner, S., Mikkelsen, B. E., Sonnino, R., & Barling, D. (2016). Balancing competing policy demands: the case of sustainable public sector food procurement. *Journal of Cleaner Production*, 112, 249-256.



According to a study in the UK public sector, top management support and commitment to the sustainable procurement is the leading facilitator of GPP³.

Environmental criteria in procurements as drivers

In this section we analyze the impact of environmental criteria in the implementation of GPP⁴.

Interaction among different actors to facilitate a learning process

A success case of GPP for a zero-emission building in Norway⁵ shows that to the collaboration between policy makers, regulators and suppliers is a key factor. This is also a learning process for all the actors involved. As stated in this study, “A robust governance process must therefore rely on both qualitative cooperation between actors, and emphasis on the implementation of quantitative targets and requirements directly into the formal governance process”.

Knowledge and awareness about GPP

The study⁶ about the drivers for GPP in Italian municipalities show that public employees, who receive sufficient information about GPP and participate in training session on GPP, can increase their knowledge of GPP, which are strong drivers for green procurement practice. Therefore, it is important that public authorities have access to sufficient skills, knowledge and tools to implement GPP. This study highlights the importance of providing in-depth, detailed and operational guidelines to support purchasing officers in applying green criteria to their ordinary tasks.

Purchasing power of the procurers

A survey⁷ conducted in Norway on green public procurement for Norwegian municipalities and counties found that “green procurement practice in the municipalities and counties is linked to their abilities to actively work with purchasing. These abilities appear to be dependent on the size of the municipality, typically reflected by the presence of a purchasing department, and the formulation of a purchasing strategy”. The purchasing power and capability of the purchasing department, and whether a purchasing strategy is in place has an impact on the purchasers’ ability to carry out GPP. Smaller municipalities, especially those without a procurement

³ Walker, H., & Brammer, S. (2009). Sustainable procurement in the United Kingdom public sector. *Supply Chain Management: An International Journal*.

⁴ Soto, T., Escrig, T., Serrano-Lanzarote, B., & Matarredona Desantes, N. (2020). An Approach to Environmental Criteria in Public Procurement for the Renovation of Buildings in Spain. *Sustainability*, 12(18), 7590.

⁵ Sparrevik, M., Wangen, H. F., Fet, A. M., & De Boer, L. (2018). Green public procurement—A case study of an innovative building project in Norway. *Journal of Cleaner Production*, 188, 879-887.

⁶ Testa, F., Annunziata, E., Iraldo, F., & Frey, M. (2016). Drawbacks and opportunities of green public procurement: an effective tool for sustainable production. *Journal of Cleaner Production*, 112, 1893-1900.

⁷ Michelsen, O., & de Boer, L. (2009). Green procurement in Norway; a survey of practices at the municipal and county level. *Journal of environmental management*, 91(1), 160-167.



department, may find it difficult to be strongly engaged in GPP, but they could solve this problem by collaborating with other municipalities.

Financial barriers

Financial barriers have been found to be extremely relevant for GPP. Budget constraints hinder the procurement of green products and service in many countries. Even though policy makers try to address the environmental policy objectives, with *limited budgets*, they may have to take cost-cutting measures and lower the environmental criteria.

Another form of financial barrier is the *relative high cost of green products*. Cost has been found to be the leading barrier to GPP based on a study in the British public sector⁸. Green products and services are perceived as expensive choices. According to a study performed in Sweden⁹, this can be especially relevant for smaller municipalities with limited financial resources. Case studies carried out in Malmö and Östersund municipalities in Sweden about the public procurement of electric vehicles (EV)¹⁰ show that public procurement of EVs can create purchasing power and stimulate the market for EVs, however, the high price of EVs was the main criterion when deciding among all the possible alternatives.

Therefore we can conclude that without the strong financial support and political will for achieving sustainable goals, environmental criteria are considered as a burden rather than a driver for GPP¹¹.

Legal aspects

The review study by Vejaratnam et. al¹² shows that legal issues such as lack of government legislation, loopholes in the legal system and ambiguity in legal requirements act as barriers to GPP.

In some countries, insufficient legislation on GPP is a major barrier for its implementation. The study by Hall et al. (2016) points out that there is a need for an extensive regulatory framework on GPP and the absence of enforcing regulation is a major problem. These studies show that loopholes in the legal system discourage suppliers to provide green products.

⁸ Walker, H., & Brammer, S. (2009). Sustainable procurement in the United Kingdom public sector. *Supply Chain Management: An International Journal*.

⁹ Hall, P., Löfgren, K., & Peters, G. (2016). Greening the street-level procurer: challenges in the strongly decentralized Swedish system. *Journal of consumer policy*, 39(4), 467-483.

¹⁰ Palm, J., & Backman, F. (2017). Public procurement of electric vehicles as a way to support a market: examples from Sweden. *International Journal of Electric and Hybrid Vehicles*, 9(3), 253-268.

¹¹ Testa, F., Annunziata, E., Iraldo, F., & Frey, M. (2016). Drawbacks and opportunities of green public procurement: an effective tool for sustainable production. *Journal of Cleaner Production*, 112, 1893-1900.

¹² Vejaratnam, N., Mohamad, Z. F., & Chenayah, S. (2020). A systematic review of barriers impeding the implementation of government green procurement. *Journal of Public Procurement*.



Procurers and suppliers

The attitude and willingness of procurers to take an active role in implementing GPP can have a major impact on GPP. Traditionally, the minimum price criterion has been the main driver for many procurers and some of them are unwilling to accept the cultural change towards GPP¹³. Studies show that local authorities take procurement decisions on the basis of the minimum price without considering the cost for the whole life cycle. This result has been found in both UK and some other European countries^{14,15}. Instead of calculating the long-term cost that includes the environmental impact, many procurers still focus on short-term economic gains, and this type of mindset can create major barriers against GPP.

These studies also show that the knowledge and expertise of public authorities on green products and services can influence the GPP decision-making. Lacking such expertise can pose barriers for GPP.

Furthermore, as GPP imposes additional green criteria, there are less suppliers that are qualified for participate.

2.2 Drivers and barriers to the involvement in public procurement of innovative SMEs

There is considerable evidence that SMEs perceive public procurement as challenging.

Challenges	
Public procurement process	<ul style="list-style-type: none"> i. Overly prescriptive qualification criteria ii. Poorly written tender specifications iii. Prohibitive resource requirements iv. Requirement to supply via a third party
Public procurement policies	<ul style="list-style-type: none"> i. Lack of monitoring and reporting mechanisms of green policies ii. Lack of commitment and drive from the top iii. Lack of robust measurements and monitoring mechanisms iv. Contrasting political agendas v. Very risk adverse culture.
Competence of public procurement officers	<ul style="list-style-type: none"> i. Poor preparation of specifications ii. Lack of knowledge of the market iii. Lack of communication

¹³ Thomson, J. and Jackson, T. (2007), “Sustainable procurement in practice: lessons from local government”, *Journal of Environmental Planning and Management*, Vol. 50 No. 3, pp. 421-444, doi: 10.1080/09640560701261695.

¹⁴ Thomson, J. and Jackson, T. (2007), “Sustainable procurement in practice: lessons from local government”, *Journal of Environmental Planning and Management*, Vol. 50 No. 3, pp. 421-444, doi: 10.1080/09640560701261695.

¹⁵ Jiménez, J.M., Lopez, M.H. and Escobar, S.E.F. (2019), “Sustainable public procurement: from law to practice”, *Sustainability (Switzerland)*, Vol. 11 No. 22, doi: 10.3390/su11226388.



	iv. Slow feedback
Procurement contract	<ul style="list-style-type: none"> i. Large contract size ii. Lengthy contract

Very often SMEs perceive the public procurement process as frustrating and biased against them because of overly prescriptive qualification criteria, poorly written tender specifications, prohibitive resource requirements, requirement to supply via a third party¹⁶.

SME-friendly public procurement policies are critical for SMEs participation. There has been growing support for policies to encourage SME suppliers and additional policies have been implemented at the national level in many countries. However, studies¹⁷ have found a significant lack of monitoring and reporting mechanisms that hinder the implementation of those policies. The main barriers in this case are the lack of commitment and drive from the top, lack of robust measurements and monitoring mechanisms combined with contrasting political agendas, and very risk adverse culture.

Moreover, public procurement practices and the competence of public procurement officers are concerns for SMEs according to a study by Loader (2015). It is worth pointing out that the buyer's role can support or hinder certain mentoring behaviors between suppliers and public buyers¹⁸. While some buyers are strongly opposed against providing support to suppliers, some others prefer to help suppliers to influence buyers by exploring new business opportunities and 'sell themselves', other suppliers are keen on mutual learning and prioritize helping suppliers understanding how to best interact with buyers. These differences among buyers can be either barriers or enablers to SME participation.

There is also evidence that the size, measured by employee number¹⁹, significantly influences small and medium sized enterprises' (SMEs) resources towards public tenders. Compared to small and medium-sized firms, micro-enterprises have very few resources available and win public tenders less often.

¹⁶ Loader, K. (2015). SME suppliers and the challenge of public procurement: Evidence revealed by a UK government online feedback facility. *Journal of Purchasing and Supply Management*, 21(2), 103-112. doi:10.1016/j.pursup.2014.12.003

¹⁷ Davis, P., & Brady, O. (2015). Are government intentions for the inclusion of innovation and small and medium enterprises participation in public procurement being delivered or ignored? An Irish case study. *Innovation-the European Journal of Social Science Research*, 28(3), 324-343. doi:10.1080/13511610.2014.985192

¹⁸ McKevitt, D., & Davis, P. (2015). How to interact, when and with whom? SMEs and public procurement. *Public Money & Management*, 35(1), 79-86. doi:10.1080/09540962.2015.986897

¹⁹ Flynn, A., McKevitt, D., & Davis, P. (2015). The impact of size on small and medium-sized enterprise public sector tendering. *International Small Business Journal*, 33(4), 443-461.



3. Methodology

A case study is a qualitative method to investigate one case or multiple cases over time, through a detailed, in-depth data collection involving multiple sources of information²⁰. A case study will primarily rely on interviews, observations and document studies (Yin, 2014)²¹.

The potential users of the results of a case study are policy makers at EU, national and local level, academia, and industry as a whole. The dataset collected from case studies will serve the XPRESS objectives by mapping current practices of green public procurement in different municipalities and regions and identifying the driving factors that promote or prevent SME engagement in green public procurement. These insights can strengthen the (conceptual) foundation of the XPRESS project and provide very useful insights on the challenges and opportunities of stimulating the RES uptake via SME friendly GPP.

The results of the case studies are presented in a systematic way and they are representative and comparable among cases. The case study structure and reporting guidelines are prepared by all the XPRESS partners to ensure a common research design and reporting structure.

To maximize the replicability at the case level and provide adequate input, two methodological criteria have been considered (Eisenhardt, 1989)²²:

Representation: The cases have been implemented in various countries and selected on the basis of different type of public procurement procedures (e.g. innovation partnership, competitive dialogue, open procedure, closed procedure)

Contrasting Situations: The collection of cases have been chosen to represent contrasting situations. For example, successful procurement cases with SME as one of the suppliers vs. cases where SMEs participated in the bidding process but did not win the contract.

The interviews were carried out following the structure that is attached in the Appendix. The duration of each interview varies between 45-90 minutes. Ethical and confidentiality issues in line with the EU's legislation, including anonymity were strictly followed. Accordingly, a consent form was signed by each interviewee.

The case studies involve various actors (public authorities and SME). The options of case choices are 1) two cases from Scenario A; 2) one case from Scenario A, the other one from either Scenario B or C; 3) one case from Scenario B, and the other one from Scenario C. Therefore, the case studies provide insights from both the public authorities and SMEs.

²⁰ Creswell, J. W. (2007). *Qualitative inquiry & research design*. Sage Publication.

²¹ Yin, R.K. (2014) *Case study research. Design and Methods*. 5th edition, Sage.

²² Eisenhardt, K., M. (1989). *Building Theories from Case Study Research*. *The Academy of Management Review*, 14(4), 532-550.



Case Scenarios:

Scenario A: A public purchase where at least one of the suppliers is a SME in the field of RES, based on the TED dataset (most ideal case). In this scenario, at least one interview needs to be conducted with each actor (public procurers and representatives from SME), and the third interview can be from either actor.

Scenario B: A SME, in the area of RES, with previous experience of winning a public tender, having participated in a bid, or having considered to participate in a bid in future. All three interviews are collected from the SME. Potential representatives from SMEs can be CEO, CTO or marketing director.

Scenario C: A municipality who has previous experience with SME suppliers in the area of RES, or has evaluated bids from SMEs, or has considered or is considering having more SME suppliers. All three interviews are collected from the public authority. Potential representatives from the public authorities can be purchasers (at least one), and officers from the business development sector, environment-related sector or energy-related sector.

The selection of case studies aimed at providing a holistic analysis of the perspectives from both the PAs and SMEs. The distribution of case studies with respect to counties, scenarios, and main themes are as follows:

- Belgium
 - o Case 1, Scenario B: interview with a SME that gives consultancy services to PAs and SMEs for renewables.
 - o Case 2, Scenario B: interview with a SME that provide service based on information communication technology (ICT) which allows the procurer to supply electricity.
- Denmark
 - o Case 1, Scenario A: interview with public authorities from two municipalities in the same region that work on increasing the use of RES.
 - o Case 2, Scenario B: interview with three SMEs within the field of RES in Denmark. SME 1 sells PV, SME 2 is a supplier of intelligent sustainable energy management systems, and SME 3 is a consulting company that has specialized in delivering innovative RES solutions in buildings.
- Germany
 - o Case 1, Scenario A: interview with two public procurers at a German County. The district (county) processed a tender for green electricity of the district with its 22 municipalities.
 - o Case 2, Scenario A: two interviews, one is with the head of the procurement services in a city in Germany, and the other one is with the head the Department of Environmental Precaution and Planning in the city.



- Italy
 - Case 1, Scenario B: two interviews with representatives from two SMEs in Italy. The first one is a small engineering company working in the energy sector, and the second SME provides green services in the energy sector and specializes in gas engine-based cogeneration, on-site power and renewable natural gas applications.
 - Case 2, Scenario A: interview with a public employee in a large city in Italy, and the case based on a procurement of photovoltaic roof in school buildings in a province in Italy.
 - Case 3, Scenario A: interview with a public employee in a municipality in Italy. This case is select on the basis of a tender about the modernization and efficiency improvement of municipal building heating systems and energy service management.
 - Case 4, Scenario A: interview with a public employee in a municipality in Italy. The case is on the basis of a procurement project about the centralization of the heating system at the service of middle school, elementary school and nursery school through district heating grid.
- Norway
 - Case 1, Scenario C: interviews with one PA and two of the involved SMEs about solar cell on new and existing buildings
 - Case 2, Scenario A: interviews with two PA, one small municipality and one larger municipal enterprise that is responsible for school building in a large municipality.
- Portugal
 - Case 1, Scenario A: interview with a representative of the national agency that establishes all the environmental policy In Portugal.
 - Case 2, Scenario A: interview with a public company in a city in Portugal that is responsible for the collection of solid waste and green areas maintenance.
- Slovakia
 - Case 1, Scenario B: Interview with representative of a SME, the SME is a non-governmental company set up by the department of Energy Center in one of the cities in Slovakia.
 - Case 2, Scenario A: interview with a public procurer from a city in Slovakia.
 - Case 3, Scenario A: interview with a public procurer in the district office in Slovakia, the interview partner is responsible for public transport in the whole district.
- Spain
 - Case 1, Scenario B: interview with representative of a SME that is a green energy supplier to the public buildings of two cities in Spain.
 - Case 2, Scenario A: interview with a representative from a public company in Spain, this public company carries out several environmental services in the local municipality.
 - Case 3, Scenario B: interview with SMEs that is a social cooperative on renewable energy generation and consumption.



- Sweden
 - Case 1, Scenario B: interview with a SME that works with electricity equipment, and power units.
 - Case 2, Scenario B: interview with a SME that is a taxi company in Sweden.
 - Case 3, Scenario A: interview with a public authority in north of Sweden.
 - Case 4, Scenario A: interview with a university located in the southern part of Sweden.

- UK
 - Case 1, Scenario B: interview with a representative from a SME that develops energy storage technology from second life electric vehicle batteries.
 - Case 2, Scenario B: interview with a representative from a SME that is a UK based manufacturer SME specialized in ground source heat pump.
 - Case 3, Scenario A: interview with a city Councilor in UK about their practices around public procurement of renewable energy solutions.



4. Case studies

4.1 Case studies in Belgium

4.1.1 Case 1 in Belgium

This case is about a SME (Bel-SME-1) who provides consultancy services to PAs and SMEs for renewables.

Bel-SME-1 was established in 2012. Since 2015, they have been delivering services to the market. The interviewee has been CEO of the organization since 2017. Bel-SME-1 works as consultant in the field of the energy sector, they aim to realize climate goals with PAs. They support the PAs in Belgium to reach sustainability goals. They have introduced various innovative solutions in business models, and public sourcing legislation. For instance, PAs can buy solar installations from the private suppliers, and the business model for the purchasing and collaboration is based on their innovative business model.

Analysis of current situation

a. Sustainability strategies, energy related strategies

The company is working with renewable strategies and the overall energy related strategies. They work to unburden PAs by providing energy management. Bel-SME-1 provides cheaper solutions for PAs, based on a total cost study by KPMG indicating that Bel-SME-1 does the job with fewer required resources.

b. PP strategy or regulations & support for SMEs

There is mainly indirect support for innovative SMEs, both at regional level and national level. There are some schemes diminishing for Photovoltaic (PV) devices. On EU level, there is a call to develop a system to use Power Distribution Unit (PDU).

The interviewee also mentions that he has seen that the majority of the public sector has made statements on their websites for their intentions to buy renewables. Also, there exists a formal procedure called “state of translation and contraction” or “competitor dialogue” for SMEs. But it is quite rigid. It is also complicated because actors in PAs do not really specify what they want to procure.

Themes

Several themes emerged from the interview, such as established strategies to procure RES, supplier engagement, ease of access to information for SMEs, barriers for SME to participate in a tender.

There are established policies as well as strategies at public authorities in Belgium. These organizations promote pre-tender engagement and often invite SMEs to a dialogue before



tenders. Also, SMEs approach PAs with their company presentations to establish dialogue. Interviewee sees the most problematic phase of this communication is during the tender time.

This consultancy SME has worked as a bridge between SMEs and PAs. It has focused to make information easier to access and use for its customers. They have high focus on their technical expertise, and they invested a lot during past years, and they are going to a harvesting mode to use the investment, and also to assess the effectiveness of their investments.

They mention that it is to some extent hard to find right expertise in the market. However, it is not hard to find financial support in terms of funds and loans to finance projects. Also, it has been a great source of learning for the SME to work with renewables to become one of the successful actors in the market. They are very satisfied with the level of support they received from public sector. Instead, they mention that PAs are sometimes decisive in the way they want a tender to be prepared which makes it a bit difficult. The interviewee mentions that flexibility is important to make the relationship more successful.

They have been successful in giving consultancy services to the SMEs and PAs. They see that technical expertise is the lifeblood of their success. They have had no problem in receiving fund to support their business. They allocated considerable resources in marketing of their services. In terms of financing, they allocated 20% to market their innovative solutions. Their innovation is mainly about creating digital platform, business models, and ease of access for customer to use RES services.

Summary & Discussions

Bel-SME-1 relies heavily on their technical expertise to deliver innovative solutions related to RES. However, they have not forgotten to focus on marketing activities which helped them to cover investment costs and show turnover of 700 000 Euros. Their success also depends on the existing policies as well as strategies to procure RES. These strategies even promote pre-tender dialogue which gives great opportunity to SMEs to participate more in tenders. Supply, distribution, and management issues are the most challenging issues in front of them which demands better teamwork, ensuring suppliers environmental consideration.

The interviewee mentions that economically most advantageous formula is often used to evaluate tenders and tenders are often open procedure. LCA is becoming more and more important in tenders. Bel-SME-1 is on right track to give more consultancy services to SMEs due to know-how of the market they gained, focus on technical as well as marketing parts, and awareness of legal issues, support schemes, and existing regulations to promote RES.

4.1.2 Case 2 in Belgium

This case is based on an interview with a representative from a SME (Bel-SME-2) in Belgium. This SME (Bel-SME-2) has established a service based on information communication technology (ICT) which allows the procurer supply electricity directly from the producer and cuts the



intermediaries. It is very new in Belgium and they hope to increase the use of renewables via their services.

Analysis of current situation

a. Sustainability strategies, energy related strategies

Green services constitute the main offering in this SME. For instance, they offer point of origin services for the energy. This guarantee of Origin (Goo) is important to know whether energy is renewable.

Bel-SME-2 is a SME started in 2005. They work as a SME that submits to tenders. Also, as a consultant to SMEs which want to attend at public procurement with renewables. Also, they help PAs in designing tenders. They have a knowhow of renewables in Belgian market. They have different innovative service solutions in the field of renewables such as Guarantee of Origin (Goo), and corporate power purchasing (CPP).

The company wants to help and develop renewable energy, as much renewable energy as possible. They limit their goals to national Belgium territory. So, they are not really interested or active abroad. But they still have a long way to go in Belgium. Renewable energy share in electricity in Belgium is about 25% and if one generalizes it to energy in the whole, it's not even 10%. So, still a long way to go.

b. PP strategy or regulations & support for SMEs

Stop-and-go-policy refers to the issue of Ad hoc policies, and it takes a lot of energy from SMEs to know and become familiar with them. Public support is compared to a jungle by the interviewee, which indicates that it is confusing and difficult to find the right type of public support.

Financial support is also another important point for the interviewee. The payments are often late and sometimes SMEs need to have their own financial resources to setup the work and ask for payback afterwards. Administrative issues are another important point. The administrative work related to procurements is heavy, so SMEs need to do a lot of work to submit to a tender.

The company is moving from a market situation where renewable energy was subsidized, to a market situation where subsidies will disappear. This is happening right now in Belgium and that's why they try to be ahead of the market and be ahead of the regulations and find means to help developing renewable energy in a normal market situation without subsidies. And that is why, they are very much focusing on corporate power purchasing right now.

c. PP & supplier engagement

For smaller investments or smaller jobs that the procurement budget is limited. They give consultancy services to PAs in a free procurement phase.



d. PP & SME

They are unaware of strategies for engaging with SMEs. They do not think that a lot of municipalities are really focusing on that.

Barriers & Drivers

Identification

- Lack of human resources, legal issues, marketing issues, supply or distribution issues. Other: policy issues (interviewee highlights legal issues)

Possible solutions

- Lack of human resources is dealt by training existing human resources.
- Legal issues are being addressed by following policy developments and updates. Also, trying to influence policies.
- Marketing issues are developed by investing on information communication technologies.
- Supply or distribution issues are dealt by looking at other European countries as well as countries in other parts of the world since Belgium is a small country which limits the availability of local suppliers.
- Policies develop and update constantly, and the interviewee uses the term “stop-and-go-policies” referring to overnight development and disappearance in a short period of time. They follow-up policy developments. It has become a comparative advantage for this consulting SME since other SMEs do not have the resources to follow-up policy development. However, it is tiring and resource consuming even for this consulting SME.

Summary & Discussions

Bel-SME-2 is backed by knowledge on renewables as well as a good understanding of public market of renewables in Belgium. It is managed by a group of experts that has succeeded to invest approximately 25% of their turnover in new product development. Although, the numbers will be unchanged in the next year, the company has succeeded to hire a good position in between SMEs and PAs. They give services to SMEs due to their understanding of the legal framework of renewables in Belgium. Also, they help PAs in their tenders because of the tacit knowledge they developed from Belgian market with the SMEs in it. It is vital for PAs to know prior to tenders whether there will be SMEs applying to a tender, and how to design new tenders which Bel-SME-2 becomes useful to consult with. Furthermore, they offer third party solutions related to renewables such as Guarantee of Origin which gives data to customer about which source the energy is from, for instance, whether the energy is produced from renewables. Another services provided by them is called corporate power purchasing, which is a program to connect producer of energy to consumer and removing the intermediaries. Hence, this SME is on the way to increase its market share, influence policies to make it easier and more understandable, and contribute to increase of RES in Belgium.



This SME has technical expertise of how the political system related to renewables work in Belgium market. It is crucial in order to help other SMEs and sometimes public authorities to maintain a tender. They have invested in finding talents and educating people, and they are on the way to increase their market share. The market in Belgium seems ready and not so competitive, which makes it easier to introduce innovative solutions in renewables such as Goo and CPP. However, as other public markets in Europe, PP in Belgium is confusing and complicated. Confusion is due to different policies which many of them are still new. This makes SMEs being tired to catch up and learn. Also, it is complicated since it needs human resources to deal with administrative issues. Furthermore, it is a wish that payments can be done sooner and part of it in the beginning of a contract that SME can finance operations. Instead, payments are late, and SME needs to have own financial resources to begin with. Considering all these barriers, it seems this market is going toward using more renewables and open more room for SMEs to attend in public procurement.

4.2 Case studies in Denmark

4.2.1 Case 1 in Denmark

Description of the case

This case is with the public authorities from two municipalities. The two chosen municipalities are both situated in the same region, and work on increasing the use of RES. One of the municipalities aims to have 100% renewable energy supply of heat and electricity by 2035.

- *Municipality 1*

The informant from the municipality is an engineer and has worked 12 years in the Department for Economy and Property.

The municipality has a Property strategy, which aims to work with sustainability and promote energy savings. All public property should be DGNB (German sustainable building council) certified, where the German criteria have been adapted and reviewed to fit the Danish standards, law and in practice. During the years, the informant has worked in the municipality, 150 MDK has been invested in energy renovation and DGNB certification. The municipality has installed around 10 000 m² BIPV (building integrated photovoltaic). The policy for energy renovations is that there should be a payback time of 25 years of investments in energy renovation, and the BIPV pays back in 10 years so they can contribute to financing a deeper renovation. However, the government has changed the rules so BIPV is now only considered in new buildings and through renovation projects. The change in the legislation made it much harder to install BIPV.

The municipality uses several SMEs on the framework tenders, small tenders under 50 000 DKK. However, for a large project, it is normally large companies bidding. In large tenders' consultants are used, and there might be a dialogue process. The municipalities have been divided into three



“procurement districts”, and SMEs can only bid in one district, to ensure that more companies have the opportunity of working for the municipality.

The municipality has not conducted its own market engagement activities for RES purchases because they do not consider it as necessary, as the processes work fine as it is. There have been several cases of an SME being among the winning suppliers, especially concerning geothermal heating and ventilation systems. But this is also because most companies in the area are categorized as SMEs. The informant does not perceive any potential barriers for SMEs to participate in public purchases.

- Municipality 2

The municipality aims to have 100% renewable energy supply of heat and electricity by 2035. From 2013, they stopped establishing new oil boilers, and in 2020, 50% of the electricity consumption is covered by wind energy. 43 % of heat consumption is covered by seven district heating plants using biomass heating. The municipality got the world's first offshore wind park and has in total 163 MW wind power in the municipality. Because of “over-production” of wind electricity, the municipality has a goal of using larger shares of the produced wind energy locally.

The municipality is committed to the EU's climate pact to reduce CO₂-emission as a geographical area with a minimum of 20% in 2020 compared to 2008 reference year. Further, the municipality has an energy consumer goal of minimum 3% reduction per year of CO₂-emissions.

In collaboration with universities and others, the municipality has a development project called “Lightning Metropolis” with the aim of saving 300 000 kWh for lightning in municipal buildings.

The municipality has not an established strategy for SME engagement, but there have been cases where SMEs have been winning public contracts. The informant assumes that potential barriers for SMEs to participate in public purchases is due to lack of capacity and that the most problematic phase in the interaction are before the tender.

Analysis of the current situation

a. Sustainability strategies, energy-related strategies:

Municipality 1 has a property strategy which aims to work with sustainability and promote energy savings. All public property should be DGNB (German sustainable building council) certified, where the German criteria have been adapted and reviewed to fit the Danish standards, law and in practice. During the years the informant has worked, the municipality has been investing 150 MDKK in energy renovation and DGNB certification. The municipality has installed around 10 000 m² BIPV (building integrated photovoltaic). However, the government has changed the rules so BIPV is now only considered in new municipal buildings.

Municipality 2 aims to have 100% renewable energy supply of heat and electricity by 2035. From 2013 they stopped establishing new oil boilers, and in 2020 50% of the electricity consumption is covered by wind energy, and 43 % of heat consumption is covered by seven district heating



plants using biomass heating. The municipality got the world's first offshore wind park and has in total 163 MW wind power in the municipality. Because of “over-production” of wind electricity, the municipality has a goal of using larger shares of the produced wind energy locally. The municipality is committed to the EU's climate pact to reduce CO₂-emission as a geographical area with a minimum of 20% in 2020 compared to 2008 reference year. Further, the municipality has an energy consumption goal of minimum 3% reduction per year of CO₂-emissions.

b. PP strategy

Neither municipality 1 or 2 has a strategy or policy for the procurement of RES. Municipality 2 tries to be involved in research and development projects for RES, but these types of projects are typically carried out together with research institutions without a tendering process. Municipality 2 has for instance carried out a process for replacing oil boilers at a municipal building of 1 200 m² to an innovative system of 45 kW heat pump including a salt phase shifting heat storage to increase flexibility in operations and increase renewable energy power supply from the grid.

Municipality 1 uses consultants for larger tenders, and turnkey is the traditional procurement model used for large projects. In large public procurement they might also use a dialogue process. For smaller, not specific projects, the municipality uses framework tenders where all sizes of companies can bid. Projects like geothermal heating or ventilation systems are normally made by SMEs.

c. PP and supplier engagement

Municipality 1, as mentioned above, normally has a dialogue with the turnkey entrepreneurs. Else, the tenders are published on the municipal platform without any supplier engagement activities. Municipality 2 is involved in research and development projects for RES, and they have also conducted a dialogue in the pre-tender phase with potential suppliers for the tender for innovative heat pump systems with heat storage.

d. PP and SME

The two municipalities do not have an established strategy for SME engagement. Municipality 1 does not consider it as necessary for RES purchases because the processes work fine as it is. For both municipalities, there have been cases where SMEs has won public contracts, and the municipalities used several SMEs on the framework tenders, small tenders under 50 000 DKK. This may be due to the fact that most local companies in both municipalities are categorized as SMEs. To ensure that more companies have the opportunity to work for the municipality, the municipalities in Denmark have been divided into procurement districts, and SMEs can only bid in one district.



Barriers and drivers

The informant from municipality 1 does not perceive any potential barriers for SMEs to participate in public purchases. While the informant from municipality 2 assumes that potential barriers for SMEs to participate in public purchases are due to lack of capacity and that the most problematic phase in the interaction is before the tender.

Summary and discussion

The municipalities work on increasing the RES, but they do not have a strategy or policy for the procurement of RES. Due to changes in regulations, it is difficult for Danish municipalities to invest in solar energy in municipal buildings that are not new buildings. The municipalities have not an established strategy for SME involvement, other than that they typically use SMEs in framework agreements. For larger projects they use turnkey contracts, and for these projects they may use dialogue in the pre-tender phase.

4.2.2 Case 2 in Denmark

Description of the case

The case is based on three SMEs within the field of RES in Denmark. SME 1 sells PV, SME 2 is a supplier of intelligent sustainable energy management systems, and SME 3 is a consulting company that has specialized in delivering innovative RES solutions in buildings. The three SMEs are chosen to look at the different barriers and drivers for them to participate in PP.

- SME 1, solar cell (PV) supplier

This SME is a solar cell (PV) supplier, and the interviewee is the head of sales and project development.

The SME sells PV, and the main market is private as well as public companies. The company works mainly in Denmark but has a sister company in Germany with 80 employees. They can provide construction workers for the mounting in Poland, and they work as consultants for an Albanian sister company. Before Corona, they also worked in the US.

The company has been inventing a mounting system and is now working on selling their invention. Hence, there are no plans for further innovation and the focus is on surviving. The market has been difficult since 2012, where the Danish government changed the rules for the settlement of electricity from PV and the legislation for municipalities, which meant that the municipality should establish a company for each PV plant. Hence, the focus has been on survival for a couple of years, but now they experience that the market is growing again.

The main constraints/barriers for the development of the company are legal issues and lack of financial resources. Since the company has struggled to survive, they cannot invest in innovation, but they do concept development continuously. The company is not satisfied with the level of public support, mostly due to the legislation.



The Danish municipalities want to use PV, but they are not allowed, or it is only considered for new buildings. The national level, the regions and private owners can use PV, but not the municipalities. Hence, the company only sells PV to municipalities if it is a new building.

The SME has participated in pre-tender meetings; else they use a platform for tenders called comdia (www.comdia.com). They win around 50% of their bids, and the winning is almost always price based. One time they lost a tender because the procurer asked for a specific technology which was not available in the market. The SME confirmed with the procurer about it, so they made a bid with the budget for that technology, and the competing firm did not. The SME tried to complain that it would be impossible with the competing firm's budget to get the required technology, but the SME did not win.

Barriers for them:

- Be visible to the procurers
- Financial barriers, need to have their Germany sister company as a financial back up to place a bid for a tender
- Difficult to spend a month to develop a bid for a tender when they have ordinary private customers they need to maintain.

Barriers for SMEs:

- If the municipalities do not know the company, the company are not invited
- Tenders are often published with very short notice, and then they miss them
- Some tenders demand financing that the company cannot meet
- Some requirements are not good, e.g. outdated but the municipality is not willing or able to change it. Then the bidding is not accepted, although the solution is better. An example is one bid that was won on 2 MDKK, but the SME knew that it would cost 5 mill DKK and complained. But the complaint was rejected, and they decided not to go to court, although they had a good case.
- Difficult to take time for development, public support would be good
- Soothe SME considers the phase before the tender as the most problematic phase

Success factors:

- The municipalities must do an effort to invite SMEs
- Dialogue is good

- *SME 2, consulting company*

The SME is a consulting company on low energy and renewable energy supply in buildings with around 15 employees. They have specialized in delivering innovative solutions, and the overall



strategy is to work with innovative sustainable energy building solutions in a wider societal context.

The SME has participated and participates in several innovative building projects, where innovative RES are an important part. They have participated in the Horizon 2020 project Deep Energy Renovation and ELENA project on innovative low energy building renovation in social housing companies.

The SME has introduced new goods, services and processes, and believes the impossibility to give the technologies out for rent is the main barrier for the development of the company. However, they plan to increase the percentage of investment dedicated to innovation in the next 12 months.

The SME has received a grant from the Horizon 2020 program, funds from the Danish Energy Agency and municipal funds. However, they perceive the support from public funding to be not easily accessible and not adequate.

The SME has through a tender process been selected a “framework agreement” with a municipality giving the opportunity to bid on smaller projects on innovative sustainable energy building renovation with a process of bidding for the selected companies. This arrangement works well for the SME, allowing more long-term cooperation and thereby innovation in small steps and sharing of knowledge with the customer. They also have a similar arrangement with another municipality, giving access to a network of cooperating municipalities.

The barrier for the SME in participating in PP is that it is demanding much resources to participate, and they find the most problematic phase to be during the bidding process since this is resource demanding. When reflecting on the critical success factors for SMEs to become suppliers to public customers, the SME considers specialization and participating in teams as important factors.

- *SME 3, intelligent sustainable energy management systems supplier*

The SME supplies intelligent sustainable energy management systems focusing on energy savings and RES and the integration into local and regional energy systems. They have specialized in delivering innovative solutions.

The SME has participated and participates in several innovative intelligent energy projects where innovative RES's are an important part. They have introduced new goods, services and processes, and plan to increase the percentage of investment dedicated to innovation in the next 12 months.

The main constraints for the development of the company are related to financial resources and the lack of rentability of projects. The SME has received funding from both the Horizon 2020 program and National Danish funds, but they perceive the public funding as not easily accessible and not adequate. Financial incentives are the support that will help the SME the most to develop and further improve RES services.



The SME has good experience in working together with municipal-cooperative district heating companies and cooperative social housing companies following the same regulation as public authorities on tendering – for development on sustainable energy. They have had the will to invest in developing activities and also to take risks. For SME it is economically very difficult to take the full risk in innovation projects.

The main barrier they face in trying to participate in PP is that it demands a lot of resources to participate. The SME finds the phase during the bidding process as the most problematic phase, as it is resources demanding. When reflecting on the critical success factors for SMEs to become suppliers, the SME answers specialization and participating in teams.

Analysis of the current situation

a. Sustainability strategies, energy-related strategies

The strategy for SME 1 is to work with product management. They have developed an innovative mounting system that makes the mounting fast and effective and have no plans for further innovation. SME 1 has experienced some difficult years due to changes in the rules for the settlement of electricity from PV, so their focus has been on survival for a couple of years. They have not had big earnings, but they experience that the market is starting to grow again.

SME 3 has a strategy to work with innovative sustainable energy building solutions in a wider societal context. The company is working together with other companies in a network context, including the strategic partnership of Civic network for building renovation for 400 MEURO. SME 3 has participated in several innovative building projects, and participates in the Horizon 2020 project Deep Energy Renovation, and the ELENA project on innovative low energy building renovation in social housing companies, which have to follow the same regulations as for public tendering.

SME 2 has also participated, and participates, in several innovative intelligent energy projects where innovative RES are an important part.

b. Regulations and support schemes

SME 2 and SME 3 have received EU-grant from the Horizon 2020 program and funds from the Danish Energy Agency's EUDP support scheme. SME 3 has also received municipal/EU ELENA funds. Still, SME 2 and SME 3 perceive the support from public funding as not easily accessible and not adequate. SME 1, on the other hand, has not received funding or other support from public administrations. They are dissatisfied with the level of public support, mostly due to the legislation.

SME 1 has experienced some difficult years since 2012 when the Danish government changed the rules for the settlement of electricity from PV and the legislation for municipalities. Due to the changes, municipalities must establish a company for each and every PV plant. This makes it difficult for municipalities to choose solar panels, and hence difficult for SME 1 to get public



customers.

c. PP and supplier engagement (and d. PP and SME)

SME 2 has good experience in working together with municipal-cooperative district heating companies and cooperative social housing companies following the same regulation as public authorities on tendering – for development on sustainable energy. The PAs have had the will to invest and take the risk in developing activities which is beneficial for SMEs as it can be economically very difficult to take the full risk in innovation projects.

SME 3 has through a tender process been selected a framework agreement with a municipality. This is an arrangement that works well for SME 3 as an SME, giving the opportunity for more long-term cooperation and thereby innovation in small steps as well as sharing of knowledge with the customer. They have a similar arrangement with another municipality, which gives them access to a network of cooperating municipalities.

SME 1 has participated in pre-tender meetings with PA, and they win around 50 percent of their bids. However, as mentioned, the market has been tough, and municipalities only consider PV on new buildings. When winning public procurement contracts, it is always due to the price.

Barriers and drivers

The main constraints or barriers for participating in PP is according to the SMEs that the process is quite resource demanding. For SME 1 it is especially difficult to use time and resources to develop a bid for a public tender when they have ordinary private customers they need to maintain. Further, perceived barriers are related to financial barriers and as an SME it can be difficult to meet financial criteria. The SMEs experience that tenders are often published with short notice, making it difficult to discover and develop a bid. SME 1 has also experienced that the municipalities are not willing or able to change requirements when they are not good, e.g. outdated. An example of this is a bid where another supplier won on 2 MDKK, but SME 1 complained because they knew it would cost 5 MDKK, but the complaint was rejected and although they had a good case they did not have resources to go to court. Lastly, there is always a barrier for SMEs to be visible to the procurers.

Regarding the driver or success factors for SME engagement in PP, all three SMEs highlight dialogue and participating in teams as factors. The municipalities could make an effort to invite SMEs, and the SMEs can together with municipalities or on their own build the competence needed by the municipality.

Summary and Discussions

The case, especially SME 1, shows how important role legislation has on the RES market. For SME 1 the changes have made it difficult to participate in PP as the municipalities do not require PV. SME 3 and SME 2, on the other hand, have benefited from working with municipalities, and public contracts have influenced both firms in a positive way.



4.3 Case studies in Germany

4.3.1 Case 1 in Germany

This case is based on interviews with two public procurers at a German County. The district (county) processed a tender for green electricity of the district with its 22 municipalities (population: 245 000). The county has developed a Master plan: 100% climate protection with three pillars, renewable energy, energy efficiency and energy avoidance.

There are two respondents participated in the interview. The first one is responsible for energy purchasing for the district, and his main job is in climate protection management and energy management. The second participant is the head of the department of Rural areas and Consumer protection of which the Climate Protection and Renewable Energies Department is a part of.

Analysis of current situation

a. Sustainability strategies, energy related strategies

The district has developed a climate protection concept and the *master plan for 100% renewable energies* based on the climate protection concept. These are two support programs from the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and therein the goals for sustainability are defined. In addition to energy efficiency and energy saving, the district also produces the energy in a renewable way. The district also built a sustainability concept on top of the climate program two years ago, where the 17 UN criteria for sustainability are the basis of it. In summary, the district has a clear strategy and that is the basis for the climate program.

The district has now also launched a so-called 50-roofs program as part of the climate protection action program. The 50-roofs program describes 50 further roofs where the district would like to build photovoltaics in order to be able to cover its own electricity requirements to a large extent.

b. PP strategy or regulations

The district usually uses open tendering procedures so that the free market can also apply. Via the German e-tendering system, tenders are published. In principle, this is done or carried out in the open awarding procedure and the purchases are then published by the district in the German e-tender as it is done in the open procedure.

The procurement of the energy sources is in charged by the specialist service *Renewable Energy* since 2014. The goal of this unit is to procure 100% sustainable and green electricity. The general purchase or the procurement runs over other organizational units of the district. At the moment in the run-up to the climate emergency, which was under discussion throughout Germany, this



district has developed a climate protection action plan in which the procurement system is also examined. Within this framework a new procurement guideline is being developed.

The determination of the tender's framework conditions were decided politically. Enabling the participation of municipalities and own companies as well as central coordination were important goals. Service providers were hired that could carry out the operational work for setting up the tender such as define *green electricity*, define *service specifications* (contract periods, notice periods, ...), define *lots* (street lamps, heat, etc., if necessary separately), review of *acceptance points* (load profile data, etc.).

In terms of energy and electricity procurement, the district is not only using these so-called certificates of origin to buy green electricity from electricity that was produced conventionally and then re-labelled as hydropower. Instead, they use differently labeled electricity, for example the ok-power label from TÜV-Nord and TÜV-Süd. With this we want to make sure that the energy we buy is actually from a renewable energy source.

They are somehow aware of the LCA, "it is already in the minds that durability and specific energy consumption has to be taken into account... not only the cheapest, but the best value for money is chosen", but its usage is neither formalized nor implemented.

c. PP & supplier engagement

They have used dialogue forms such as a workshop with potential suppliers, but rarely. They consider it important "that the supplier provides us with certain references" and that pre-defined criteria are met. Given this, the price is decisive.

d. PP & SME

Usually, the electrical installation firms that maintain the regular repairing etc. are naturally appropriate for larger orders. But smaller enterprises or enterprises without so much experience are shy away from tendering portals. SMEs perceive the effort to get used to the new portals and tendering procedures is too big, also the legal framework conditions that a public authority has are complex.

The respondents think it would be helpful for more SMEs to participate in public tenders if there were criteria such as regional specificities or basic information about social standards. In other words, the PAs could bring in a few additional factors, where perhaps one or the other smaller company has an advantage. Moreover, smaller firms can set out on their own or form alliances so that they can get win more tenders and get more orders. This is also an important point that smaller craftsmen's businesses have to join forces to a certain extent in order to be able to participate in a tender, and perhaps also process larger contracts. From the awarding side, the PA's hands are naturally tied.

The green electricity tender is a good example that SMEs can benefit from. At the very beginning, the aim was to fix as large a quantity as possible at a fixed price for three years. Today it is almost like that that one must actually negotiate and tender a procurement mode with the partner. The



district is currently working on topics such as balancing groups and regional electricity, where additional services and activities are being negotiated. And that is a great opportunity for small energy suppliers, for such municipal or regional utilities, because they can simply offer electricity, but it is also a service, and the municipalities also benefit from it. It is also the case where a win-win situation can be achieved.

The major challenges for potential suppliers were the long contract duration and many delivery points (acceptance points) with partly low consumption. The main advantages of the joint tender were more favorable conditions due to larger tender volume, less administrative effort, inclusion of smaller communities and creating a role model effect of public institutions purchasing green electricity.

Potential barriers for SMEs to participate in PP:

- SMEs must be ready to fulfill the formalities. Many SMEs consider the procedure a black box.

“Many people find it too costly or think that there are sitting bureaucrats, who will not pay out the money for my service timely.”

“there is the problem with companies who say that the effort to get used to the new portals and tendering procedures is too big.”

“there are the legal framework conditions that a public authority has. ... A little more leeway for all those involved would be helpful, for example, it would be helpful if there were criteria such as regional specificities or basic information about social standards or something like that.”

“Not all SMEs understand what we are asking for; they do not have the knowledge of the process”

- Small SMEs should get involved into cooperation with others.
- Shortage of supplier firms for “green” electricity is a problem.

Drivers for SMEs to participate in PP:

- Increasing demand for green electricity is a big opportunity for all supplier firms.
- The flexibility of SMEs is an advantage: *“Big players have no interest in such small “dribs and drabs”*. It can be a good thing for a small energy supplier, and PAs as customers and the other municipalities also benefit from it.
- Cooperation is considered be the key factor for success *“smaller craftsmen's businesses have to join forces to a certain extent in order to be able to participate in a tender, and perhaps also process larger contracts.”*
- It is considered to be recommendable to *“bring in a few additional factors, where perhaps one or the other smaller company has an advantage.”*

“I think an important process is simply to get involved in this field of municipal business.”



- Suppliers taking initiative themselves: *"I always find it important and courageous when the suppliers say we have something new, we offer a product, we take the step towards sustainable products."*

4.3.2 Case 2 in Germany

This case is based on two interviews, one is with the head of the procurement services in a city in Germany and the other one is with the head the Department of Environmental Precaution and Planning in the city.

Analysis of current situation

a. Sustainability strategies, energy related strategies

In accordance with the goals of the Paris Convention, the city wants to reduce greenhouse gas emissions by at least 40% by 2030, become climate-neutral by 2035 and switch completely to renewable energies by then. There is also a concept to switch completely to electric mobility. The goal is to cover the majority of the energy demand by 2035 with renewable energy. In addition, there is also a sustainability strategy "Implementing Agenda 2030", which is basically part of the second topic of climate and energy, which takes up the climate protection goals and develops strategic and operational instruments etc. In this respect there is a strategy for the entire city, in which the procurement process is, of course, embedded.

The main task areas of the department of Environmental Precaution and Planning are local climate protection within the focus area Climate Protection. The department oversees the agenda office for sustainable development. They also create standards and have been doing a systematic analysis of the environmental compatibility of the things the city procures.

This city is one of six German pilot municipalities to support the creation of sustainability strategies. An operational goal exists that all procurement procedures are carried out according to sustainability aspects and criteria are specified for this. For example, the city council has already decided that they will introduce a so-called solar obligation for new buildings from 01.01.2021 on. The climate protection goals include a reduction of greenhouse gas emissions by at least 40% by 2030, climate-neutrality by 2035 and a complete switch to renewable energies by then. The city also has adopted the sustainability strategy "Implementing Agenda 2030" which takes up the climate protection goals and develops strategic and operational instruments etc.

The city follows a Master plan for the energy transition and climate protection. The aim of protecting the climate, due to a Council decision, also holds when purchasing vehicles and equipment. The interview partner provides us with a document tendering a conventional and an e-vehicle in one process.

The city is also considering the application of the Photo Voltaic (PV) systems. Politics is on its way in this respect. Another topic is about the municipal vehicle fleet. They had the political requirement to achieve the best possible energy effectiveness years ago, i.e. the lowest possible level of pollution, etc. Currently, they are also in the process of retrofitting the catalytic



converters in existing diesel vehicles, which is a very ambitious project. Also, the change from gasoline vehicles to electric vehicles, whenever possible, is an important topic in the climate protection strategy. They have bought one of the first e-scooters within a joint project with the Postal Service Company and are continuing to expand this area. They have purchased about 30 VW e-ups, which are now in use throughout the administration. They are currently converting their bicycle fleet to e-bikes and they have also bought an e-truck. They aim to reduce the number of necessary vehicles by implementing a system with container solutions: *“we have achieved a reduction of 50% in terms of vehicles”*.

b. PP strategy or regulations

The city has a decentralized procurement management. In the area of construction contracts, there are guidelines that architects and engineers take into account accordingly, i.e. up to the passive house or also, control issues. They are currently trying to ensure a central energy management to get an overview of the consumption and problems with heating systems, etc.

They are conservative in their tendering approach, i.e. limited tendering depending on the contract value. They write what they want in the directory of services and the bidder has to deliver that, and then, they only consider the price. This unit coordinates procurement activities above a certain contract value in such a way that they accompany and publish the procedures, carries out communication with the bidders, checks the calculation in the offers, and accompanies and advises the colleagues in the specialized departments.

The city works with our municipal energy supplier in RES, which is a 100% subsidiary. The city has many Photo Voltaic (PV) systems on own properties, a considerable number of which were built directly by the municipal utilities under a leasing model. This means that the city does not go into tendering procedures to acquire necessary energy supply, but instead awards the contracts directly to the municipal utilities.

There is awareness of the LCA but scepticism about whether it works in practice. Innovative procurement is considered as difficult to implement because of budgetary goals and restrictions.

c. PP & supplier engagement

The unit does not have an established strategy for dialogue with RES suppliers in the pre-tender phase but there is some dialogue that is a result of regular cooperation with the companies, and very rarely they conduct workshops with potential suppliers. It was mentioned, that in another area, the procurement of services and protective clothing, they conducted a bidder dialogue and have openly communicated that, and the results of this dialogue were communicated in the following tender.

d. PP & SME

According to the interview partner, a lack of SME participation is not a problem in the municipal procurement.



Barriers

- Electric vehicles needed by the city (buses, firetrucks, vehicles for park management etc.): thin markets, that is, only a few suppliers exist.
- SME involvement is in the focus of municipal procurement but, because of the thin markets, often SMEs are only present via local subsidiaries of large vehicle producer companies.
- Money
- Not starting with the implementation: *“And one should not make giant concepts again “how, where, what”, but one should simply start.”*

Drivers

- A critical success factors for SMEs to be suppliers to the municipality is that SMEs are more flexible to deliver specific equipment which the big suppliers deny delivering.
- Procurement in the area of RES: *“it is like rolling a medicine ball. If you don't actively push the ball, the ball does not move, it stays. A medicine ball is not necessarily a self-runner. [We saw with the fair procurement of clothing] that it is only then a self-runner, because the market players saw that fair procurement is a topic with which one can score.”*
- Political support: *“because all the things I have just mentioned are ultimately based on political decisions.”*
- Acceptance of measures to switch to RES by the citizens.
- Appropriate human resources in the administration so that these things can be brought forward and can be controlled. *“we have that in our control center for climate protection.”*
- Joining networks and learning from others

4.4 Case studies in Italy

4.4.1 Case 1 in Italy

This case is based on two interviews with representatives from two SMEs in Italy. The interviews are focused on how public procurement can help promoting training innovation and how public procurement can prioritize green investments in their tender notice.

ITA-SME-1 is a small engineering company working in the energy sector that relies on its own financial resources and technical expertise for the production of green products and services. The company's investments for the future are focused on innovation and new services.

Concerning the information collected during the interview, SME-ITA-1's entire business and revenue is based on funds obtained through tenders. In the last decade, it has applied and won in several European and national public tender.

The ITA-SME-2 was founded with the intention of providing green services in the energy sector and now, it specializes in gas engine-based cogeneration, on-site power and renewable natural gas applications. The company usually engages with private clients or applies for public



tenders, excluding EU calls since it is an internationally based corporation. In the last decade, ITA-SME-2 based its strategy on innovation, by producing new goods and updating services.

Considering the data collected in the interview, ITA-SME-2 has never relied on public funding for its projects, neither it is aware of any kind of national support schemes aimed to support SMEs or green companies for the development of renewables.

Based on these experiences, these two companies have identified the following barriers and drivers for SMEs in national tenders.

Barriers

- the bureaucratic procedures and schedule is the main obstacle for SMEs in national tenders. In fact, applying for national or public tenders often results in delays and lack of funds, whereas applying for EU calls is more convenient, both in terms of access and timeline.
- The first problem of public tenders is bureaucracy. The projects drafts are confusing and do not give clear direction.
- In addition, small companies do not have the capacity to cope with the expenses needed to partake in the long-term deadline of tenders.
- ignorant/unknowing interlocutor and delays in the draft of tenders or in their output.
- Public tenders' lack of visibility has to be addressed by the administrations in order to increase SMEs' participation in PP.
- Administration should engage in a dialogue with the companies as well as improving and simplifying tenders.
- Financial initiatives should be increased to promote the development of renewables and the enhancement of their related products.

4.4.2 Case 2 in Italy

This case is based on an interview with a public employee in a large city in Italy, and it is based on a procurement of photovoltaic roof in school buildings in a province in Italy, the total value is more than 20 million euros (excluding VAT). This procurement is not selected; it is referred by the interviewee during the interview

This city historically follows an ambitious environmental and climate policy starting the Green Public Procurement process in 2003 in collaboration with the Regional Environmental Protection Agency. It has elaborated over the last years several Action Plans for GPP, the first one dating back to 2008. The interviewee has been active in and responsible for the process for the last decade or so and is well informed on the subject. The tender she refers to goes back to 2009 and at the time was an important best practice. In the meantime, the Provinces and the newly formed Metropolitan Cities have lost many of their functions and financial resources and thus while their own procurement policies continue to be important, they play mainly an important role in giving guidance to the cities and towns in their territories.



Analysis of the current situation

This city has been active in Green Procurement, elaborating periodically an Action Plan for GPP. It is continuing with the implementation of the current Green Procurement Action Plan, elaborating at the same time a new version in order to include products and services not regulated to date by the Minimum Environmental Criteria (CAM) approved by the Minister of the Environment, as is already the case for car maintenance (oil and tire change).

Moreover, in October 2019, by decree of its mayor, the city joined the Plastic Free initiative, appointing at the same time the Green Manager to implement this measure and ensure the harmonization of current and future sustainable development and environmental sustainability activities.

In relation to the energy-related strategy, the city participates in several European projects focused on energy efficiency in public buildings.

a. Public procurement strategy

In 2008, the Provincial Council decided to implement the Green Procurement policy within its own body and in the Municipalities of the metropolitan area and to start the process for the drafting of the Action Plan.

In relation to RES related procurement, for electric vehicles the city will use CONSIP (central purchases of the Italian public administration) conventions, if they exist, or in any case use the Public Administrations' electronic market, which it is obliged to do. For solar panels no purchases are planned as the roofs are already saturated.

b. PP & supplier engagement

In relation to a strategy for dialogue with suppliers in the pre-tender phase, the interviewee refers that at present there are no process of dialogue with suppliers in place.

The Ministry of the Environment in the drafting of the Minimal Environmental Criteria CAM of each single product, service or work sets up a discussion table with the companies in order to prepare them and create an adequate answer to the demand.

c. PP & SME

Related to a strategy for more SME engagement in public procurement, the city has established a list in the "Albo Lavori Pubblici" section of the Tender Portal where qualified economic operators can register. This list is to be used for the awarding of works, other than open or restricted procedures, for an amount of less than 1,000,000 euros, carried out by the city, also in its capacity as central contractor.



Barriers and drivers

- Potential barriers for SMEs to participate in public purchases are the administrative burdens linked to the preparation of the bid and the "oversize" lots of the tenders. In addition, a long duration of contracts reduces competition.
- Success factors for SMEs to be suppliers of the municipality, wherever possible, are procedures through direct award or inviting a defined number of suppliers that streamlines the procedure and SMEs have a better chance of success.

Summary and Discussions

Public bodies like this large city which have qualified personnel and in the present case is of good ecological will, should be stimulated to follow innovative procedures through targeted advice on how to do introduce them into their daily functioning. Equally important would be to support them in their communication with the cities and towns of their territory since they have an important role of guidance.

4.4.3 Case 3 in Italy

This case is based on an interview with a public employee in a municipality in Italy. This case is select on the basis of the tender about the modernization and efficiency improvement of municipal building heating systems and energy service management. The interview served as a training lesson for the interviewee who is quite competent when it comes to single procedures that fall into his realm of activity but is largely lacking more general concepts under which to subsume his daily practice. A procurement "strategy", overall sustainability goals, and an overarching vision he does not consider his domain. That is the task of the political leadership. *"The introduction of innovate criteria for the award is attributable to a political choice of the previous Administration. It was a political decision."* This is the unfortunate distinction between the technical staff and the political leadership which serves too often for abdicating any responsibility on the part of the "tecnici", even though factually they have large decisional leeway, being on their posts as "dirigenti" or "responsabili" for years and decades, while the politicians, mayor and deputy mayors come and go.

The interviewee is aware of the Sustainable Energy and Climate Action Plan and of the Sustainable Urban Mobility Plan but does not consider it his task to actively work towards their goals. He will do so when told. Otherwise *"we stick to what is the regulation on Public Works"*. He feels most at home in the energy field with efficiency in public lighting because it is the most circumscribed field of action that guarantees immediate savings and usually is realized with the help of some big ESCO that takes the whole process into its hands.

In the case of this city, as opposed to the next case in Italy (case 4) it will not be enough to inform and train the staff in innovative procurement procedures, the technical personnel first would need an awareness of the responsibility they have for a sustainable future of their territory, the possibilities they have to act and then – and only then – would it make sense to build capacity in doing things, for example procurement, in an innovative way.



The case has been selected for the award criteria. The evaluation criteria of the technical offer concern "technological upgrading aimed at energy saving also through the use of renewable energy sources" and "greater energy savings expressed in kW-h/year obtained compared to those proposed by the Promoter in the Feasibility Project".

Analysis of the current situation

a. Sustainability strategies, energy related strategies

This municipality is a signatory of the Covenant of Mayors since 2012. In 2016 it renewed its objectives by adhering to the Covenant of Mayors for Climate and Energy with targets up to 2030.

The municipality will transform its energy use by reducing demand and encouraging local generation. These benefits will also help alleviate fuel poverty and create local jobs and more sustainable communities. The municipal policies will be focused on the residential and transport sectors. The municipality will boost the renovation of the buildings, with the update of the Building Code, fixing new targets and promoting the refurbishment with local incentives. Regarding the transport sector, the municipality is going to adopt a Sustainable Urban Mobility Action Plan, to be able to tackle with efficacy this big and difficult sector and to identify correctly the main challenges and the proper solutions.

In relation to the energy-related strategy, the interviewee stated that the City Council is focusing a lot on the efficiency of public lighting and heating systems. As regards the use of photovoltaic solar energy, some interventions have been carried out related to the specific opportunity for the realization of these projects.

b. PP strategy or regulations

The municipality does not have a general policy on sustainable procurement, it complies with current legislation and there is no awareness that procurement could be an instrument to promote sustainable development. If the interviewee is typical for the staff of the administration – and he probably is – there is not only a profound distinction between the political staff, mayor and deputy mayors, that decide and the technical staff that executes these decisions but there also seems to be lacking any attempt on the part of the political leadership to create some understanding for the decisions it takes among those that execute it. The idea that the technical staff has merely an executive role and need not understand what it is doing seems to be held by both, the politicians and the technicians.

The interviewee was not able to report on the involvement of SMEs in the pre-tender phase.

Related to public procurement and SMEs, most of the calls published by the municipality are awarded to SMEs.



Barriers and drivers

- There are not particular barriers identified, SMEs «*as long as they have the minimum qualification required by law*» can participate in the public tenders since they are open tender procedures.
- A success factor for SMEs to be suppliers of the municipality is for the most part that they are local SMEs. The presence on the territory helps for a better organization of the work.
- Probably also helps because they can do the work directly and not subcontract to third parties with increased bureaucratic procedures and costs.

Summary and Discussions

This municipality unfortunately seems to be typical for a large part of the small and medium-sized local public administrations in Italy where more or less illuminated mayors and deputy mayors formulate policies that are then executed by the technical staff with little understanding and even less interest in what they are executing. Any innovative process would have to address the political side of the administration and work its way to the technical staff.

4.4.4 Case 4 in Italy

This case is based on an interview with a public employee in a municipality in Italy. The case is on the basis of a procurement project about the centralization of the heating system at the service of middle school, elementary school and nursery school through district heating grid.

In spite of being a relatively small town of less than 20.000 inhabitants, this municipality promotes an ambitious environmental policy. It adhered to the Covenant of Mayors 2030 and was awarded in 2018 the Climate Alliance Europe Award “Climate Star”. While the goals formulated in the SECAP (Sustainable Energy and Climate Action Plan) are rather ambitious and there is political support also for choosing innovative solutions for energy and mobility, the administration in its procurement procedures is pretty conventional. That in good part has to do with the fact that the municipality spends its own resources mainly for management costs where it is bound by its contracts with a service provider while the investments are being done with regional, national or European financial supports which come with precise conditions on how to spend these financial means. So, it is not astounding that the only innovate procedure used was in the context of a European project, Prominent Med, that focused explicitly “on the use of Public Procurement of Innovation (PPI) to stimulate the adoption of innovative products and services”. The bulk of procurement procedures follows “consolidated procedures” and is directed towards small and medium-sized enterprises in the region.

Analysis of the current situation

a. Sustainability strategies, energy related strategies

In the field of transport, the municipality has implemented interesting initiatives to optimize the service with the bus on call project which allows them to reduce the number of empty kilometers



by cutting the less frequented routes, remaining at the service of users who can call in during certain times of the day. To fight the pollution, the municipality is launching together with another close by city and the national Ministry of the Environment a series of activities especially in the streets adjacent to the schools, trying to mitigate the effects of pollution in these areas particularly affected by traffic.

With reference to the last five years the activities of the municipality are related to the Covenant of Mayors and the drafting of the SEAP developed together with Climate Alliance Italy. It represents the line to follow for all environmental activities.

b. PP strategy or regulations

The municipality, related the general policy on sustainable procurement, complies with current legislation. The municipality is still inserting CAM (Minimum Environmental Criteria) in the tender specifications: depending on the projects the municipality sends out for the tender it inserts participation criteria that prefer materials and structures that are consistent with the CAMs and it assigns reward scores within the most economically advantageous offers. This discourse is implemented in the case of contract for sustainable procurement, it does not apply to simpler procedures in which the award is determined by the maximum discount, and in that case the municipality selects companies belonging to the regional list to have a guaranteed minimum quality profile.

c. PP & supplier engagement

Related to a strategy for dialogue with suppliers in the pre-tender phase is not commonly used by the municipality. The most part of the proceedings follow consolidated procedures. The activities in terms of supplies are to be found in documents like the three-year program of public works and the two-year program of services that represent the showcase for companies for what will be future contracts.

When the municipality works on a project in which there is no experience, usually it gets in contact with another sister administration or it turns to the market to make a preliminary investigation and get a better understanding.

d. PP & SME

Related to a strategy for more SMEs engagement in public procurement, for activities related to public works (like construction companies, small companies operating in traditional sectors) the procedures are simple and consolidated. In specific sectors in which there is no experience, recent activities are developing. For example through the "digipass" (an initiative of the local region to support individuals and companies in the use of digital technologies) the municipality has already held meetings with representatives of SMEs for discussions about to the eco-bonus.



Barriers and drivers

- The interviewee said «SMEs usually cover 90 percent of services of the administration. In tenders open to subjects of all sizes, the municipality is not of interest for large companies». It seems there are no barriers for SMEs to be suppliers of the municipality.
- Related to the critical success factors for SMEs to be suppliers to the municipality, the interviewee said “For a medium size municipality the small and medium enterprises always make the most advantageous offers”.

Summary and Discussions

This municipality can serve as a case in point for that group of small and medium sized towns that despite relatively small maneuvering space is quite willing to use innovative solutions if there is guidance on how to do it. “It takes more training in the public sphere to be more effective to welcome new stimuli and we try to continue our education as much as possible.”

4.5 Case studies in Norway

4.5.1 Case 1 in Norway

Description of the case

Solar cell on new and existing buildings

Case scenario A: a public purchase with at least one of the suppliers is SME in the field of RES

Based on interviews with one PA and two of the involved SMEs

The chosen case is based on an ongoing project on solar cell on new and existing buildings. The purpose of the request was to gain a better understanding of the opportunities in the market before a possible acquisition of solar cell systems for roofs on new and existing buildings at the university. The PA wanted input from the market on both a general basis and in connection with a specific procurement of solar cells for a new laboratory building. After sending out the RFI, the PA received answers from at least seven suppliers, where four/five of these are SMEs.

The case is based on interviews with the responsible purchaser in the PA, and two of the involved SMEs. The chosen SMEs have less than 10 employees, and the companies have operated for less than 4 years. They have both participated and won public procurements and are chosen because they answered the RFI sent out by the PA. The purpose of the case is to investigate how public authorities try to use innovative, dialogue-based public procurement to achieve RES objectives, and to get the perspective from two of the participating SMEs. The case project is an ongoing public procurement, and the informant from the PA hoped that this project would be the first comprehensive innovative procurement conducted at their workplace. However, due to covid-19, the process has been put on hold.



- *PA, public purchaser at university*

In January 2020, the PA sent out an RFI (request for information) inviting suppliers to a dialogue regarding RES. The purpose of the request was to gain a better understanding of the opportunities in the market before a possible acquisition of photovoltaic systems for roofs on existing buildings at the university. They wanted input from the market both on a general basis and in connection with a specific procurement of solar cells for a new laboratory building.

In the RFI, the PA had prepared a list of questions that they wanted to shed light on through the market dialogue. This included that the PA asked the suppliers for input on how a future competition for the acquisition of photovoltaic systems for existing roofs could be carried out, such as which award criteria should be used and how to emphasize environmental criteria.

At least seven suppliers responded to the RFI, where four of these are SMEs. However, due to the corona situation, the PA has not moved forward with this project.

The informant hoped that this case could potentially be the first comprehensive innovative procurement conducted at the organization. The PA lags in this field, hence it is the goal of the informant who is the contact person for innovative public procurement.

The informant has good experience in using dialogue and finds it especially useful in markets that develop quickly, then dialogue is the key to not end up with an old product or solution. Further, as a purchaser, the informant does not know the customers' needs or the possible solutions provided by suppliers, so the dialogue needs to address this. Further, the informant highlights that using dialogue could be a good way of involving SMEs.

Potential barriers for SMEs to participate in PP:

- SMEs cannot invest in a lawyer that handles the formal requirements
- Not all SMEs understand what we are asking for, they do not have the knowledge of the process
- Providing documentation such as annual reports, credit account, certifications, is expensive
- Several factors are related to financial aspects

Drivers for SMEs to participate in PP:

- Dialogue
- Simplification of the process

- *SME, solar cell supplier*



The SME was one of the solar cell suppliers who answered the RFI. They are a pure solar energy company and focus on systems towards agriculture, private, industry, public sector, and off-grid.

Their goal is to grow and develop skills and knowledge within solar energy. They have introduced new solutions for the Norwegian market which have a special type of power grid. Hence, they have rebuilt, modified, and adapted international solutions for the Norwegian market. Further, they have recently developed a control system for both production and consumption of solar energy. They are also working on getting funding to install a small research lab in Norway to measure the actual solar condition since there is a lack of data from colder conditions. There are many who believe that Norway is not suitable for solar energy, which the informant believes is an information barrier, because the low temperatures, clear air and reflection from the snow make the conditions unique.

Barriers for development

- Financial resources to support development and innovation projects
- Legal barriers. There are several restrictions on the development of solar energy on a larger scale in Norway.
- Lack of knowledge in some of the grid companies.

Barriers

- Overall, public inquiries contain too few opportunities to be creative and innovative at an early stage, it quickly becomes too controlled.
- PP is perceived as difficult and demanding
- The focus on meeting the criteria goes beyond the goal of a good financially sustainable solution.

Drivers

- Earmarked funds for RES. Then more municipalities can afford to choose the best green solution.
- Pre-tender supplier/market engagement activities.
- Simplification. The process and regulations have become significantly easier, but there is still a way to go.

- *SME, solar cell supplier*

The SME was one of the solar cell suppliers who answered the RFI. They have been running for two-three years and aim to grow 50-100% every year. They operate in Western Norway and try to build a chain of partner companies so that they can carry out the entire value chain. They spend a lot of time and effort in internal competence development and training.

They experience that an increasing number of people want to take part in the green shift. This changes the typical decision-making process, and the payback time and investments are looked at from a completely different perspective.



Environmental criteria have been used as a criterion, but they do not always find it easy to be judged fairly on. In one case where they lost the contract, they lost it because the municipality suddenly required that the supplier should use recycled materials since one of the competitors had bought their support system from a company that used recycled aluminum. This was then written into the municipality's order by a consultant, and the SME was not able to document if their supplier bought recycled materials for their products within the acceptable time, and lost the tender because they scored zero at this criteria.

Barriers for development

- There is a large gap in the various grid companies in interest and competence.
- Hiring new people and training them
- We use "engineering" resources on the marketing and logistic, if we were able to have someone to do the logistic, we could have utilized the expertise in RES better

Barriers for PP

- Financial barriers. When having the public as a customer we are responsible for the import and take the risk of having equipment sent from China
- As a new company they do not have any 3-year account with a profit to refer to yet and have experienced that they have been rejected because they are not considered financially solid enough
- Potential barrier: if the public sector starts to require ISO certifications this would be difficult for small companies to achieve
- Large firm has competence within PP since one of the employees has worked towards the public sector for over 20 years and know what it takes, but for other SMEs, without that experience, it will be a barrier

Drivers/ for PP

- Assistance to get to the right level when it comes to formal qualification for PP.
- Incentives
- Remove criteria such as the need for having 10 MNOK in equity

Analysis of the current situation

a. Sustainability strategies, energy-related strategies

The PA is a public research university in Norway. The university follows the university's strategy for 2018-2025, and one of the practices is that they will contribute actively towards achieving the 17 sustainable development goals. One of the strategic research areas in the period is renewable energy, and the university works on development and integration of *renewables and sustainable energy supply*. Hence, the PA commits itself to contribute to such a transition by minimizing the ecological footprint.



Norway is in the initial phase with solar cells, and several of the suppliers including the chosen SMEs are experiencing strong market growth from both the private and public market. In recent years, the price of solar cells has fallen so dramatically that more and more organizations and private people are now looking to invest in solar panels. Traditionally, solar cells have been economically viable in countries with high electricity prices. However, solar-generated electricity has become competitive even in Norway, although Norway has inexpensive hydroelectricity. The Norwegian climate, the cold weather and sunshine combined with reflection from snow, are ideal conditions for solar cells. The decrease in the price of solar cells and the increased focus on the green shift has expanded the market as more companies value sustainability ahead of price.

b. PP strategy

The PA has not a separate procurement strategy but follows the overall strategy at the university. They have not completed a complete innovative public procurement, but they have previously invited suppliers for dialogue, and find the dialogue phase very important and useful. In the procurement assessment criteria, they experience that there is an increased focus on environment and ethics. They have discussed whether environmental criteria should have a larger share (percentage weighting), and they do an assessment for each procurement.

c. PP and supplier engagement

The PA is a part of the national program for supplier development (LUP). The program aims to help public authorities to create innovation through their public procurement and provides training and support in the implementation of such projects. Since the start of LUP in 2010, LUP has assisted municipalities and other public enterprises with over 150 procurements. The supplier development program is owned by the Confederation of Norwegian Enterprise (NHO), the Norwegian Association of Local and Regional Authorities (KS), the Norwegian Digitalization Agency (DIGDIR), Innovation Norway and the Research Council of Norway. Even though the PA is part of the supplier development program, they lack experience in conducting innovative procurement processes.

In the chosen case, the suppliers were satisfied with the RFI sent out from the PA, and both SMEs pointed out that this was a good way to include SMEs. The SMEs experienced the RFI as open enough, but at the same time closed/detailed enough. Both SMEs expressed that they hoped that the further process would progress soon.

d. PP and SME

The university does not have a focus or strategy related to SMEs, other than the scheme where the suppliers must answer whether they are SME or not. However, in the project regarding the solar panels on new and existing buildings, the majority of the suppliers who answered the RFI



were SMEs. The informant from the PA believes increased use of dialogue and the use of innovative public procurement could help to include more SMEs.

Barriers and drivers

There exist several barriers for SMEs to participate in public procurement. According to the informants, the main barriers are financial barriers and barriers related to the public procurement process, as shown in Table 1.

The financial barriers are highlighted by both the public authority and the SMEs. The purchaser at the PA points out those SMEs in general cannot invest in a lawyer that handles the formal requirements, nor does it have an administration that could provide the required documentation. Public authorities require several documents, and some of them may be expensive for the SME to acquire, especially if public authorities start to require certifications.

The SMEs highlight that a barrier as a newly started SME is that they are often rejected because they are not considered financially solid enough. The public authorities might require 3-years account with profit, which is difficult as a new enterprise. Further, another barrier for SMEs in taking part in large public procurements is that it is the supplier who must bear the cost and risk of ordering materials, as the public authorities do not pay in advance.

All three informants highlight that the public procurement process is a barrier. The SMEs perceive the process as difficult and time-demanding, which can be a major barrier for SMEs that do not have employees with long experience and knowledge of the process. Both SMEs have employees who have previously worked closely with public procurement and thus know the process and the formal requirements. Still, they consider the process as demanding and experience that public authorities have too much focus on meeting the set of criteria, rather than focusing on the overall goal, to find the best financially sustainable solution. Overall, the SMEs experience that the public procurement processes contain limited opportunities to be creative and innovative at an early stage, and that the process quickly becomes too controlled.

Table 1: Identified barriers

Barriers	
According to the SMEs:	According to the PA:
Financial barriers <ul style="list-style-type: none"> Responsible for the cost and risk of importing products New companies can be rejected because they are not considered financially solid enough. Require 3-years account with a profit. 	Financial barriers <ul style="list-style-type: none"> SMEs cannot invest in a lawyer that handles the formal requirements Providing the documentation, such as annual reports, credit account, certifications, etc., is expensive Knowledge



The PP process

- The process is too controlled, and they receive it as difficult and demanding
- PA is too focused on meeting the criteria, and not on the overall goal of finding a solution that is both financially and sustainable good.
- Required experience or knowledge of the process to participate

- Not all SMEs understand what the PA ask for, and many do not have enough knowledge about the process

Certifications (potential barrier)

- Expensive for SMEs if the PA starts to require certifications such as ISO

The identified drivers or success factors for SMEs to become suppliers to public customers are listed in Table 2. Common to all three informants is that they consider increased use of dialogue/structured engagement activities and simplification of the process as important success factors for involving SMEs. The public procurement process and regulations have become significantly easier in recent years, but the informants believe that there is still a way to go. The SMEs, especially those who do not have experience with PP, would benefit from assistance when it comes to formal qualification activities.

To alleviate the financial barriers for newly started SMEs one of the SME suggested removing financial criteria such as the need for having 10 MNOK in equity. Further, the SMEs highlight that there is a need for different types of incentives such as earmarked funds for RES, so that more municipalities can afford to choose the best green solution.

Table 2: Identified drivers

Drivers	
According to the SMEs:	According to the PA:
<ul style="list-style-type: none"> • earmarked funds for RES • simplification of the process • market engagement activities • assistance regarding the formal qualification • incentives • remove criteria such as the need for having 10 MNOK in equity 	<ul style="list-style-type: none"> ☐ dialogue ☐ simplification of the process

Summary and Discussions

Both the PA and the two SMEs would like to increase the use of dialogue in an early phase. The use of dialogue is considered as a critical success factor for SME engagement, and it is also a way for the buyer to ensure that the goods or services they purchase are the most sustainable or the



newest on the market. Further, a simplification of the process and assistance on how to participate in public procurement, are considered as drivers for increased SME participation. The SMEs experience that it can be time-consuming and require competence to participate in public procurement. Especially for newly started companies, it is perceived as financially difficult to participate.

4.5.2 Case 2 in Norway

Description of the case

Based on interviews with two PA, one small municipality and one larger municipal enterprise that is responsible for school building in a large municipality.

The case is based on interviews with a larger municipal enterprise in a large municipality, and a small municipality. The chosen municipal enterprises are one of the larger public enterprises in Norway that have been involved in the breeze to use solar energy in public buildings, and they have built up competence in solar energy internally in the organization. The chosen municipality is, on the other hand, an example of how ordinary, small municipalities can manage to build competence and put in place solar energy projects within the limited financial and human resources. Hence, this case aims to describe how two municipalities of different sizes and with different amounts of resources have invested in RES.

- PA, municipal enterprise

The PA is a municipal enterprise responsible for school buildings in a large municipality. They build and develop new buildings or rehabilitate existing buildings.

We decided to contact the PA because they announced in 2018 an innovative competition on smart energy use and storage of solar power on buildings. First, the PA decided to arrange a dialogue conference, where the companies were invited to discuss possible solutions. A couple of days after the dialogue conference, the PA announced a planning and design competition at Doffin (The Norwegian database for public procurement), asking how they could utilize the surplus electricity in the best way.

The PA received ten different proposals for smart storage and the use of solar energy in its upcoming energy-plus-houses. The solutions were judged on environmental friendliness, energy efficiency, long-term economic profitability, scalability, and the possibility of practical implementation. The PA named five winners, and the winning proposals were for solutions around the use of fast charging of electric cars, used electric car batteries for storage, hydrogen solution, and smart energy management. The PA tested some of the proposed solutions at a school in the municipality, but they did not end up using any of the solutions there.

In the plan and design competition, the PA had a jury of internal members but also some professional experts. The jury consisted of one member an independent research organization, one from a research environment around solar cells, and the internal members were a technical



advisor, an environmental manager (the informant), one from the purchasing law department, and a real estate director.

The PA finds it important to have a dialogue with suppliers in the pre-tender phase, to prepare the market for the challenges, thoughts, and ideas they have. However, it takes time and resources, and the informant mentioned that they had experienced that one of their dialogue conferences were too general, the description was too wide, so it was difficult for the suppliers to understand. Hence, in this case it could have been wise to have another round and be more specific, but that is difficult when they must meet the deadlines.

Potential barriers for SMEs:

- PA require a lot of documentation regarding financial requirements, social dumping, environmental requirements, and so on
 - Large organizations could have a staff function that can serve projects with this type of information, while SMEs may not have the same structure and resources to manage to deliver the documentation
 - In the future PA might require that their suppliers have an environmental certification from a third party, which can be difficult for SMEs
- *PA from a small municipality*

The PA is a rural municipality that uses both bioenergy and solar energy in their buildings. The last few years they have invested in solar cell systems at a nursing home, a school and have recently acquired a larger facility to be installed on the swimming pool building.

The municipality has a climate plan from 2009, and in the revised plan from 2018, they added a requirement that solar energy will be the main rule on their own buildings. To get solar energy on several of their municipal buildings, they have for several years asked the politicians to set aside 500,000 NOK each year for RES. This has made it possible for the municipality to add solar cells as a requirement where it has not been budgeted. In the last project, they were granted 2 MNOK to install a larger solar cell system on the swimming pool building.

Their first acquisition of solar cells was made in connection with the replacement of the water heaters in the nursing home, and with the extra funds (500,000 NOK) they got to purchase solar cells as part of the framework agreement for electrical services. The second acquisition was related to the building of a new school, and with the extra funds, they were able to add solar cells into the turnkey contract. For the last acquisition, they received offers from 9 suppliers that wanted the task of setting up solar cell facilities on the swimming pool building, a bigger plant than the other two solar cell systems.

The municipality has spent a lot of time and resources on increasing its expertise in solar cells and is part of the solar energy cluster. They want to learn from their experiences and find out how municipalities can more easily acquire solar cell systems in the future.



Analysis of the current situation

a. Sustainability strategies, energy-related strategies:

The small municipality had an early strategic anchoring for the use of bioenergy, but not for solar energy. The municipality still succeeded in getting a solar energy project in place, and when the climate plan was revised in 2018, specific goals and measures were introduced for solar energy. In addition to the climate plan, it has been crucial for the municipality to set aside some money earmarked for RES in the financial plan. During the period from 2014 to 2018, the environmental advisers persuaded the politicians to set aside NOK 500 000 annually for solar energy. This made it possible for the municipality to install solar cell systems in buildings where it was not a part of the budget, and the municipality has until now acquired systems on three of their municipal buildings.

The municipal enterprises aimed to reduce their energy consumption by 17% at all the schools in their municipality by 2020, and all future school buildings should have a climate profile where the use of solar cells and heat pumps is central. The energy-related strategies are anchored in their environmental and energy strategy. The document states that municipal enterprises shall be leaders in energy-efficient operations, and they shall reduce the environmental impact through procurement activities by setting relevant environmental requirements for suppliers and deliveries. Further, the PA shall focus on life cycle analyses to promote a long-lasting environmentally friendly solution. They also have a criterion that all roof surfaces should be assessed for the use of energy production, which has led to installations of solar cells on several new buildings in the municipality.

Both PAs have sustainability strategies with specific goals regarding RES. They have in common that they focus on building internal RES competence and are actively participating in RES environments and clusters. For the small municipalities, there has been no budget for RES in their construction projects, and the introduction of the solar energy system has depended on individuals in the municipality who have built expertise and convinced politicians to earmark money for solar cell systems.

b. PP strategy

Both PAs focus on making green purchases and emphasize environmental criteria in their procurements. In the municipality enterprises, they must emphasize the environment between 20 and 30 percent in procurement over a certain value. However, the informant from the large PA finds it difficult to emphasize the environmental criteria because one supplier may have left out a machine that they cannot get emission-free in their tender, while another supplier may be honest and add this machine. Then there will be a discussion on whether they compete on an equal basis, and the informant would rather use high minimum requirements.

The two PAs have used different public procurement strategies for the procurement of RES in their buildings. The municipal enterprise is as earlier mentioned a big organization that builds and renovates several school buildings; hence the focus has been on finding innovative solutions for the energy use in their building. Among other activities, the large PA has conducted a design competition on smart energy use and storage of solar power of their school building and used



resources to create a dialogue with the suppliers. The small municipality does not have the same resources to do innovative procurement activities. However, they have been able to acquire RES through thinking creatively. Their first acquisition of solar cells was made in connection with the replacement of water heaters in a nursing home, and with the extra fund (500 000 NOK), they were able to purchase solar cells from a local SME as part of the framework agreement for electrical services. The two other acquisitions of solar cell systems were made through turnkey contracts, which is the most common way for municipalities when building new buildings.

c. PP and supplier engagement:

The municipal enterprise is one of several partners in a national programme for supplier development, a program that is set up to accelerate innovations and development of new solutions through the strategic use of public procurement. The partners involved in the program are encouraged to communicate to the market, invite for dialogue and challenge themselves to come up with smart solutions. In 2018, the enterprise announced an innovative competition on smart energy use and storage of solar power on their school buildings, as part of the programme for supplier development. First, the PA decided to arrange a dialogue conference where the companies were invited to discuss possible solutions. A couple of days after the dialogue conference, the PA announced the design competition at Doffin (the Norwegian national notification database for public procurement), asking how they could utilize the surplus electricity in the best way. They received ten different proposals, and the solutions were assessed by a jury consisting of both internal and external professionals. The PA named five winners, and the winning proposals were for solutions around the use of fast charging of electric cars, used electric car batteries for storage, hydrogen solution, and smart energy management. The PA tested some of the proposed solutions at a school building in their municipality, but they did not end up using any of the solutions there.

The small municipality has not facilitated dialogue with suppliers in the pre-tender phase. On the other hand, the municipality has been active in the solar cell cluster and experience that they have a good overview of the market and in this way achieved the benefits of dialogue. However, as the solar cell market expands, it may be beneficial for them to invite the suppliers for dialogue in a future pre-tender phase. The large municipal enterprise points out that they find it important to have a dialogue with the suppliers to prepare the market for challenges, thought, and ideas they have. Even though it can be resource-intensive, the informant explained that it is useful to make suppliers understand what they need and to enable innovative solutions. On the other hand, they do not always have the opportunity to conduct a dialogue with the suppliers as they have deadlines they have to meet.

d. PP and SME

Neither of the PAs has a strategy for supporting SMEs (other than for framework agreements) in public procurement. However, SMEs has been among the winners of tenders.



Barriers and drivers

The PAs believe there are several barriers for SMEs to participate in public procurement. First, PA requires a wide range of documentation regarding financial requirements, social dumping, environmental requirements, and so on. Large organizations could have an administration function that can serve projects with this type of information, while SMEs may not have the same structure and resources to do the same. Second, the municipal enterprise would in the future like to require that their suppliers have an environmental certification from a third party, which can be a new barrier for SMEs.

Regarding the drivers or success factors for SME engagement, both PAs believes in using dialogue. The small municipality has good experience of building internal competence and getting involved in the RES market, for example through solar energy clusters. The municipal enterprise has also increased their internal competence within RES and had a good experience with the use of idea competition to create innovative solutions and involve SMEs.

Summary and Discussions

The two PAs are examples that show that municipalities regardless of size could be able to invest in RES. However, it requires commitment, expertise, and political/ financial support. The small municipality has been creative and been able to bring in RES through existing framework agreements with a local SME. The large municipality, as a major municipal enterprise has taken the step further and used innovative PP activities to find new and improved RES solutions, which has also engaged SMEs.

4.6 Case studies in Portugal

4.6.1 Case 1 in Portugal

Por-PA-1 is the national agency that establishes all the environmental policy In Portugal, such as climate actions, pollution, noise, etc. In this case, there is not a concrete public procurement case. Nonetheless, it is worth highlighting that Por-PA-1 oversees the National Portuguese Strategy for Green Public Procurement 2020.

Analysis of the current situation:

a. Current sustainability strategies (overall goals, practices)

ENCPE (National Strategy for Ecologic Public Procurement) is the translation of these criteria according to the national needs. This is done with the organization of working groups with the participation of several entities, such as municipalities and companies. Municipalities are represented by the national Portuguese association of municipalities.

In this context, Por-PA-1 has produced guidelines for the acquisition of priority groups of products, such as paper, catering, transport, buildings, etc. Currently, they are working in another 7 product groups (cleaning products, sanitary furniture, textile, public lighting, public space maintenance, and road construction).



Although Renewable Energy is not a working group, Portugal possesses a national criterion for energy contracting (that was approved in April 2020). This is not mandatory for municipalities, but it is mandatory for public national organizations.

b. Public procurement strategy

Given that Por-PA-1 is not a municipality, public procurement is not conducted. However, as mentioned, ENCPPE tackles GPP by delivering useful directives and guidelines for municipalities to adopt such strategy. Currently, in alignment with the Ministry of Environment and Climate Action, they are promoting partnerships/working groups between ecological criteria and circular procurement.

There are criteria included in the “Acordos Quadro”. These are the directive for central/national organizations as the one already mentioned for electricity purchase. These directives usually include environmental criteria. These serve as a support to municipalities and public companies. For example, for the purchase of energy 100% renewable. There are “Acordos Quadro” for electricity, natural gas, renting of vehicles. They are very recent (2019-2020).

c. Public procurement and supplier engagement. Public procurement and SME

At national level, this is done through the working groups where relevant stakeholders participate. There is negotiation between members to establish which will be the criteria to be included in the “Acordos Quadro”. Within the working groups, Por-PA-1 tries to involve all the interested parts: suppliers, purchasers and even academia. The actors are represented by associations, so SMEs are also included this way. This participation is not exclusively to SMEs representatives, but to all types of private actors.

Besides this, Por-PA-1 supports municipalities that ask for information and guidance to improve the tender process. This could involve the contact of private actors to learn about the solutions that a municipality might be looking for.

Barriers and drivers

Identified barriers and drivers

- The identified barriers are linked to the high volume of paperwork that is required sometimes. In one hand, the cost and human resources needed to handle these PP processes and, in the other, a low level of digitalization from a big share of the SMEs spectrum.
- The main driver is the innovation that SMEs might offer.
- From the public side, the reduction of bureaucratic requirements might impact positively SMEs. Big companies usually have specific departments to deal with legal requirements.



Summary and Discussions

Por-PA-1's activities are quite necessary to translate the GPP objectives of the European Commission into the Portuguese context. The effort required to bring together all the interested parts, including municipalities and SMEs, is rather high. However, given that their operation is done at national level, it is hard to know at first hand all the particularities than municipalities face when launching PP processes.

This top-down approach is highly required to be aligned with the European Directives, but a bottom-up approach is equally necessary to boost green PP practices at municipality level. This is the gap XPRESS should focus on.

4.6.2 Case 2 in Portugal

The following is a report on the case of a public company in a city in Portugal that is responsible for the collection of solid waste and green areas maintenance. This report includes the analysis and results of the interview.

Por-PC-1 is responsible for all the environmental services, namely waste management, green spaces maintenance, biodiversity promotion, and related education and innovation in the city.

Analysis of the current situation:

a. Current sustainability strategies

The city was the first municipality in Portugal to locally apply the sustainable development policy that has become the driver for all sustainability issues. Also, as one of the few cities engage on climate action, the city possess a Climate Change adaptation action plan, which is going through each year with the implementation of actions.

Regarding energy, they are producing the roadmap towards carbon neutrality 2050. That is their main goal energy-wise.

b. Public procurement strategy

Public procurement is limited by the procedures established by law. Although a multicriterion approach is used (experience, financial status, etc.), the decision will ultimately be based on the lowest price if the subjective criteria are correctly addressed. This is because the return of the investment is looked to be optimized. Each criterion is associated to a weight (%) that is decided by involved departments (financial, acquisition, environment, etc.), that might have different goals (i.e. financial vs environmental). At the end, different approaches complement each other.

The sustainable issues are mostly included as requirements. And sometimes this create backlashes, because if a requirement is not mandatory law and it is not relevant to the execution and the function of the service, then it might not even be legal to ask for it. Sometimes it is not possible to include it because product providers can argue against that.



c. Public procurement and supplier engagement, public procurement and SME

The level of supplier engagement is very low, due to the limitations established by law.

Por-PC-1 limits themselves to just conversations intended to better understand what is offer in the market. Also, for grants application as suppliers are brought as partners to assist with the assessment.

Barriers and drivers

Identified barriers and drivers

- Low bidding barrier, but this is mandate by current regulation. Digitalization is also identified as a barrier. Also, the Impossibility to engage in conversation with private companies as this could be an impediment for a transparent procurement process.
- Although, there is no strategies to engage with SMEs, innovation usually stem from SMEs, so it is interesting.

Possible solutions

- Changes are expected. Not necessarily in procurement but given the carbon neutrality groups and the new law on energy communities, the overall strategy may go towards that. For example, by including certified green energy in every energy contract.
- A solution to include sustainability requirements is to have an EU accepted standard, as happens with the EURO standard for vehicles. However, the assessment of life cycle or carbon issues is too complex to easily respond how this can be done.

Summary and Discussions

In summary, PAs must comply with public procurement procedures, they can engage in conversations with innovative partners in grant applications, not with suppliers. In a certain manner, the very same law that protects public procurers and protects public money also impedes the integration of innovation.

4.7 Case studies in Slovakia

4.7.1 Case 1 in Slovakia

This case is based on an interview with a SME in Slovakia.

The interview partner was the director of a non-governmental company Slo-SME-1. The company was set up by the department of Energy Center in one of the city in Slovakia. It was formerly financed by the UNDP program (United Nations Development program) to implement the program “Removing the barriers of public lighting restoration in Slovakia”.



At present the company helps municipalities to successfully implement street lightning modernization projects, the project documentation of the modernization, and the preparation of feasibility studies for the EBC contract and so on. The company also provides the physical construction and the maintenance of lighting systems like exchanging the lamps.

Analysis of the current situation:

a. Sustainability strategies, energy-related strategies:

Saving energy is the focus. In the last two years they included some smart city components in their projects but the concept is still new to them: “So we take care that our projects are prepared for the municipalities or for the customers in a way that in the near or later future they can anytime connect without any additional investment any luminaires into the smart city concept and then using the luminaires for connecting with the sensors and to monitor the quality of their air and the traffic intensity of all the other things for which the street lightning system infrastructure can be used.”

The share of innovation activities (such as R&D, training, or product development) is in “the project business 100 percent. All our projects are energy efficiency projects with a minimum fifty or sixty percent energy savings from the former state to the state after reconstruction.” The share is unknown for the construction part of their business.

b. Involvement in PP

The company actively participates in tenders and is successful there. As stated by the interviewee, “every contract is important for us”. The interview partner describes one example in more detail: “One very successful project was in the city of XX. There, we won twice. The first stage was about 200 Luminaires. The second stage was about 700 luminaires in this municipality. Our main clients take 1000 to 2000 luminaires. It was a standard procurement for the construction services, for the investment. In every procurement there were usually two to four competitors fighting over the price.”

Financial support and external support to find new markets would be very much welcomed.

Drivers and Barriers

Main constraints/barriers

- Hard competition: “Slovak market with street lightning reconstruction business is quite saturated.”
- Frequent cancellation of tenders
- Badly prepared procurement documents
- Non-sufficient understanding of banks “it would be helpful to have some more education for the banks, for example how energy efficiency projects are working.”
- Price is the only criteria that counts (Municipalities care about energy savings though): “In the project documentation there are some saving [requirements]. The CO2 savings are also calculated. But in the public procurement there is usually no care about that.” The interview partner is not concerned with LCA considerations.



- Size of the tender can be a problem for SMEs

Drivers for SMEs to participate in PP

- Pre-tender dialogue is very much welcome but still very new for municipalities. The company has not taken part yet.
- Slovak municipalities have started to prefer smaller local companies when tendering services.
- Consortia building of several SMEs is considered beneficial.
- Sharing international experiences on public procurement in the RES area and visits to other municipalities is considered beneficial: "...to show the Slovak municipalities the best examples from other markets on how ... to implement the green procurement"

4.7.2 Case 2 in Slovakia

This case is based on an interview with a public procurer from a city in Slovakia.

The interview partners are responsible for public procurement procedures in the city office and for the energy in the city. This city has 35 000 citizens and is the central city for the region.

Analysis of the current situation

a. Sustainability strategies, energy-related strategies:

The city has goals around energy management and energy savings. In particular, they try to reduce the energy consumption, with the help of programs of the European commission. They have no defined strategy for sustainable or green procurement, but they are trying to apply green criteria in all procurements. For example, they have procured electric cars for the city or they have procured some office materials as well as services for the green parts of the city. There they have taken ecological criteria into account.

The city already procured one electric vehicle. Regarding the energy supply procurements, so far, they do not require the suppliers that the supplied energy needs to be green.

b. PP strategy:

The qualification of the staff and the head workers as well as references about which kind of supply the company already made are important pre-conditions for having a chance in a tender. However, in the awarding stage, it is only the price that is relevant. There is no political support and initiative to consider other components such as LCA. Such support is considered to be needed before LCA can play a role for procurers.

c. PP and supplier engagement:

The interview partners mention that pre-tender consultation is a law in Slovakia since about one year (in cases when the cities procure larger projects) but has not been used by them so far because there is no need to do so in their regular procurement business. They consider it as



presumably helpful for a better preparation of the contract or the procurement and, in particular, for the green energy procurement.

d. PP and SME

The municipality has no established strategy for more SME engagement in public procurement as the procurement code does not allow preferring one company size in particular. “But what is interesting in our country, and in general in the European Union, there are only 2% of large companies. Thus, there is a high probability that most of the suppliers would be small and medium enterprises in this city”. The procurement can be divided into smaller parts and the city really tries to use this legal possibility. For example, recently, a small supplier has won the tender for the treatment of the fountain and irrigation system in the city.

Barriers for SMEs

In general, the interview partners feel that there is a good participation of SMEs in the tenders.

- A recognized barrier is that the company does not have the proper technical infrastructure, like machines, which they need for the procurement.
- The other barrier can be a very long process of the procurement and not so deep knowledge about the legislation and the process of the public procurement. When the company wants to prepare the tender offer, this can be complicated for them, regarding the administration. Also, the electronic communication is not only an advantage but can also be a barrier because companies may not have such equipment and, thus, are unable to communicate in an electronic way. SMEs may also have a capacity problem because the owner often has no time to prepare the tender offer, and they also lack the employees with appropriate knowledge.

Drivers for SMEs

- Cooperation with some other suppliers or having a person who can give this technical expertise to the SME can solve the above-mentioned problems
- Reduction of the number of different documents which needs to be prepared would be most beneficial for SMEs (no such a large and detailed documentation than currently required)
- Cost efficiency to be able to offer a good price for this service
- Competence to use the electronic marketplace
- More stable legislation related to public procurement so that suppliers do not have to adjust frequently

4.7.3 Case 3 in Slovakia

This case is based on an interview with a public procurer in the district office in Slovakia.

The interview partner is responsible for public transport in the whole district. The department is also responsible for investments of cultural organizations like theater or museums, and also for social treatment of seniors or schools and high schools/education in the region.



Analysis of the current situation

a. Sustainability strategies, energy-related strategies:

The authorities are preparing currently a new concept of smart principles in the regional development. It is related to energy, environment, and a circular economy. The interview partner's department prepares for the start of the new concept. Currently they are testing new ways of social responsibility in the procurement processes. So far, this is related only to social politics but not to environmental aspects.

There is not something like a general strategy for public procurement so far in this district. Currently they are trying to use some new way of social responsibility in the procurement processes. These are related not to the environment so far but to the social politics and aspects of the procurement are taken into account.

The district would like to decrease the usage of electric energy in their city and to renovate old/older buildings and change the electric lighting systems in the city. But they do not have enough human resources in the district office which have enough knowledge related to smart principles in the regional development. Plans to introduce energy related public procurement strategies are considered rather to be a long-term project.

The interview partner does not have any experience with procurement of solar panels. But he is aware of a pilot project to change the heating in social treatment building and to use the system of heating pumps there. This project should be financed by the European Union funds but there is some delay.

In about two years about 40% of public transport needs to be based on electric energy. The interview partner expects that they will then procure this public transport services, and one condition in this procurement will be that the supplier provides about 40% electric buses. This will be a very large procurement for the district.

b. PP strategy

Here is some explanation regarding the social aspect in the procurement. This district has two registered social businesses or social entities which are like a company, but which has a special status that calls them social business. There is a special law in the Slovak republic related to this social entity, like other countries in the European Union. These entities employ people who were a long time registered as unemployed and have a problem to find a job.

LCA does not play a role. They do not have the capacities to calculate the life cycle costs for the goods they want to procure and there are no standard procedures available as, possibly, in other countries.

There is interest to start using new assessment criteria, for example to use the total costs of ownership assessment. They would like to cooperate in this area with the office for public procurement of the capital city which are leader in preparing new ways of procurements. They



hope for a model or a technique for procuring intellectual services such as architecture services or building inspections (expected criteria: the price counts 30% and the quality counts 70%).

c. PP and supplier engagement

The only criterion used for a tender so far is the price. In addition, they set some conditions for the participation. They also establish some contract conditions which must be fulfilled (e.g. quality, qualification of the personal).

They have used the strategy of dialogue with suppliers in the pre-tender phase twice. They also publish the upcoming public procurements every year.

d. PP and SME

The method to involve SMEs is to advise public entities which procure volumes below 50000 Euros to consider local suppliers so that the local SMEs have good access to all the smaller procurements. The interview partner's department manages only larger procurements, but they try to split the delivery into smaller parts in order to allow SMEs to participate without the necessity to join a consortium. In that way, they try to make the procurement SME-friendly.

Barriers for SMEs

- The procurement is often very complex.
- Electronic usage or the electronic way of procurement are a big barrier for small companies. Everything needs to be done in an electronic way.
- Sometimes the conditions for the participation are so strict that the smaller companies are not able to fulfil the condition for the participation.
- Bad experience with previous participation and discouragement

Drivers

- Company needs to have low costs in order to be able to offer a low price.
- New technology which allows cost savings is beneficial: "In general, we can say that the cost efficiency is the critical success factor."

4.8 Case studies in Spain

4.8.1 Case 1 in Spain

This case is based on an interview with a green energy supplier in Spain. This company was found through TED data in several tenders as awarded SME. SPA-SME-1 won a tender of 17 million euros to supply energy to the public buildings of two cities in Spain, where the competitors were 5 large companies and 2 SMEs.

SPA-SME-1 is a SME with 10 years of operation. Their main activity is supply green energy; they operate in mainland Spain. They are immersed in an expansion and growth process, and they are increasing the volume of clients, and positioning themselves in the energy supply sector. The



sector is very competitive, and there are appearing new players such as oil companies (i.e. Repsol, Total, Cepsa, etc.). The SME is aiming to have a small part of the market, and committing with the renewable energies. SPA-SME-1 is a regional based company that supplies more energy which permits them to be better positioned nationally. Since 2015, they hold the 100% renewable certificate from the CNMC (Comisión Nacional de los Mercados y la Competencia).

Analysis of current situation

a. Sustainability strategies, energy related strategies

They are immersed in an expansion and growth process, where they are increasing the volume of clients, and positioning themselves in the energy supply sector. SPA-SME-1 is aiming to have a small part of the market and commit with the renewable energies with guarantees of 100% green origin; the latter are instruments as indirect investment, as the green generation facilities invest in R&D. They are also planning to invest in generation facilities and projects that is up to 990 kWh installations of small solar farms, as only the distribution permit is needed up to that power.

b. Regulations and support systems

They only work with own financial and technical resources and expertise. In terms of type of support they could need, they find their weakness on the marketing issues. In this sense a market consultant will help to develop and further improve their renewables-related services. In addition, an external technological support will help them to promote developments as they have limited personnel resources.

Barriers and drivers

- As the tender bid the Public Authorities require a minimum volume of income, which is very high for SMEs, therefore, only large companies are able to apply for the tender. –
- Another barrier is the requirement of several customer service local points; in this case the SME cannot be compliant due to the limited personnel and financial resources.
- In addition, the different Public Authorities have different criteria for the same service, for example for energy supply service the criteria could be more standardized, in this sense the bidding process could be easier for SMEs.
- Regarding SMEs, many of them lack ICT knowledge; they do not have at their disposal digital certificate to participate in online bids.
- When analyzing the bidding process main barriers found are: Bidding process could be improved, there is many documentations requested that could be obtained by the PA from public sources; the process is very slow due to incongruences between bid documents and sometimes paper work. The latter due to the lack of ICT improvements in Public Authorities that still work without online procedures.
- PA have different criteria for the same service, for example for energy supply the criteria could be more standardized, in this sense the bidding process could be easier for SMEs.
- ICT in PA



- The process is very slow due to incongruences between bid documents and sometimes paper work.

Driver to GPP:

- One of the drivers is including 100% green energy as mandatory requirement.

Driver to PP for SMEs:

- The benefit the SME can obtain through the visibility when winning PA tenders.
- The SME can offer better customer service through their proximity to the client.

Possible solutions

Some of the solutions to the barriers mentioned previously could be summarized as follows:

- Public Authorities are starting to divide the bid into smaller lots, in this sense they make more concurrence because SME can apply together with large companies.
- Regarding similar services/products asked into the bid, the bidding process could be more standardized to easy the process to SMEs.

Summary and discussions

SMEs face some specific problems in comparison with large companies, in this sense high volume of business are asked in the bids, therefore SMEs fall out of participating in the process, though currently Public Authorities are starting to work in lots in order to facilitate a wider participation of SMEs.

On the other hand, bids ask for customer service local points, where SMEs can make the difference, the problem arises when SMEs cannot cover the whole territory when the service is nationwide scope.

Bid process could be more standard when the service asked is the same, in this case green energy supply, as well as easier in terms of the documentation submitting, as nowadays PA are still working on paper documents instead of online processes.

4.8.2 Case 2 in Spain

This case is based on interview with a representative from a Public Company in Spain.

PC-SPA-1 is a public company that carries out the following environmental services in the local municipality: wastewater treatment, public street cleaning, and solid waste collection and treatment. The company is located in a city with 200.000 inhabitants and a high seasonality that increases the population up to 4 times this value.

PC-SPA-1 was identified as a potential Case Study from TED according a contract to supply of electric light vans, official review service and final discharge management service for the vehicles of the year 2018. This contract was awarded to an SME, SPA-SME-2 that is the local dealership of a French car manufacturer. SPA-SME-2 was the only bidder in this case, that reflect the limited



market available within the island. Currently, PC-SPA-1 is preparing another tender for the acquisition of electric vehicles.

PC-SPA-1 carries out procurement to purchase service and products required to conduct its operations. However, in many cases is the municipality that leads the procurement and PC-SPA-1 participates as a technical support. So, contracting related of renewable energy is usually done by the municipality, whereas the purchase of electric vehicles for the operation of PC-SPA-1 is done in-house.

Analysis of the current situation

a. Sustainability strategies, energy related strategies

From the side of PC-SPA-1, no municipal strategies/goals regarding sustainability are known, or at least has not been communicated. Regarding Public Procurement, the municipality approved a policy for sustainable and social procurement last year, but current application is unknown. Still, this document does not address adequately the sustainable procurement needs of PC-SPA-1 operation and the monitoring proposed is almost inexistent.

The mentioned document was not as flexible as to cover the specifications that different municipal areas/public companies might face. For example, it adopted Km0 as a key parameter, useful for food supply, but not for the specific chemical products required by PC-SPA-1 treatment tasks.

Nonetheless, PC-SPA-1 has its own PP practices and measure its performance according to the European Public Procurement Score Card. Procurement is a difficult task, so PC-SPA-1 tries to analyze product by product to improve its procurement policies. Not by imposing criteria to technical areas but by working together and learning by experience. Once, for the procurement of paint, PC-SPA-1 followed the European recommendations on safety and health, and prior the tender process launched a consultation to verify if local SMEs could supply paint with such specific requirements, and the result was totally negative. That is the reason to not impose criteria that might not be feasible or might create a handicap for most of suppliers (being an island, the local market is very limited and tender volumes do not attract companies from the peninsula).

b. Public procurement strategy

Procurement is done through the Spanish online tender platforms and 95% of cases are open procedures with price as main evaluation criteria.

As a strategy, PC-SPA-1 focuses in supporting SMEs to overcome digitalization barriers (explanation below), but including environmental criteria is still very premature. Except in the case that an area already establishes an environmental requisite (i.e., vehicles must be electric), but not as evaluation criteria. Not even among the type of electric vehicles or its environmental characteristics (i.e., battery lifespan, battery post use treatment).



c. Public procurement and supplier engagement & SME

However, to maintain a good relationship with local suppliers, and have in mind the market limitations on the island, PC-SPA-1 conducts the following actions to promote SMEs participation: prior the tender process, are:

- The annual procurement plan is published so suppliers could be prepared towards the following 6 months. Given this plan, information related to the annual plan was communicated through the contracting platform.
- A mailing list has been created to disseminate useful knowledge and best practice (see 5.a).
- PC-SPA-1 has an open communication channel for bidders. In this, they inform about how to register in the platform, how to search a tender, etc. There is a registry of the received calls.

The main measures after the tender process are:

- Satisfaction survey to bidders sent by email.

It is worth to mention that these actions do not intend to prioritize SMEs over non-SMEs bidders. PC-SPA-1 is aware that most of local suppliers are SMEs, and that PC-SPA-1 operations heavily depend on the supply of products/services from these locals SMEs. It is a reciprocal relationship, almost as a symbiosis based on the island intrinsic characteristics. That is the reason behind PC-SPA-1 working to overcome digitalization barriers of local SMEs, for instance.

Barriers and drivers

Identified barriers and drivers

- One barrier that SMEs show is the low level of digitalization, even ignoring the basics as the existence of a contracting platform, what a CPV code is or how to digitally sign a document. In this sense, PC-SPA-1 works together with SMEs to assist them to overcome this barrier.
- Also, PC-SPA-1 is lowering the financial and warranty requirements to improve the chances of SMEs offering service/products.
- As mentioned, they also have a mailing list to inform SMEs about what an SME might do improve their digitalization. This mailing list do not link to tender process, is only meant to disseminate best practices as “what is ROLECE (the Official Registry of Bidders)”, “what is a CPV code”, etc.

Possible solutions

Working together with local SMEs, as PC-SPA-1 currently does, might result in very positive results. According to the indicators measured since January 2020:



- Offers presented by SMEs: 82.27% (objective 60% according to the European Public Procurement Score Card).
- Tenders awarded to SMEs: 84.51% (objective 60% according to the European Public Procurement Score Card).

Barriers to PP for SMEs:

- ITC barrier, many enterprises do not have digital certificate to participate in online bids or do not even know the online tender platform.
- Green PP and Social PP is perceived as more expensive than regular PP. Requirements for SMEs to justify their products and services are indeed Green/Social might be high requesting.
- Strategic plans, as the one approved by the municipality last year for Green and Social PP, are usually shortsighted or do not properly cover the different sustainable requirements that different sectors might have (i.e. focusing the strategy on KMO products might be positive for food, but not for chemical supplies, in which the safety and health issues of their components are key).

Driver to PP for SMEs:

- There is close collaboration with local SMEs to guarantee tenders will be successfully awarded. This is caused by the limited market available on the island: number of suppliers is limited (compare to the national market) and most of them are SMEs.
- PC-SPA-1 helps local SMEs with formation activities about the online tender platform, search by CPV, the national supplier's registry, etc.
- In the case of PC-SPA-1, the volume of services/products requested is adequate for SMEs.

Summary and Discussions

Being located in the remote area and limits the public procurement boundaries in which PC-SPA-1 might operate. This situation is the main force behind the public procurement practices PC-SPA-1 is putting in place, especially for the close collaboration with local SMEs. The main issues PC-SPA-1 deals with are related to basics good practices on PP those SMEs should be aware of, so including sustainability criteria within tenders is not even considered. The recommendations coming from the European Commission and the Spanish Government might not have in mind island's specificities or, moreover, might not even considered the huge differences on public procurement that municipal sectors or areas might have (i.e. food vs chemicals supplies). This does not mean that PC-SPA-1 does not work towards a more efficient and sustainable public procurement. They try to incorporate, or at least evaluate feasibility of such EU-wide recommendations before launching a tender, and when a sustainable improve is detected it is included as a tender requisite (not as an evaluation criteria).



4.8.3 Case 3 in Spain

This case is based on an interview with a SME. This SME, Spa-SME-3 is identified through the TED database as the SME awarded with contract on providing electric power supply in both low voltage and high voltage. the SME is a social cooperative on renewable energy generation and consumption. It is a non-profit cooperative that promotes through green marketing (100% renewable energy), a responsible and sustainable consumption of energy among its members.

Spa-SME-3 is operating since 2012, and they are working in the currently liberalized parts of the electricity sector, marketing (energy purchase) and generation (power generation). Transport parts (high voltage in the hands of REE) and distribution (medium and low voltage in the hands of large companies) are regulated.

Being a non-profit cooperative, all the benefits that are achieved by the commercialization of electricity (green) among its members, revert back into the cooperative, and the members themselves decide in an assembly to allocate those benefits. In turn, members will be able to invest in renewable generation projects, and the production will be consumed by the cooperative itself. The ultimate goal will be for the amount of energy generated by the cooperative to be equal to the amount of energy consumed by its members. All this through renewables and with the most rational and efficient consumption possible.

SPA-SME-3 supports local development, so although it can be commercialized at the peninsular level, it mainly focuses on the local area.

Analysis of the current situation:

a. Sustainability strategies, energy related strategies

As a Non-profit, all the benefits obtained through the supply of energy are invested in renewable generation projects. The ultimate objective of Spa-SME-3 is to achieve that the amount of energy generated by the cooperative is equivalent to the amount of energy consumed by its members. All this through renewables and with the most rational and efficient consumption possible.

Spa-SME-3 understands cooperatives as local leaders to drive an economy close to their environment. That is why although it can market at the peninsular level, it is mainly focused on the local region, although it can help to promote local cooperatives throughout the state. Like the overall objective of XPRESS, Spa-SME-3 aims to encourage the introduction of innovative RES technologies and to increase the share of renewable energy in final energy consumption among citizens and local public administrations.

The Spa-SME-3 model combines the generation and commercialization of energy with social activism, maintaining as horizontal and democratic a structure as possible for decision-making, can be considered a real experiment in social innovation.

Spa-SME-3 aims to build an environmentally friendly and fair energy model by marketing 100% renewable electricity, promoting generation projects, advising, participating in campaigns and



collaborating with organizations that share its objectives, being close, transparent and building trust.

b. Regulations and support systems

At the geographical level, its scope of action is mainly confined to the autonomous communities of the local region with which they have a very good relationship, although there could be more support in the development of projects at the energy level.

Spa-SME-3 offers specific advice to small municipalities that decide to independently handle the management and energy efficiency of their locality. They have detected a change in the perception of renewable energies vis-à-vis conventional models, although the allocations for this purpose are still insufficient.

For example, through REAS, Network of Alternative and Solidarity Economy Networks (Red de Redes de ECONOMIA ALTERNATIVA Y SOLIDARIA), an alternative public procurement manual has been published with a firm commitment to introduce into public procurement these low-carbon energy needs of cities and municipalities with RES technologies developed by innovative SMEs.

Barriers and drivers

Identification of barriers

Continuing in the institutional field since the beginning, Spa-SME-3 has contact with more than 100 municipalities. 40-50 of them are already consumers and/or collaborators, but there is still a long way to go. The local institution, usually of small-medium size, is the most sensitive to the local model of Spa-SME-3. In this sense, there are flourishing certain initiatives to reactivate or activate municipal marketers although most in the administrations contract via auctions of the central purchasing offices. Given this, Spa-SME-3 cannot compete, as a matter of volume, but it does submit to ad hoc tenders. The problem for many small municipalities is to draw up coherent, reliable and efficient technical specifications. The phenomenon of municipal marketing companies is not a real competition since only large municipalities can assume it.

Another problem is often the digitization of the documentation to present the public tenders with many problems of the computer system.

Barriers to PP for SMEs:

- The technical and economic solvency requirements in public tenders are too demanding or too high for small enterprises to access.
- Many municipalities in the area manage their energy resources through a Central Shopping Center, and they think they will not be able to find other more advantageous options.
- Small municipalities that decide to manage their own energy resources do not have qualified staff to develop such specific technical specifications.



- The submission of electronic documentation in public tenders often gives rise to many computer problems; the most complex part of a tender is usually the submission of documentation.
- There are also public entities that request the submission of paper documents.

Controller to GPP:

- The Government is increasingly aware of energy efficiency and good practice guides for sustainable and ethical public procurement have been published.
- The administration itself seeks assistance and advice from the cooperative to manage energy resources locally.

PP driver for SMEs:

- The cooperative is 100% self-financing through the marketer.
- SMEs can offer better customer service through their proximity to the customer.
- Spa-SME-3 has a good team of professionals that controls the ICT and do not have problems of digitalization.

Possible solutions

Different options are therefore being considered, especially for small municipalities. It is in the field of generation that the greatest qualitative change must take place, since prestige-confidence depends on it, as well as responding to the initial purpose of the cooperative project. Although the activation of certain European projects has been a relief and satisfaction, they need to equip themselves with new projects and with more ambitious horizons. In this sense, it is observed that certain activities need a previous endowment of resources (people, means) to be able to properly deploy these services. That is why all marketing is oriented to have resources to support these intra-entrepreneurship initiatives within Spa-SME-3.

Summary and discussions

In the short term, Spa-SME-3 needs to promote information processes so that domestic users perceive the quality of service and facilities to contract 100% renewable energy.

For public administrations, Spa-SME-3 can have a great journey if it can make them see that their service-price offer can be much better than that of conventional ones.

The areas of self-consumption or linking own generation are strategic and will have a strong development in the coming years.

For relatively strong companies, they need to offer comprehensive services that directly link production and consumption.



4.9 Case studies in Sweden

4.9.1 Case 1 in Sweden

This case is based on an interview with a SME in Sweden.

Swe-SME-1 is a SME started in a suburb in Stockholm 55 years ago. They began to develop DC converters and then they added another branch in Sweden. Currently, they have another production site in Switzerland. They are still a small family-owned business with 27 people. This case is chosen since this SME works with electricity equipment, and power units. They are also to some extent an innovative company. This company has increasing sales in Europe through selling more in Spain, Switzerland and other parts of Europe.

They do recycle of old or broken products through collecting them from customer sites. The way Swe-SME-1 sells and provides support has changed. It has been mainly by travelling to the customer's sites and these days it is mainly by computer, emails, and connecting to customer sites. Different barriers identified that limit the growth of the company. Pandemic is affecting the SME by limiting the supply possibilities from Sweden which the SME is compensating through procurement from other countries.

They need to establish a relationship with PAs. As they mention, they mainly have problem in pre-tender phase which needs them to be more proactive, contact procurers, send them product samples, and demos to go for procurements which price is not the main criteria. Instead, procurements which quality, and environmental considerations have higher weights.

This SME is trying to increase the sales and gain more profit. They have a good technical expertise which has helped them to develop electronic equipment. Backed by the Swedish design and the well-known Swedish quality, their products are often expensive. This premium price has made it difficult for them to compete in tenders which lowest price is often the criteria.

They have been adapting themselves to the current pandemic situation and procure from other parts of Europe and hold sales and marketing through digital channels. They have not established relationship with public authorities to benefit from different possibilities such as different tender types, funds, and loans.

Analysis of current situation

a. Sustainability strategies, energy related strategies

The current organizational strategy is to increase sales. They are increasing sales through contacting potential customers, sending emails and asking for digital meetings. Also, they are testing different business models such as lease and licensing.

The energy related strategies are focused on recycling through collecting broken products from customer sites. Also, by reusing the old parts in new products. In other words, increasing the life cycle of products and parts.



b. PP strategy or regulations & support for SMEs

They are unaware of benefits of public procurement. They have attended in tenders that they lost because of higher price. Also, they have avoided few tenders because of the high competition over the price. They have not received any support from PAs yet.

c. PP & supplier engagement

They have not been engaged in any relationship with PAs. They meet with municipality representative every week which the representative comes and talks to them. The interview explains it in a form of tea meeting. However, there is no established strategy for public procurement.

d. PP & SME

As stated earlier, they have participated in tenders. However, they have not won any tender yet. The reason has been the low price of the tenders which makes it difficult for them to even think of participating in tenders. However, they have experience of participating. However, it did not result in winning a tender.

Barriers & Drivers: Identification

- Low price of the tenders, limited supply during pandemics which also affects environmental issues and the total costs. Furthermore, certification is an issue.

Barriers & Drivers: Possible solutions

- In order to deal with the issue of low price, it is good to lift quality in the procurement and announce tenders that quality and environmental issues receive grades.
- Supply issues can be dealt by procuring from Europe. However, it can increase the total costs.
- Customers demand environmental certificates such as ISO 14001 that demands company investments to license operations.

Summary & Discussions

This SME needs to establish strategy to approach public procurement. They need to study public procurement and above all change their viewpoint toward public tenders. The general picture is that there is low chance of winning and there is although competition on price which has made the procurements unattractive for this SME. The tenders that promote economically most advantageous formula are suitable for Swe-SME-1 to look at them. Tenders that focus on lowest price are not the right types of tenders for Swe-SME-1 to consider. They also need to work more on the marketing front to communicate the value of their products such as the high life span of the product which reduces the total cost of the product during the life cycle. It is good that they do such LCA of their products and use this information in their communication channels. It will



open possibilities for them that procurers get to know them more which in return results in announcements of more quality and environment-oriented procurements.

4.9.2 Case 2 in Sweden

SWE-SME-2 is a taxi company in Sweden. Before 2020 they had 700 vehicles and contracts with other taxi companies around Sweden. They are one of the biggest Swedish companies within taxi business. Owned by the 900 members who also are sub-contractors. The case is chosen as this SME works with renewables when it comes to vehicles and have earlier won tenders for public authorities.

Analysis of current situation

The company is facing challenges for survival related to Covid-19 and the tough and sometimes unfair competition on the taxi market. This is related to the Covid situation and to new actors on the market like Uber. All companies have similar costs, so this encourages gambling, risking and cheating.

The company finds that there is a lack of charging infrastructure in the city, as charging takes time and also access. There is only one location exists for charging hydrogen, and it is quite far away from the city.

a. Sustainability strategies, energy related strategies

The current organizational strategy is to keep the position as one of the largest taxi actors, but the market has changed. The tough and sometimes unfair competition on the taxi market is related to the Covid situation and to new actors on the market like Uber. Their energy related strategies are focused on to be completely renewable 2025, now discussing to instead be fossil free/emission free with a new clean vehicle directive, but no time perspective is yet set.

The respondent gave many examples of the lack of long-term sustainability directions from society or from the political level. One example was about the missing criteria in public procurement. Another example was about the long-term, predictable signals regarding what fuels to go for (like the subsidizing/discounting of HVO100 that lasted one year), that makes it possible for them to invest in the right type of cars. A third example was the fragmented demands for taxi transport services, implying that there is no coordination. Therefore it is highly difficult to live up to a plethora of demands and not possible to practically and economically have dedicated cars for each municipality.

b. PP strategy or regulations & support for SMEs

In terms of the level of public support for green services, the respondent meant that they could do so much better and they should work together with the Pas much more. Sub-contractors



have lack of time and lack of priority. The public/the higher political level must come down to the procurement level or contract, which is very hard for them.

Environmental criteria is very seldom part of the procurement assessment criteria, one example is Stockholm's stad (city of Stockholm in English) (2-4% of the cars should be on renewable fuel). This is important for the resource utilization of the cars as e.g. Region Stockholm färdtjänst (transport services in English) is a very good complement to the normal taxi demands as they occur between 10-14 during the day (a totally dead part of the day).

When it comes to regulations and/or support schemes at the EU, national or municipality level, the respondent said that their biggest issue is the clean vehicle directive. From 2026, the city aims to be fossil free, which it is a problem for SWE-SME-1. Because they keep the cars for up to 6 years, they need to know what cars to buy now. This company acts in the premium segment, and premium cars are expensive, and they do not have many emission-free cars as option. In 2022, they are expecting that there will be some middle-class cars that might be possible to use.

The support from public funding in terms of the development and innovation of renewables is "hard to find and hard to get". The respondent thinks that the PAs do not use procurement in a good way as they could. The suppliers cannot get paid well enough to be willing to innovate in this area, in terms of renewables.

c. PP & supplier engagement

The municipalities think that they have good strategies for dialogue with suppliers in the pre-tender phase. They are often invited for dialogue. They talk to their contractors, but some of them also reach out to the market. But the communication is very one-sided instead of dialogue. "They seldom listen to what we say, they just want us to say yes", as stated by the respondent.

When it comes to participation in any pre-tender supplier/market engagement activities for renewable energy-related purchase organized by a municipality, the respondent said that the municipality tried to reach them 1, 5-2 years before. They have to be in the right process on starting procurement, as timing is important from the municipalities. In the last 5 years we have had some really bad procurements, no contractor wanted to bid upon them. The respondent finds that it is difficult to influence the Pas' procurement strategies.

When trying to participate in public procurement, the respondent mentioned that they are facing barriers such as different municipalities have completely different demands, even if they are next to each other. There are totally different tenders, so you cannot use the same cars. It would help if there are consistent national or regional strategies. Another issue is that the procurers do not have expertise to make simple, clear and stable demands for the tender.

The respondent thinks that the Pas could have done better in terms of the level of public support for the green products or services. He thinks that the PAs and private sector should work together much more. The public/the higher political level must come down to the procurement level or contract; The PAs usually have limited time for the sub-contractors, and lack of priority.



Barriers & Drivers: Possible solutions

- The general barriers they try to deal with by a new competitive strategy and a new management.
- Another barrier is the lack of sustainability-friendly cars in the premium segment, which their strategy dictates.

Barriers & Drivers: Identification

- Financial constraints due to a tough market situation, and management problems in a cooperatively owned company.
- Difficulties with the cooperative ownership (with 900 owners) implying different levels of business and sustainability knowledge.
- Lacking infrastructure for fuel, like charging cars, tanking hydrogen or HVO100. Charging takes a lot of (potential driving) time, and there is just one location where hydrogen can be tanked.
- Lack of long-term directions from society and financial constraints are barriers to sustainability.
- Different municipalities have completely different demands, even if they are next to each other. Totally different tenders, you cannot use the same cars.
- The procurers do not have expertise; it needs to be simple, clear and stable demands.
- The drivers or critical success factors for SMEs to become suppliers to public customers is that municipalities and regions could pay for and get the expertise beforehand, then the supplier can build the business model accordingly.

Summary & Discussions

This SME has a lot of problems to deal with currently. But they have also a lot of knowledge, competencies and ideas for improvement. Several barriers need to be handled outside the company, on public or political level. Tenders that focus on lowest price are not the right types of tenders for SWE-SME-1, because they are in premium market segment and their ambitions to be a fair player on a not always fair market. Like many other SMEs they see public procurement as the lifeblood during pandemic when private taxi orders have reduced dramatically.

4.9.3 Case 3 in Sweden

Description of the case

This case is based on an interview with a public authority in north of Sweden. They have 17 people in the procurement division, and they procure 1.4 billion SEK per year.

This municipality is well-known in Sweden as one of the pioneers of using electronic tender system. This capacity to hold e-tenders which demands that they provide detailed documentations and answering inquiries has helped them to navigate easier to environmentally friendly procurements. Also, procurement department from several years ago has had a chair in the strategic meetings of the community meaning that procurement has a strategic role in the municipality.



Due to importance of environmental considerations Sweden, and specifically in north of Sweden which includes several natural heritages, it is important to increase the level of renewables and innovative solutions in the procurements. Also, in Sweden people are very nature oriented which is another reason for the success in moving toward environmentally friendlier solutions. Also, due to geographical distance of this town to the capital (1000 km) it is interesting to study how they deal with the challenges of electrification and finding suppliers for renewables.

Geographical distance is another theme presented in the interview. Sweden is a big country and geographical distance of this municipality to the capital is almost 1 000 kilometers. The long and cold winter reduces possibilities to use electric cars and placing more solid criteria on suppliers and supplies.

Analysis of current situation

a. Sustainability strategies, energy related strategies

This municipality has fossil-free transport and environmental strategies with the focus on sustainable energies. Also, based on the vision of 2050, which is developed from Agenda 2030, there is a strategy called “sustainable energy for everyone”. Municipality follows the agenda in Sweden to cut fossil fuels. There is document called Vision 2050 which is developed from agenda 2030 which explains different strategies and actions that this municipality has in hand to become fossil fuel free.

Sustainable development is important for the municipality. They have had several procurements related to RES. Human resources to maintain tenders with more precise requirements is a need for them. The municipality has the responsibility to serve the people in the region through different activities as well as procurement. Also, preserving natural resources, reducing carbon emission, using sustainable means of transport are among the top priorities in environmental issues.

Geographical distance has limited their opportunity to have a bunch of suppliers to choose in between. Also, it has reduced their speed of placing environmental criteria with the pace that infrastructures in other regions of Sweden are developing. The pace of electrification, biofuels, and other means of transport and heating is high in Stockholm, but it reduces as one goes further away from the capital.

Also, municipality needs to consider using economic resources in a cost-effective way. It means that the lowest price bid is not the most popular form of the procurement. Economic considerations are important in tenders. They use different ways of procurement with a major focus on open procedure. They began using LCA some time ago, and they are on a right track to include more LCA based procurements which results in more sustainable procurements. However, they have not found it easy to use. It demands great resources from procurement division, but they sometimes use it.



As many other public actors, they were not ready for Covid-19. It has absorbed lot of resources from them and it might reduce the level of investment that they had plans to do related to renewables.

b. PP strategy or regulations & support for SMEs

During 2019, the municipality had a project about sustainable procurement which resulted in a new policy and guidelines for sustainable procurement. The policy is building on both inner and outer goals as part of the overarching program vision 2050. Also, they have the national procurement strategy which are the global goals for agenda 2030, and the ISO-standard 24000 for sustainable procurement.

These policies point toward guidelines and guidelines are interconnected with each other and the procurement process. Hence, sustainability is in everything they do.

Municipality follows the political agenda decides by politicians and policy makers. These policies are decided by political parties that they are in charge for a certain period in the municipality. It gives a strategic role to the procurement that it should follow the political decisions in the procurements.

c. PP & supplier engagement

Marketing activities that the municipality has been doing for several years has helped them to be positioned as a fair and environmentally friendly municipality. This has helped them to easily lift the level of criteria toward SMEs and larger organizations to maintain more tenders with economically most advantageous criteria.

It is a mandatory action in their pre-tender phase. But depending on the object it's sometimes only like a phone call or two, but at most of the time they tend to make it quite a lot. They are very active in the supply chain. They participate in a lot of tender schools and supplier meetings, in the project organization, the Swedish Federation of Business Owners, confederation of Swedish Enterprise. Also, they have, once in a month plan to check suppliers to assess which one they shall meet disregarded if they are in contract with them or not. If the decision is to visit a supplier, it can be planned or spontaneous. They often speak to them first, so supplier know they are coming. Just an opportunity for them to speak to procurers and if they have any questions about procurements.

They make purchasing plan for 12 months indicating what they are going to do in the next 12 months. They also have checklists, so when they talk with suppliers, they need to check some things because they must talk to them about trends, sustainability, and what is in the pipe for them. How they look at the municipality in general, if they have points on issues that should be done better, less of, more of, etc. So, they have some sort of checklist on what to do. Also, they know what they are going to do soon, talking about the assignment coming up. Is the contract big? What are requirements? How should they take this assignment on themselves? Should they do tips and tricks, open talks really?



As a municipality they are kind of opened, their budget is like an opened book. So, the figures are opened to the suppliers. But things can change, there can suddenly be a pandemic, and the money is transferred to other areas and so on. So, partly, they talk about the money and if they have a specific procurement that they talk about, of course the municipality have an idea of this is what they are going to spend the budget on. But it can also change. The dialogue with the suppliers says that it is okay, but if they are going to be sustainable, then they are going to double that up. They must check with that finance people and talk to them and see how they will handle it. And perhaps, they can have an increased budget for that object, sometimes not, but it happens.

They used to do a lot of Prior Information Notice (PIN). They are not doing it as much as they used to right now. It is unclear if it is because of that they have been busy with the pandemic, or other reasons. But yes, they try to be as transparent as possible and doing a lot of pre-information, both locally and of course now in the TED database as well. They also have it on the municipality website. There they have the planned procurement, so it's free for everyone to look at.

They actively engage with suppliers through different means. One of these instruments is supplier satisfaction survey that they send to their suppliers to know how satisfied they are with the contract and the existing relationship. They also plan their procurements for 12 months and they communicate it with suppliers and receive input on that.

d. PP & SME

The municipality has a goal that they should develop the local companies. So, they are doing a lot. They are aiming for a lot more dialogues, that is why they are doing the pre-tender information which they list the local companies, regularly. They also have an e-service for the SME suppliers. Where they can be seen, and say 'hello, I'm here', 'I can offer you this'. It makes it easier for procurers to contact SMEs to have the dialogues, and participating in all these entrepreneurial breakfasts, and business organization as well as tender meetings. They try to be out as much as they can.

They actively search in the market for new solutions. They are active in pre-tender meeting, exchanging information and reaching suppliers. This will help them to setup procurements that can result in enough number of participants. Otherwise, there is a risk for having tenders that no SMEs can attend in it. They try to do a lot of external collaborations, split the contracts, and simplifying the tenders regarding language and structure, try to reduce the numbers of requirements, and use special contract terms. They try to develop the contract view in the agreement period, using a lot of verbal presentations of the offer, and verbal evaluations of the offers. Procurers try to think about the business model. If it is fixed price, then it could be hard for a small supplier to attend. It is a high risk, for the SMEs. Procurers need to think guaranteed volume to attract the SMEs. Also, to use the accurate currency, because they do not always ask for prices in Swedish Crones. They try to do small things and get better and try talking and evaluating their own work. They also send out supplier satisfaction survey which is a



questionnaire for all suppliers to get feedback. What procurers have been good at, or bad? What can they do better?

Barriers & Drivers: Identification

- One of the things is the lack of knowledge. They sometimes get a bit overwhelmed because it is kind of bureaucratic language, very formal. They have to talk about the procurement through the procurement system. Because they are going to talk to them about to the 5 principles of the EU. So, that is the biggest barrier, lack of knowledge and a bit of overwhelming. They are not used to it.
- Procurers are very creative, innovative, and teamwork oriented. It is very often that they get new solution very quick. When they start working together, they can find further improvements. They are kind of quick to adapt to new changes.

Barriers & Drivers: Possible solutions

- They attend tender schools to gain new knowledge related to new procurements. They learn the language of the procurement to get used to this bureaucratic language system. However, the procurement department happens to end up in court every year.

Summary & Discussions

The municipality receives principles from the political agenda and updates its procurement policy. The procurement policy communicates in a transparent way with suppliers and other stakeholders to be practiced for 12 months. During this process, there are different assessments of deviations from the plan.

New and renewable procurements demand great deal of resources. Geographical proximity has made this municipality independent and digitalized. However, the choice of suppliers is limited. The municipality is on its right track to increase procurements with renewables, using more LCA in procurements.

4.9.4 Case 4 in Sweden

This case is about a university with about 2000 employees located in the southern part of Sweden. They are chosen by convenience sampling for the researchers, by the fact that the procurers have shown interest in the XPRESS project and participated in a workshop, as well as based upon the knowledge that the university is certified according to ISO14001. Furthermore they have recently been involved in procurement for a 700 MSEK campus facility. Their “normal” procurement volume is 60-70 MSEK. Two fulltime purchasers work with procurement. Overall, there is an importance of environmental considerations in Sweden.

They have currently two fulltime staff in the procurement department, which is one staff short. They procure regularly 60-70 MSEK per year (recently they have also put 700 MSEK into new



facilities on one campus). They have no sustainable procurement policy or strategy (then not including RES).

Analysis of current situation

a. Sustainability strategies, energy related strategies

The university has no sustainability or energy related strategies, nor quantitative objectives, even though they have ISO 14001 certification.

The university follows the political agenda decided by politicians and policy makers.

Personally, the purchaser really prefers sustainability projects, but in the situation with one staff short, it takes time and they don't have the possibility to do these kinds of work. The management doesn't show interest in the possibility of sustainability projects and are not aware of their potential impact.

b. PP strategy or regulations & support for SMEs

A PP strategy has never been discussed. When they are making a contract for e.g. bus travels, they have requirements from "The National Agency for Public Procurement" that are used.

Economic considerations are important in tenders. They usually do not set very hard requirements for environment, if it generates a higher cost in the end.

c. PP & supplier engagement

This is taken into consideration every time that they are about to start a project or a pilot study. Sometimes they have met a couple of suppliers. For example, for the furniture to the new campus. The public authority has never conducted its own pre-tender supplier/market engagement activities for renewable energy-related purchases. In those cases with the renewable, they use "the National Agency for Public Procurement" guidelines. Those requirements are not very difficult to follow.

d. PP & SME

There are many wishes to support SMEs, not from management, but from the ones with the needs, the customers (the faculties). They often want small and local suppliers. Maybe it is really the local suppliers they want to use for convenience reasons. They have a lot of suppliers that are SMEs. They won't pay for the travel costs and want physical meetings. Innovative SMEs often have great, innovative and maybe sustainable solutions, but we have no "mandate" to choose those companies. "Even if we see the greatness of them, then they get too expensive. And I might understand and even agree. Without instructions or directions of guidelines how to choose in those situations, it is difficult".



Barriers & Drivers: Identification

- A lot of procurements are set with un-proportional requirements that can be a barrier for SMEs. Another barrier can be that travel costs must be included in the tender.
- A driver can be that their small procurements sizes help SMEs to participate in tenders, but no number supporting that driver could be declared.
- Lack of managerial support for procurement. A lot of the time it depends on the personal interest from the person that is procuring, who has the need in the university or which institution or which faculty, depending on that.

Summary & Discussions

The procurer has personal interest in sustainable procurement, but no managerial support in doing so. This is the major barrier found in this case. It is also very difficult to conduct sustainable procurement without mandates, strategies or policies.

4.10 Case studies in UK

4.10.1 Case 1 in UK

This case is based on an interview with a representative from a SME (UK-SME-1). UK-SME-1 is a company developing energy storage technology from second life electric vehicle batteries. The XPRESS team interviewed the CEO of the company. Key themes were the company's development and deployment of innovative energy storage technology in recent years, as well as the key role of support from Innovate UK, a UK body which provides innovation funding. On the other hand, there remain key barriers around the market environment and regulation. They also engage through local authorities as part of the company's development, including engagement with local authority procurement frameworks.

Analysis of current situation

a. Sustainability strategies, energy related strategies

The company was founded in 2010 and has been operating as UK-SME-1 since 2014. They develop energy storage technology from second life batteries, representing an innovative renewable energy technology. A key aspect of this is that they have a control architecture allowing them to use any electric vehicle battery.

They have systems installed in the UK, Europe and USA. They are now in scale-up mode, having already developed the technology and tested the business model. Developing their system has been a key focus over the past five years. As electric vehicle uptake increases and demand for storage increases due to increasing renewable generation, the market potential of their technology is expected to grow. As the systems are deployed, unique datasets around battery usage profiles and optimization of battery usage will become available.



Key barriers for the development of the company are around the market environment and regulation, including Ofgem regulations and charging strategies of electricity Distribution Network Operators, as well as rules around the recycling of batteries.

b. PP strategy or regulations & support for SMEs

They pointed to Innovate UK as a particularly beneficial source of support for the company. This was given as an example of public support for innovative renewable energy solutions being done well, whereas other financial incentives, while sometimes beneficial, can also be badly implemented and badly withdrawn. In their view there is also a gap in the UK for an organization to support startups to help them to scale up.

Public procurement is also a means by which the company could be supported, and the company is currently on a public procurement framework. They are not aware of frameworks being actively designed to support renewable energy systems; however public authority frameworks do appear to be increasingly moving towards having low carbon policies. The company also has an existing project with the local City Council, in which Connected Energy's system has been installed alongside the EV chargers and PV canopies.

Barriers & Drivers

In the interview, UK-SME-1 identified following key barriers for the company. These were not primarily around barriers to public procurement; rather they are around the market environment and regulation, including Ofgem regulations and charging strategies of electricity Distribution Network Operators, as well as rules around the recycling of batteries.

Summary & Discussions

UK-SME-1 are a clear example of an innovative SME working in the renewable energy space, and their collaboration with public authorities to date, for example their project with the City Council, illustrates the value of public procurement for supporting such innovative SMEs. However, there are also a broad range of other factors and barriers to consider, including market and regulatory barriers.

4.10.2 Case 2 in UK

This case is based on an interview with a representative from a SME in UK (UK-SME-2). This company is a UK based manufacturer SME specialized in ground source heat pump - GSHPs, with a vast experience in shared ground loops and 5th generation district heating, for social housing and private new buildings, being a manufacturing since 1999. Beyond manufacturing heat pumps, UK-SME-2 works with many installers, specifiers and housing providers across the UK. The current organizational strategies (overall goals, practices) of this firm are relevant for the XPRESS project. The strategy is based on low-carbon heating. The idea is to improve the



acceptance of shared ground loop systems in social housing across the UK, e.g. energy retrofitting of tower blocks (improving energy efficiency of gas or electric heating systems).

Analysis of current situation

a. Sustainability strategies, energy related strategies

As current sustainable strategies, the firm uses a Fifth Generation District Heating and cooling network as a thermal energy supply grid, which circulates low-grade heat sourced from the ground, the air or waste heat processes, around a network of pipes to heat pumps. This strategy will allow installing 5th Fifth Generation District Heating low temperature systems for schools and social housing. This is more evident for Scotland, with a high penetration of renewables, where UK-SME-2 products offer very efficient solutions based on ambient temperature loops, mitigating heat loss and providing a robust sustainable system long life for delivering zero-carbon heating in housing.

The current energy-related strategies and goals are based on low-carbon heating as part of a wider energy system. The firm will be involved in projects as cold energy approaches and electrification of transport using storage of renewable electricity allowing optimization and flexibility. With this strategy in mind in the municipalities, the firm will be involved in innovation local energy.

b. PP strategy or regulations & support for SMEs

Regarding strategies from municipalities on regulations and support schemes applied to SMEs, the reduction of costs seems an important variable to consider. Concerning municipalities having an established strategy for dialogue with suppliers in the pre-tender phase, the firm is aware that local authorities invite solution providers to present a product or solution for something regarding low carbon.

c. PP & supplier engagement

Normally the local authorities ask for a 20 minutes presentation, after a public announcement. During the pre-tender, the public authorities are much more engaged if they have in-house expertise. Otherwise, it is hard to engage and explain the products/solutions to public authorities. After the contract award – sometimes can also be difficult. However, in this phase, it is just contracting, negotiations around what is offered and not offered by the firm, and after some years of experience the firm improved the process making it more clearly on scope.

Barriers & Drivers

- As main constraints/barriers for the development of the firm, the Public Procurement is seen as one of the most important. Local authorities avoid having contact with private companies because of the public procurement regulations in order to not show that are favoring certain firms.



- In addition, some local authorities do not have energy expertise in house and so need to rely on expensive consultants.
- Moreover, there should be a better scoring system around efficiency, about low-carbon savings, life cycle sustainability.
- As drivers of success, marketing and information (being known in the industry), and having case studies of previous projects to point to. So good examples and case studies of success in different geographies/close to local authorities are important. Moreover, disseminating information clearly is also important.
- Finally, writing tenders and knowing all the details as well as having experience, learning as you go, is also an important driver for success. As possible solutions, the criteria of the scoring systems should be improved.
- In addition, the planning process: Bronze, Silver, Gold banding in Scotland - immediate get a Gold Standard if the client installs their solution (because it saves a large amount of CO₂), whereas if the client used ASHP gets only Bronze Standard (and needs to install additional products to get the Gold Standard as well). Therefore, procurement should be around life cycle costs and life cycle carbon costs.

4.10.3 Case 3 in UK

This case is based on an interview with a city Councilor in UK to learn about their practices around public procurement of renewable energy solutions. The council has a range of targets and measures in place to support and procure renewable energy.

The key themes of this case were the council's work through and support of other organizations to bring about procurement of renewable energy solutions, as well as the importance of zero carbon within the strategies of the council (including procurement strategies), and the activities of the council to encourage local businesses, particularly SMEs, to bid for council contracts, overcoming any potential barriers that could be faced by SMEs with limited resources to put towards understanding council procurement rules.

Analysis of the current situation

a. Sustainability strategies, energy related strategies

The City Council has targets in place for reductions in carbon emissions, to ensure that the council (representing 1% of the city's economy) is net zero by 2030, and that the city more broadly is net zero by 2050. They are keen to work with local suppliers in particular (50% of suppliers are local), and a large proportion of these are SMEs. The XPRESS team observes that this appears to be one of the more progressive councils in the UK, with high ambitions for achieving reductions in carbon emissions and some good approaches in place to encourage deployment of renewable energy solutions.

The city has a community organization which the council works with, and puts money and resources into, usually through loans. This organization installs and manages renewable energy generation projects alongside businesses, schools, and communities all over the region, as well



as supporting communities with energy efficiency projects. It represents a key means by which the council seeks to encourage deployment of renewable energy solutions.

In terms of the council's approach to sustainable energy procurement, while the council does not have dedicated sustainable procurement strategy, green energy is a key factor across all of their strategies, including procurement. The council's requirements and critical success factors around procurement capture their zero carbon aims.

b. PP strategy or regulations

The council aims to keep a lot of work in-house. Due to competition rules, they have had to set up a company to do this. This is about general council services, such as council housing maintenance, maintaining streets, recycling waste, providing MOTs, etc. They don't have a dedicated sustainable procurement strategy; rather green energy is a key factor across all of their strategies, including procurement. The council's requirements and critical success factors around procurement capture their zero carbon aims.

c. PP & SME

There are good practices in place to encourage SMEs to supply to the council and to boost SME suppliers' engagement with the council. They are keen to work with local suppliers in particular (50% of suppliers are local), and a large proportion of these are SMEs. For example, council officers will go out and talk to local companies or run events. This is so that the SMEs can understand what the requirements are if they want to supply to the council, to save everyone time. It's also important to do this since SMEs are less likely (compared to large businesses) to have the resources to work out what they need to do to supply to councils. The balance between small and large suppliers bidding for council projects will depend on the project size. Large suppliers are unlikely to bid for small projects.

Furthermore, it was excellent to hear about the ways that the council encourages local SMEs to supply to the council, to help overcome the barriers to public procurement that innovative SMEs can face, particularly around reduced capacity relative to larger companies, which can have resources dedicated to understanding local authority procurement processes.

The practices of the City Council thus provide some highly beneficial learning into ways that public authorities can promote public procurement from SMEs, particularly in the context of innovative renewable energy solutions - the key focus of the XPRESS project.

As mentioned by the City Councilor, *"We have campaigns to get more people to offer their services and supply to the city council. We have officers who go out and talk to small companies and say, 'This is what we want, we want to get low carbon technology, we want local suppliers.'"*



Summary and Discussions

The council's requirements and critical success factors around procurement capture their zero carbon aims, as well as factors such as the Oxford Living Wage. These strategies for engaging local SMEs allow the SMEs to understand what the requirements are if they want to supply to the council, increasing SME engagement with the council and driving increasing SME participation in public procurement, while avoiding time being wasted in the procurement process for SMEs not appropriately meeting the criteria of the procurement process.



5. Summary of the findings

The findings from all the case studies are summarized to answer the four research questions, and in this chapter, each of the research questions will be discussed based also taking into account the literature review:

1. How municipalities/regions are applying innovative green public procurement to achieve RES related objectives?
2. To what extent SMEs are engaged in green public procurement?
3. What are the drivers and barriers to green public procurement as perceived by both suppliers and purchasers?
4. What are the critical success factors and barriers perceived by local authorities and SMEs on involving SME in public procurement?

5.1 How municipalities/regions are applying innovative green public procurement to achieve RES related objectives?

The results are summarized in the following table. The findings show that most municipalities are planning to achieve RES related objectives and some of them have performed green public procurement. However, many SMEs believe that they have not been well-informed and they are not aware of the possible support provided by the municipalities. In most cases, this supports is not easily accessible and is not adequate. There is a clear mismatch between the objectives of the municipalities and the perception of the SMEs.

For most PAs, minimising the price of the contracts resulting from GPP is still the key criterion, or in some cases the only criterion. In some municipalities, such as in the interviewed municipalities in Norway and Sweden, performing green purchases with an emphasis on environmental criteria in their procurements is already common practice. In terms of the pre-tender dialogue with the potential suppliers, some municipalities have already included this aspect in their procurement (Denmark, Norway, Slovakia), some other municipalities are aware of the benefits of pre-tender dialogue and have plan to practice it, but some municipalities are not planning to conduct any dialogue because of the legal barriers.

COUNTRY	CASE	HOW MUNICIPALITIES/REGIONS ARE APPLYING INNOVATIVE GREEN PUBLIC PROCUREMENT TO ACHIEVE RES RELATED OBJECTIVES?
BELGIUM	Case 1	Mainly indirect support for innovative SMEs, but SMEs are very satisfied with the level of support they receive from public sector. PAs are planing to buy renewables. There are established public policies as well as strategies for SME engagement. PAs promote pre-tender engagement and often invite SMEs to dialogue with them before tenders.
	Case 2	Difficult to find public support, subsidies to renewables are disappearing
DENMARK	Case 1	Municipality 1 has a property strategy which aims to work with sustainability and promote energy savings. Municipality 2 aims to have



GERMANY		100% renewable energy supply of heat and electricity by 2035. Neither municipality 1 or 2 has a strategy or policy for the procurement of RES.
	Case 2	The support from public funding is not easily accessible and is not adequate. SME 1 is dissatisfied with the level of public support, mostly due to the legislation. SME 1 has participated in pre-tender meetings with PAs.
	Case 1	The municipality has a clear climate protection plan and several support programmes. The procurement of the energy sources is in charged by the specialist service.
ITALY	Case 2	The municipality aims to become climate-neutral by 2035 and to switch completely to renewable energies by then. They are conservative in their tendering approach, i.e. limited tendering depending on the contract value.
	Case 1	The bureaucratic procedures and schedule is the main obstacle for SMEs in national tenders.
	Case 2	The Provincial Council decided to implement the Green Procurement policy in 2008, and there is no dialogue with suppliers in place.
	Case 3	The City Council is focusing on the efficiency of public lighting and heating systems. The municipality does not have a general policy on sustainable procurement, it complies with current legislation and there is no awareness that procurement could be an instrument to promote sustainable development.
NORWAY	Case 4	The municipality has different environment-related activities. The municipality is inserting CAM (Minimum Environmental Criteria) in the tender specifications. There is no strategy for dialogue with suppliers in the pre-tender phase.
	Case 1	The PA commits itself to contribute to such a transition by minimizing the environmental footprint. The PA takes part to the national program for supplier development (LUP). The program aims to help public authorities to create innovation through their public procurement and provides training and support in the implementation of such projects.
PORTUGAL	Case 2	The small municipality had an early strategic anchoring for the use of bioenergy, but not for solar energy. The municipal enterprises plan to reduce their energy consumption by 17% for all the schools in their municipality by 2020. Both PAs focus on making green purchases and emphasize environmental criteria in their procurements.
	Case 1	There is a national criterion for energy contracting, which is not mandatory for municipalities, but is mandatory for public national organizations.
SLOVAKIA	Case 2	This city was the first municipality in Portugal to locally apply the sustainable development policy. The procurement decision is still based on the lowest price. The level of supplier engagement is very low, due to the limitations established by law.
	Case 1	The city focuses on energy saving and improving energy efficiency. In the awarding stage, it is only the price that is relevant.
	Case 2	The city focuses on energy management and energy savings. Pre-tender consultation is implemented by law in Slovakia (in cases when the cities



		procure larger projects) but has not been used by them so far because there is no need to do so in their regular procurement business.
SPAIN	Case 3	The authorities are preparing currently a new concept of smart principles in the regional development. It is related to energy, environment, and circular economy. There is interest to start using new assessment criteria; however, currently the only criterion adopted for tenders is the minimum price. They have used the strategy of dialogue with suppliers in the pre-tender phase already twice.
	Case 1	The respondent SME only works with its own financial and technical resources and expertise
	Case 2	The interviewed public company has no specific municipal strategies or goals regarding sustainability. 95% of cases are open procedures with price as main evaluation criterion. The municipality has an open communication channel for bidders.
SWEDEN	Case 3	The respondent SME mentioned that there could be more support in the development of projects at the energy level.
	Case 1	The interviewed SME is unaware of the benefits of public procurement.
	Case 2	The SME mentioned that the public support is limited.
	Case 3	This municipality has fossil fuel free transport and its environmental strategies focus on sustainable energy. During 2019, the municipality had a project on sustainable procurement which resulted in a new policy and guidelines for sustainable procurement. They actively engage with suppliers through different means.
UNITED KINGDOM	Case 4	The university has no sustainability or energy related strategies, nor quantitative objectives. Economic considerations are important in tenders. They usually do not set specific requirements for environment because they generate higher costs.
	Case 1	Innovate UK as a particularly beneficial source of support for the company, but the company is not aware of frameworks being actively designed to support renewable energy systems. The firm is aware that local authorities invite solution providers to present products that are in line with the government objectives on lowering carbon emissions.
	Case 2	The firm is aware that local authorities invite solution providers to present products that are in line with the government objectives on lowering carbon emissions.
	Case 3	The City Council has targets in place for reductions in carbon emissions, to ensure that the council (representing 1% of the city's economy) has net zero carbon emissions by 2030, and that the city more broadly has net zero carbon emissions by 2050. They don't have a dedicated sustainable procurement strategy; rather green energy is a key factor across all of their strategies, including procurement.

5.2 To what extent SMEs are engaged in green public procurement in the cases?



SMEs bring both economic and social benefits to society, and they play an important role in stimulating the development and introduction of RES. They can deliver a wide range of innovative products and service to the procuring organizations. However, sometimes these benefits are not well translated into the authorities' policy incentives.

Based on our interviews, we find that a large number of PAs have SMEs as their suppliers, regardless of any specific strategy for SME involvement. The PAs do not favor either SMEs or larger firms but they conduct their procurements on the basis of their evaluation criteria. Therefore, SMEs could win public tenders if they can provide better offers than larger firms. In some case, SMEs have more opportunities if the PAs favor the local suppliers. This is for example the case for Denmark where municipalities have been organised into procurement districts, and SMEs can only bid in one district to ensure that more companies have the opportunity to work for the municipalities. A similar approach can be found in Slovakia. However, we also find that PAs often require a minimum volume of income that is very high for SMEs. In these cases, only larger companies are able to apply for the tender.

COUNTRY CASE TO WHAT EXTENT SMES ARE ENGAGED IN GREEN PUBLIC PROCUREMENT IN THE CASES?

BELGIUM	Case 1	This consultancy SME has worked as a bridge between SMEs and PAs, it provides energy management for PAs. There are established policies as well as strategies for SME engagement in PP. PAs promote pre-tender engagement and often invite SMEs to a dialogue before tenders.
	Case 2	This SME works as a consultant for SMEs who want to participate to public procurement with renewables. They also help PAs in designing tenders.
DENMARK	Case 1	The two municipalities do not have an established strategy for SME engagement. To ensure that more companies have the opportunity to work with the PAs, the municipalities in Denmark have been organised into procurement districts, and SMEs can only bid in one district.
	Case 2	SME 1 has participated in pre-tender meetings with PAs, and they win around 50 percent of their bids. SME 2 has good experience in working together with municipal-cooperative district heating companies. SME 3 has, through a tender process, selected a framework agreement with a municipality.
GERMANY	Case 1	Smaller enterprises or enterprises without much experience stay away from tendering portals.
	Case 2	The lack of SME participation is not a problem in the municipal procurement.
ITALY	Case 1	SME-ITA-1's entire business and revenue is based on funds obtained through tenders; The ITA-SME-2 was founded with the intention of providing green services in the energy sector.
	Case 2	Related to a strategy for more SME engagement in public procurement the city has established a list in the "Albo Lavori Pubblici" section of the Tender Portal where qualified economic operators can register.



NORWAY	Case 3	Related to public procurement and SMEs, most of the calls published by the municipality are awarded to SMEs.
	Case 4	SMEs usually cover 90 percent of services of the administration. In tenders open to subjects of all sizes, the municipality is not of interest for large companies.
	Case 1	The university does not have a focus or strategy related to SMEs, other than the scheme where the suppliers must answer whether they are SME or not.
PORTUGAL	Case 2	Neither of the PAs has a strategy for supporting SMEs (other than for framework agreements) in public procurement. However, SMEs has been among the winners of tenders.
	Case 1	Por-PA-1 tries to involve all the interested parts: suppliers, purchasers and even academia. The actors are represented by associations, so SMEs are also included this way. This participation is not exclusively to SMEs representatives, but to all types of private actors.
SLOVAKIA	Case 2	Although, there is no strategies to engage with SMEs, innovation usually stem from SMEs, so it is interesting.
	Case 1	The company actively participates in tenders and is successful there; they think that Slovak municipalities have started to prefer smaller local companies when tendering services.
	Case 2	The municipality has no established strategy for more SME engagement in public procurement as the procurement code does not allow preferring one company size in particular.
SPAIN	Case 3	The method to involve SMEs is to advise public entities which procure volumes below 50000 Euros to consider local suppliers so that the local SMEs have good access to all the smaller procurements. The interview partner's department manages only larger procurements, but they try to split the delivery into smaller parts in order to allow SMEs to participate without the necessity to join a consortium. In that way, they try to make the procurement SME-friendly.
	Case 1	As the tender bid the Public Authorities require a minimum volume of income, which is very high for SMEs, therefore only large companies are able to apply for the tender.
	Case 2	The PA conducts several actions to promote SMEs participation but they do not intend to prioritize SMEs over large firms.
SWEDEN	Case 3	The SME has good relationship with municipalities.
	Case 1	This SME has participated in tenders but has not won any tender yet.
	Case 2	The SME mentioned that they are facing barriers to participate in public procurement.
UNITED KINGDOM	Case 3	The municipality has a goal that they should develop the local companies.
	Case 4	This PA often wants small and local suppliers. Maybe it is really the local suppliers they want to use for convenience reasons. The PA has a lot of suppliers that are SMEs.
UNITED KINGDOM	Case 1	The SME is a supplier for energy system in the city.
	Case 2	This SME provides service for the local municipality.



Case 3 There are good practices in place to encourage SMEs to supply to the council and to boost SME suppliers' engagement with the council. They are keen to work with local suppliers in particular (50% of suppliers are local), and a large proportion of these are SMEs.

5.3 What are the drivers and barriers to green public procurement as perceived by both suppliers and purchasers?

Many factors are identified as drivers and barriers to green public procurement.

1. As already discussed in the literature review, political will at both the national and local level can be a critical driver for GPP. Case studies in Denmark, Germany, Portugal, Slovakia, Spain, Sweden and UK show that public support, ambition to achieve sustainability, political support, and intention to apply green criteria in public procurement are drivers for GPP. GPP requires commitment, expertise, and political and financial support. However, the lack of a specific strategy or policy for the procurement of RES is a major barrier for GPP. As mentioned by one of the respondents, when there is no awareness that procurement could be an instrument to promote sustainable development.

2. The interaction among different actors can facilitate the cooperation between the procurers and suppliers. The pre-tender dialogue among PAs and suppliers is an effective platform for them to exchange information and knowledge. PAs learn about possible innovative solutions offered by suppliers and the suppliers can access information about upcoming tenders. However, in some cases, the level of supplier engagement is very low because of the legal restrictions in place.

3. Only some PAs know that GPP could be an effective instrument to promote sustainable development.

4. Some small municipalities have limited purchase power and capacity, and they rely on the central purchasing contract organized by the central procurement department. Therefore, they are less motivated to implement GPP.

5. To conclude, there are also many other barriers identified in the case studies. For example, many PAs are sensitive to price and the financial constraints for many municipalities can be a major barrier to GPP because many of the green solutions are expensive. From the supply side, the limited number of suppliers of green solutions make it difficult for PAs to choose green solutions. From a legal perspective, public procurement is limited by the procedures established by law and the main GPP criterion is often based on lowest price of the winning bid.

COUNTRY	CASE	WHAT ARE THE DRIVERS AND BARRIERS TO GREEN PUBLIC PROCUREMENT AS PERCEIVED BY BOTH SUPPLIERS AND PURCHASERS?
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BELGIUM	Case 1	Drivers: LCA is becoming more and more important in tenders; established policy and strategy to procure RES Barriers: hard to find right expertise in the market;
	Case 2	Barriers: lack of human resources, legal issues, marketing issues, supply or distribution issues, “stop-and-go-policies” (overnight development and disappearance in a short period of time)
DENMARK	Case 1	Drivers: the municipalities have the objective to achieve sustainable goals. Barriers: there is no strategy or policy for the procurement of RES; changing rules.
	Case 2	Drivers: legislation; Barriers: changing rules and legislation with less support for PV;
GERMANY	Case 1	Drivers: increasing demand for green electricity; Barriers: shortage of supplier firms for “green” electricity is a problem
	Case 2	Drivers: PAs should take the initiatives; political support; acceptance of measures to switch to RES by the citizens; appropriate human resources in the administration; joining networks and learning from others Barriers: thin markets, that is, only a few suppliers exist; PAs have the objective, but not starting with the implementation; PAs are conservative in their tendering approach
ITALY	Case 3	Barriers: there is no awareness that procurement could be an instrument to promote sustainable development; lacking attempt from the political leadership to create some understanding for the decisions; lack of mutual understanding between the technical staffs and politicians.
	Case 4	Drivers: the municipality is inserting CAM (Minimum Environmental Criteria) in the tender specifications; PAs collaborate with other municipality on environmental issues. Barriers: conventional procurement procedures
NORWAY	Case 1	Drivers: lower price of green energy; climate; increased focus on the green shift; an increased focus on environment and ethics
	Case 2	Drivers: using dialogue, use idea competition to create innovative solutions and involve SMEs; have a strategic plan; financial support Barriers: it requires commitment, expertise, and political/ financial support; difficult to practice in procurement
PORTUGAL	Case 1	Drivers: a national criterion for energy contracting
	Case 2	Drivers: the sustainable issues are mostly included as requirements. Barriers: public procurement is limited by the procedures established by law, so the decision will ultimately be based on the lowest price if the subjective criteria are correctly addressed. The level of supplier engagement is very low, due to the limitations established by law.
SLOVAKIA	Case 1	Drivers: high awareness of saving energy; financial support. Barriers: price is the only criteria that counts (Municipalities care about energy savings though)



SPAIN	Case 2	Drivers: objective to reduce the energy consumption; intention to apply green criteria in all procurements Barriers: no defined strategy for sustainable or green procurement
	Case 3	Drivers: previous experience with market dialogue. Barriers: the only criterion used for a tender so far is the price; do not have the capacities to calculate the life cycle costs; lack of a general strategy for public procurement in this district
	Case 1	Barriers: green PP and social PP is perceived as more expensive than regular PP; strategic plans are usually shortsighted or do not properly cover the different sustainable requirements that different sectors might have.
	Case 2	Drivers: including 100% green energy as mandatory requirement
	Case 3	Drivers: a change in the perception of renewable energies vis-à-vis conventional models; work with renewable energy network. Barriers: most of the contracts in small-medium size municipality is administrated by central purchasing office; it is difficult for small municipalities to draw up coherent, reliable and efficient technical specifications; low purchasing power for small municipalities; inefficient digitalization.
SWEDEN	Case 1	Drivers: procurements which quality; higher weights on environmental criteria; Barriers: high competition over the price
	Case 2	Barriers: lack of long-term directions; lack of sustainability-friendly products
	Case 3	Drivers: policy and guidelines for sustainable procurement; political agenda decides by politicians and policy makers; marketing activities; pre-tender dialogue; long-term purchasing plan; regular communication with suppliers about trends; publish a lot of Prior Information Notice; transparent about pre-information Barriers: lack of knowledge; overwhelmed because of bureaucratic language
	Case 4	Drivers: purchaser's personal preference towards sustainability projects Barriers: lack of sustainability or energy related strategies; lack of overall PP strategy; short of manpower; economic consideration over environmental;
UNITED KINGDOM	Case 1	Drivers: public support for innovative renewable energy solutions; public authority frameworks being increasingly moving towards having low carbon policies Barriers: market environment and regulation; PP frameworks not being actively designed to support renewable energy systems;
	Case 2	Drivers: procurement based on life cycle costs and life cycle carbon costs; local authorities invite solution providers to present a product or solution for low carbon
	Case 3	Drivers: high ambitions for achieving reductions in carbon emissions; good approaches in place to encourage deployment of renewable



energy solutions; The council's requirements and critical success factors around procurement capture their zero carbon aims;
Barriers: lack of a dedicated sustainable procurement strategy;

5.4 What are the the critical success factors and barriers perceived by local authorities and SMEs on involving SME in public procurement?

Based on the case studies, we find many critical success factors and barriers perceived by local authorities and SMEs on involving SME in public procurement.

1. Public procurement process can be frustrating for SMEs. Confusing and complicated requirement, restrictive financial criteria, tenders published with short notice, and outdated requirement make SMEs reluctant to participate in public tenders. Because of the complexity of the procurement, some SMEs perceive PP as a black box. Therefore, it is key simplifying the PP process and providing clear written information.
2. SME-friendly public procurement policies and strategies are critical for SMEs participation in public procurement. Many PAs are unaware of the benefits of SME engagement in PP, and there is a lack of public support for SMEs. Public policies and strategies that are short-term oriented and lack of long term consistency are a major barrier for the SMEs as they do not have enough resources and time to keep track of procurement policies. For example, some municipalities require that participants to public tenders have a certain amount of equity: this is a barrier against SME participation. Furthermore, requirements such as environmental certification from a third party can be a barrier for SMEs. However, as some PAs focus on local suppliers, this creates more opportunities for local SMEs.
3. The visibility of SMEs and communication between SMEs and PAs are critical factors for SME engagement in PP. Market dialogue between SMEs and PAs can increase the visibility of SMEs, and increase their interest to participate. For SMEs, participating in teams and join a network or a cooperative to share information can be very beneficial.
4. Some other barriers are digitalization (some SMEs do not have enough ICT knowledge to participate to online bids), lack of knowledge and expertise on PP, and their own management problems in a cooperatively owned company.

COUNTRY	CASE	WHAT ARE THE CRITICAL SUCCESS FACTORS AND BARRIERS PERCEIVED BY LOCAL AUTHORITIES AND SMES ON INVOLVING SME IN PUBLIC PROCUREMENT?
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BELGIUM	Case 1	Drivers: stablished policies as well as strategies at public authorities for SME engagement; it is not hard to find financial support in terms of funds and loans to finance projects; technical expertise of SME; SME's marketing activities
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DENMARK	Case 2	Barriers: it is tiring and resource consuming because of the “stop-and-go-policies”; PP in Belgium is confusing and complicated; payments are late, and SME needs to have own financial resources to begin with; administrative issues.
	Case 1	Barriers: the informant from municipality 1 does not perceive any potential barriers for SMEs to participate in public purchases. While the informant from municipality 2 assumes that potential barriers for SMEs to participate in public purchases is due to lack of capacity and that the most problematic phase in the interaction is before the tender; large size of the tender.
	Case 2	Drivers: market dialogue and participating in teams Barriers: the process of PP is quite resource demanding; it is difficult to use time and resources to develop a bid for a public tender when they have ordinary private customers they need to maintain; For a SME, it can be difficult to meet financial criteria; tenders are often published with short notice, making it difficult to discover and develop a bid; the municipalities are not willing or able to change requirements when they are not good, e.g. outdated; difficult for SMEs to be visible to the procurers; lack of financial resource;
GERMANY	Case 1	Drivers: the flexibility of SMEs is an advantage; cooperation is considered be the key factor for success; Suppliers taking initiative themselves. Barriers: SMEs must be ready to fulfill the formalities. Many SMEs consider the procedure a black box; long contract duration and many delivery points.
	Case 2	Drivers: SMEs are more flexible to deliver specific equipment which the big suppliers deny delivering; joining networks and learning from others Barriers: SME involvement is in the focus of municipal procurement but, because of the thin markets, often SMEs are only present via local subsidiaries of large vehicle producer companies; financial barriers; PAs have the objective, but not starting with the implementation
ITALY	Case 1	Drivers: Administration should engage in a dialogue with the companies as well as improving and simplifying tenders: Financial initiatives should be increased to promote the development of renewables and the enhancement of their related products. Barriers: the bureaucratic procedures and schedule; applying for national or public tenders often results in delays and lack of funds; the projects drafts are confusing and do not give clear direction; small companies do not have the capacity to cope with the expenses needed to partake in the long-term deadline of tenders; ignorant/unknowing interlocutor and delays in the draft of tenders or in their output; public tenders’ lack of visibility has to be addressed by the administrations in order to increase SMEs’ participation in PP.
	Case 2	Drivers: Success factors for SMEs to be suppliers of the municipality, wherever possible, are procedures through direct award or inviting a



	<p>defined number of suppliers that streamlines the procedure and SMEs have a better chance of success.</p> <p>Barriers: Potential barriers for SMEs to participate in public purchases are the administrative burdens linked to the preparation of the bid and the "oversize" lots of the tenders. In addition, a long duration of contracts reduces competition.</p>
	<p>Case 3 Drivers: The presence on the territory helps for a better organization of the work; not subcontract to third parties</p> <p>Barriers: The PA thinks there are not particular barriers identified for SME.</p>
	<p>Case 4 Barriers: The interviewee perceives that there are no barriers for SMEs to be suppliers of the municipality, as SMEs usually cover 90 percent of services of the administration.</p>
NORWAY	<p>Case 1 Drivers:</p> <ul style="list-style-type: none"> • earmarked funds for RES • simplification of the process • market engagement activities • assistance regarding the formal qualification • incentives • remove criteria such as the need for having 10 MNOK in equity • dialogue <p>Barriers:</p> <p>Financial barriers</p> <ul style="list-style-type: none"> • Responsible for the cost and risk of importing products • New companies can be rejected because they are not considered financially solid enough. Require 3-years account with a profit. • SMEs cannot invest in a lawyer that handles the formal requirements • Providing the documentation, such as annual reports, credit account, certifications, etc., is expensive <p>The PP process</p> <ul style="list-style-type: none"> • The process is too controlled, and they receive it as difficult and demanding • PAs are too focused on meeting the criteria, and not on the overall goal of finding a solution that is both financially and sustainable good. • Required experience or knowledge of the process to participate <p>Certifications (potential barrier)</p> <ul style="list-style-type: none"> • Expensive for SMEs if the PA starts to require certifications such as ISO <p>Knowledge</p> <ul style="list-style-type: none"> • Not all SMEs understand what the PAs ask for, and many do not have enough knowledge about the process



PORTUGAL	Case 2	<p>Drivers: using dialogue, use idea competition to create innovative solutions and involve SMEs</p> <p>Barriers: first, PA requires a wide range of documentation regarding financial requirements, social dumping, environmental requirements, and so on. Second, the municipal enterprise would in the future like to require that their suppliers have an environmental certification from a third party, which can be a new barrier for SMEs.</p>
	Case 1	<p>Drivers: the innovation that SMEs might offer, the reduce of bureaucratic requirements might impact positively SMEs</p> <p>Barriers: high volume of paperwork, a low level of digitalization</p>
SLOVAKIA	Case 2	<p>Barriers: low bidding barrier, but this is mandate by current regulation. Digitalization is also identified as a barrier. Also, the Impossibility to engage in conversation with private companies as this could be an impediment for a transparent procurement process.</p>
	Case 1	<p>Drivers: pre-tender dialogue is very much welcome; Slovak municipalities have started to prefer smaller local companies when tendering services; consortia building of several SMEs is considered beneficial; Sharing international experiences on public procurement in the RES area and visits to other municipalities is considered beneficial.</p> <p>Barriers: hard competition; frequent cancellation of tenders; badly prepared procurement documents; insufficient financial support from banks; Size of the tender can be a problem for SMEs.</p>
	Case 2	<p>Drivers: cooperation with some other suppliers or having a person who can give this technical expertise to the SME; reduction of the number of different documents which needs to be prepared would be most beneficial for SMEs (no such a large and detailed documentation than currently required); cost efficiency to be able to offer a good price for this service; competence to use the electronic Marketplace; more stable legislation related to public procurement so that suppliers do not have to adjust frequently.</p> <p>Barriers: company does not have the proper technical infrastructure, like machines, which they need for the procurement; a very long process of the procurement and not so deep knowledge about the legislation and the process of the public procurement; the electronic communication is not only an advantage but can also be a barrier because companies may not have such an equipment and, thus, are unable to communicate in an electronic way; SMEs may also have a capacity problem because the owner often has no time to prepare the tender offer, and they also lack the employees with appropriate knowledge.</p>
	Case 3	<p>Drivers: company needs to have low costs in order to be able to offer a low price; new technology which allows cost savings is beneficial.</p> <p>Barriers: the procurement is often very complex; electronic usage or the electronic way of procurement are a big barrier for small companies; the conditions for the participation are so strict that the smaller companies are not able to fulfill the condition for the</p>



		participation; bad experience with previous participation and discouragement
SPAIN	Case 1	<p>Drivers: PA lowering the financial and warranty requirements to improve the chances of SMEs offering service/products; communication with SMEs.</p> <p>Barriers: low level of digitalization</p>
	Case 2	<p>Drivers: PA is lowering the financial and warranty requirements to improve the chances of SMEs offering service/products; the PA has a mailing list to inform SMEs about what an SME might do to improve their digitalization; there is close collaboration with local SMEs to guarantee tenders will be successfully awarded. This is caused by the limited market available on the island: number of suppliers is limited (compare to the national market) and most of them are SMEs; this PA helps local SMEs with formation activities about the online tender platform, search by CPV, the national supplier's registry, etc.; the volume of services/products requested is adequate for SMEs.</p> <p>Barriers: the low level of digitalization.</p>
	Case 3	<p>Drivers: The benefit the SME can obtain through the visibility when winning PA tenders; the SME can offer better customer service through their proximity to the client.</p> <p>Barriers: PAs require a minimum volume of income, which is very high for SMEs; the requirement of several customer service local points, SME cannot be compliant due to the limited personnel and financial resources; the different Public Authorities have different criteria for the same service; many of SMEs lack ICT knowledge, they do not have at their disposal digital certificate to participate in online bids; many documentations requested that could be obtained by the PA from public sources; the process is very slow due to incongruences between bid documents and sometimes paper work; the process is very slow due to incongruences between bid documents and sometimes paper work.</p>
SWEDEN	Case 1	<p>Drivers: establishing relationship with PAs; proactive in the pre-tender phase</p> <p>Barriers: high competition over the price; lack of support from PAs; limited supply during pandemics which also affects environmental issues and the total costs; certification</p>
	Case 2	<p>Drivers: if PAs could pay for and get the expertise beforehand, so the supplier can build the business model accordingly.</p> <p>Barriers: financial constraints due to a tough market situation; management problems in a cooperatively owned company; different levels of business and sustainability knowledge in the cooperative; lacking infrastructure for fuel; different municipalities have completely different demands; lack of expertise of PAs</p>
	Case 3	<p>Drivers: participate in tender schools and supplier meetings; regular check with suppliers; actively engage with suppliers through different means; long-term purchasing plan; publish a lot of Prior Information Notice; transparent about pre-information; Procurers are very creative, innovative, and teamwork oriented.</p>



UNITED KINGDOM		Barriers: suppliers being overwhelmed because of bureaucratic language
	Case 4	Drivers: small procurements sizes help SMEs to participate in tenders; Barriers: A lot of procurements are set with un-proportional requirements that can be a barrier for SMEs; travel costs must be included in the tender; lack of managerial support for procurement, it depends on the personal interest from the person that is procuring
	Case 1	Drivers: public support for innovative renewable energy solutions; Barriers: market and regulatory barriers
	Case 2	Drivers: marketing and information (being known in the industry); previous experience; writing tenders and knowing all the details; learning by doing; procurement based on life cycle costs and life cycle carbon costs; established strategy for dialogue with suppliers in the pre-tender phase Barriers: local authorities avoid having contact with private companies because of the public procurement regulations in order to not show that are favoring certain firms; some local authorities do not have energy expertise in house and so need to rely on expensive consultants; there should be a better scoring system around efficiency, about low-carbon savings, life cycle sustainability.
	Case 3	Drivers: PA is keen to work with local suppliers; good practices in place to encourage SMEs to supply to the council and to boost SME suppliers' engagement; council officers go out and talk to local companies or run events; small size procurement projects are not attractive to large firms; Barriers: large size procurement project;



In summary, this report is based on a literature review of state-of-art studies on green public procurement (GPP) and SME engagement in public procurement, and it has shed light on a range of critical drivers and barriers to invest in innovative RES and SME engagement in PP based on the 27 comprehensive case studies in ten European countries.

Our findings show that most municipalities have a clear plan to achieve RES related objectives, and some of them have performed green public procurement. However, many SMEs perceive that they are not well-informed or are not aware of any relevant public support in PP. In some cases the available support is not easily accessible or adequate. There is a clear mismatch between the objectives of the municipalities and the perception of the SMEs.

For most PAs, minimizing the price of GPP related contracts is still the key criterion, or in some cases the only criterion, for public procurement. In the municipalities interviewed in Norway and Sweden, making green purchases and emphasizing environmental criteria in their procurements is already a common practice. In terms of pre-tender dialogue with potential suppliers, some municipalities have already included this step in their procurement (Norway, Slovakia). Some

municipalities are aware of the benefits of the pre-tender dialogue and have planned to implement it, but some others cannot perform such dialogue because of legal restrictions.

Based on our interviews, we find that a large number of PAs have SMEs as suppliers, regardless of any specific strategy on SME involvement. PAs do not favor either SMEs or larger firms as they conduct public procurement on the basis of their evaluation criteria. Therefore, SMEs could win the tender if they provide better offers than large firms. In some case, SMEs have more opportunities if the PAs favor local suppliers. This is the case for Denmark where municipalities have been organised in procurement districts and SMEs can only bid in one district. This rule ensures that more companies have the opportunity to work for the municipality. A similar approach can be found in Slovakia. However, we also find that some PAs require a minimum level of income for PP participants. This level is often too high for SMEs therefore, in some cases, only large companies are able to participate to public tenders.

Many factors are identified as drivers and barriers to green public procurement:

1. The political will at both national and local level can be a critical driver for GPP. If there is a lack of strategy or policy for the procurement of RES, then a GPP is hard to implement.
2. The interaction among different actors can facilitate the learning between procurers and suppliers. The pre-tender dialogue between PAs and suppliers is an effective platform for them to exchange information and knowledge.
3. PAs knowledge and awareness on GPP could be an effective instrument to promote sustainable development.
4. Some small municipalities have limited purchasing power and capacity, and they rely on purchasing contracts organized by a central procurement department.
5. Many other barriers to GPP have been identified in the various cases. For example, many PAs are sensitive financial and often green solutions are seen as more expensive and in limited supply. From a legal perspective, public procurement is heavily regulated and often the minimum price rule is reinforced by such regulations.

We also find many critical success factors and barriers perceived by local authorities and SMEs on involving SME in public procurement:

1. Public procurement process can be frustrating to SMEs because of confusing and complex requirements, restrictive financial criteria, tenders published with short notice, and other outdated requirements.
2. SME-friendly public procurement policies and strategies are critical for SMEs participation in public procurement.
3. The visibility of SMEs and their communication with PAs are critical factors for their engagement in PP. Market dialogue between SMEs and PAs can increase the visibility of SMEs, and increase their interest to participate in PP.



4. Some other barriers relevant barriers are: digitalization (some SMEs do not have any ICT knowledge and therefore they cannot participate to online bids), lack of knowledge and expertise on PP, and management problems in cooperatively owned companies.



Appendix 1 Interview guideline

1.1. INTRODUCTION:

Hello, my name is *[Interviewer's Name]*, and I would like to welcome you on behalf of the XPRESS Project partners, a H2020 project that aims to gain better insights into green public procurement and the collaboration between SMEs and public authorities towards the development of renewable energy solutions. Thank you for agreeing to take part in this interview.

I would like to remind you that this interview session will be recorded because we don't want to miss any of your comments. However, I would like to assure you that the discussion will be kept anonymous in accordance with the research governance policies and the information sheet and consent form made available to you.

I would also like to point out that there are no right or wrong answers, and that we value your opinion. Therefore, please try to be as precise and detailed as possible, so that we do not miss any relevant details on the topics we will discuss.

1.2. QUESTIONS:

There are two sets of questions, the first set applies if the participant is from public authorities, and the second one applies when interviewing representatives from SMEs.

1.2.1 Questions to public authorities:

1. Engagement (Description of the case/organization)

- a) Please briefly introduce your organization and your background.
- b) How long have you been with your current organization?
- c) What is your role in the organization?

2. Sustainability Strategies/Objectives

- a) What are the current sustainability strategies (overall goals, practices) in the municipality?
- b) What are the current energy-related strategies and goals in the municipality?

3. Public Procurement

- a) Does the municipality have a general, overarching strategy or policy for sustainable procurement? Please, describe the strategy/policy.
- b) With regard to the development and adoption of RES, has the municipality adopted a specific policy or strategy when it comes to procurement? Please describe.



- c) Have there been any changes in the procurement strategy for the municipality that support adopting more renewable solutions? Please describe.
- d) Do you plan to increase, reduce or keep unchanged the percentage of investment dedicated to innovation in the next 12 months?
 1. Increase
 2. Keep the percentage unchanged
 3. Reduce
 4. You do not plan to invest in innovation in the next 12 months
 5. Don't know
- e) In relation to RES related procurement (for example, purchase of solar panels, electrical vehicles, biofuels, and so on) in your municipality, please explain the procurement process and strategies typically adopted by the city.
- f) Which procurement procedures are typically used?
 1. open or closed procedure, competitive dialogue
 2. negotiation
 3. dynamic purchasing systems
 4. innovation partnership
 5. other, please describe.
- g) Which organizational units are typically involved in these procurement projects?
- h) Can you describe the procurement assessment criteria typically used for RES related procurement?
 1. In the qualification of suppliers, e.g. previous experience, competence, turnover, other. Please elaborate.
 2. In the awarding stage (lowest price, economically most advantageous). Please elaborate on the definitions used.
- i) Has the municipality used *Life Cycle Analysis* (LCA) when evaluating the bids or the performance of the procurement? If so, please describe and provide some more details. If not, please elaborate on the reasons for not using the LCA criterion and whether you plan to start adopting LCA.
- j) Is there any known planned change in assessment criteria in the near future?

4. Public procurement and supplier engagement

- a) Do you have an established strategy for dialogue with suppliers in the pre-tender phase? Do you communicate your investment plans to enterprises and publicise your activities in order to understand what type of technologies you need (market and technical



solution analysis)? Should this form part of the Prior Information Notice (PIN)? Please describe.

- b) Has the municipality ever conducted its own pre-tender supplier/market engagement activities for renewable energy-related purchase?
 1. If so, please provide details and relevant documents
 2. If not, please provide the reasons

5. Public procurement and SME

- a) Does the municipality have an established strategy for more SME engagement in public procurement? Please describe.
- b) Have there been any cases of an SME being among the suppliers winning a public contract, (ideally related to renewables) in your municipality?
 1. If so, please provide details (related tender or case document, the process and results of this procurement, barriers, critical success factors?)
 2. If not, please provide the reasons why (did any SMEs participate in the bidding? Why were they unsuccessful? Financial barriers? Technological barriers? Or others?)
- c) Can you reflect on what you perceive to be the potential barriers for SMEs to participate in public purchases? Please describe.
- d) Can you reflect on what you consider to be the critical success factors for SMEs to be suppliers to your municipality? Please describe.
- e) What is the most problematic phase in the interaction between you and the innovative SMEs?
 1. before the tender
 2. during the bidding process
 3. after the contract award

6. Other

- a) Do you have any other strategic documents and policy documents which you would like to share in relation to this interview?
- b) Do you have any other comments? If so, please specify.

1.2.2 Questions to SMEs:

1. Engagement (Description of the case/organization)

- a) Please briefly introduce your organization and your background.



- b) How long have you been with your current organization? What is your role in the organization?

2. Organizational Strategies and Innovation

- a) What are the current organizational strategies (overall goals, practices) of your firm?
- b) What are the current energy-related strategies and goals of your firm?
- c) For how long has your company been selling green products or services?
- d) Since 2015, how would you describe your firm's efforts regarding the development and innovation of renewables?
- e) Has your company introduced any new or significant improved?
1. goods
 2. services
 3. processes
- f) Since 2015, has your company introduced any new or significant improved?
1. marketing strategies
 2. organizational methods
- g) Since 2015, what percentage (approx.) of your total turnover has been invested in innovation activities?
1. R&D
 2. training
 3. product development
- h) What do you think are the main constraints/barriers for the development of your company?
1. lack of human resources
 2. lack of financial resources
 3. lack of new technology
 4. management issues
 5. legal issues
 6. marketing issues
 7. supply or distribution issues
 8. other, please specify
- i) Do you plan to increase, reduce or keep unchanged the percentage of investment dedicated to innovation in the next 12 months?
1. Increase
 2. Keep the percentage unchanged;
 3. Reduce;
 4. You do not plan to invest in innovation in the next 12 months;
 5. Don't know

3. Regulations and support schemes

- a) Are you aware of any regulations and/or support schemes at the EU, national or municipality level aimed at the development of renewables?



- b) Have you received any public funding (grants, guarantees, or loans) and advice or other non-financial assistance from public administrations?
- c) Do you perceive the support from public funding in terms of the development and innovation of renewables as adequate and easily accessible? Please elaborate.
- d) What type of support does your company rely on for the production of its green products or services?
 - 1. its own financial resources
 - 2. its own technical expertise
 - 3. external support, please specify.
- e) What type of support would help you the most in order to develop and further improve your renewables-related products/services?
 - 1. financial incentives
 - 2. market consultant
 - 3. technological support
 - 4. other, please specify
- f) How satisfied or dissatisfied are you with the level of public support (if any) for your green products or services (from very satisfied to very dissatisfied)?

4. Public procurement

- a) Do you know if any municipality has adopted a procurement policy or strategy for the development and adoption of renewables? Please describe.
- b) Do you know if any municipality has an established strategy for dialogue with suppliers in the pre-tender phase? Please describe.
- c) Have you ever participated in any pre-tender supplier/market engagement activities for renewable energy-related purchase organized by a municipality? If so, please provide further details. Would you approach public authorities in response to the Prior Information Notice (PIN) via the e-tendering Portal?
- d) Do you know if any municipality has an established strategy to increase SME engagement in public procurement? Please describe.

5. Public procurement and SME

- a) Have you ever won a public procurement contract (ideally related to renewables)? If so, please provide additional details and relevant documentation, where possible (related



tender or case document, the process and performance of this procurement, barriers, critical success factors).

1. Were 'environmental criteria' part of the procurement assessment criteria?
 2. How has this public contract influenced your firm's financial performance?
 3. Was Life Cycle Assessment (LCA) used as a criterion for this purchase?
- b) Have you ever participated in a public procurement tender process without being awarded a contract (ideally related to renewables)? If so, please provide details (related tender or case document, the process and performance of this procurement, barriers, critical success factors, reasons for not being awarded the contract, etc)
- c) If the answers to a) and b) are NO, please answer the following questions:
1. Have you ever investigated opportunities to bid on one or more public procurement contracts, but have never submitted a tender?
 2. What type of barriers did you face when trying to participate in public procurement (financial barriers, technological barriers, other barriers, please specify)?
- d) Can you reflect on what can be the potential barriers for SMEs to participate in public purchases? Please describe.
- e) What is the most problematic phase in the interaction between you and the public authorities?
1. before the tender
 2. during the bidding process
 3. after the contract award
- f) Can you reflect on what you consider the critical success factors for SMEs to become suppliers to public customers such as municipalities and regions? Please describe.

6. Other

- a) Do you have other relevant documents which you would like to share in relation to this interview?
- b) Do you have any other comments? If so, please specify.



Appendix 2 XPRESS case study – first case report guideline

The case reports include two parts: **debrief reports** of each interview and a **case report** for the identified case.

Debrief report

Following each interview, a **debrief report** (max. 2 pages) including the themes, important points and your own observations should be prepared. The debrief report may be prepared by the interviewer as he/she recalls and remembers the important points or by listening to the recording of the interview. ***These should be delivered together with the transcribed and translated text.***

Drafting a report for the case study

A report of each case including analysis, findings and results should be prepared and submitted to NTNU according to the below outline.

- *Outline of the Report*

Ensure your report includes all necessary information, but please keep it concise. Following are the key sections, which are aligned with the questions prepared for the interview.

- a) Description of the Actual Problem/Idea/Case/Project: Provide brief information for the selected case, focusing on why this case is selected, and its relevance with XPRESS project.
- b) Analysis of the current situation:
 - a. What are the current sustainability strategies (overall goals, practices) in the municipality/firm? What are the current energy-related strategies and goals in the municipality/firm?
 - b. Public procurement strategy (apply to public procurers) - Regulations and support schemes (apply to SMEs)
 - c. Public procurement and supplier engagement
 - d. Public procurement and SME



- c) Barriers and drivers
 - identified barriers and drivers
 - possible solutions

- d) Summary and Discussions

Tips: Direct quotes from the interview can be included in the report to help illustrate the contents.

Deadlines:

- Submission of Translated and Transcribed Interviews and Debriefs: *15 November 2020*
- Submission of Case Reports: *20 November 2020*



