Chapter 4

PROMOTING PUBLIC PROCUREMENT OF SUSTAINABLE INNOVATIONS: APPROACHES FOR EFFECTIVE MARKET DIALOGUE

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INTRODUCTION

Public procurement of innovation (PPI) can promote the quality and efficiency of public services. It can also provide a platform and market for new innovative solutions by ensuring sufficient critical mass of consumers, which in turn, could encourage private enterprises to invest in product development (Edquist, Vonortas, Zabala-Iturriagagoitia, & Edler, 2015; Rijkswaterstaat, 2014; Uyarra, 2013; Uyarra et al., 2014). In addition, public investments may pave the way for the diffusion of innovation to the private sector by developing the infrastructure that is needed for private markets (see e.g., Mazzucato, 2015; Uyarra et al., 2014; Edler & Georghiou, 2007).

Accounting for around 16% of the EU's GDP, public procurement offers an enormous potential to drive innovations while also addressing environmental and social challenges (European Commission, 2014; Uyarra et al., 2014; European Union, 2014; Edler & Georghiou, 2007). The role of PPI as a demand-side innovation policy instrument is addressed in the literature (e.g., Edquist et al., 2015; Edler & Georghiou, 2007) and considered high in the EU's political agenda as a means to promote the sustainability policy goals, i.e., increasing the use of renewable energy, promoting circular economy and resource efficiency as well as improving the framework conditions for business to innovate (European Commission, 2015;

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European Commission, 2010*a*, European Commission, 2011; European Commission, 2010*b*; European Commission, 2010*c)*.

Also national governments see public procurement as a strategic platform to accelerate the growth of innovation and new markets. The Finnish Government Program (2015-2019) has set an objective that 5 % (i.e., 1.75 billion euros) of the total value of Finland's annual public procurement should be directed to innovative solutions. However, no policy measures or methodologies have been presented on how to assess this objective. In addition, the Government Resolution (2013) on the promotion of sustainable environmental and energy solutions (cleantech solutions) in public procurement states that 1 % of the public sector spending should be targeted to new cleantech solutions, where the key industries are construction, energy sector, transport and waste management (Finnish Government, 2013).

The interaction and dialogue between buyer and supplier has been identified as an important trigger for innovation (Lundvall, 1992) having crucial implications for innovation dynamics (Edler & Georghiou, 2007). The value of a product or service is never created by simple transactions between the buyer and producer but in co-creation with the user and every stakeholder involved in procurement preparation. Thus competitive tendering and contract implementation are part of a network that creates the value proposition of a service to the end customer. (Vargo & Lusch, 2008) Cleantech innovations, in particular, are considered more blended, networked and boundary spanning, in which the decision-making is viewed as a collaborative and complex set of activities involving a variety of industries, firms, products, services, technologies and hubs of innovation (Horwitch & Mulloth, 2010).

However, dialogue and communication can sometimes be poor in public procurement, especially if demand is not articulated sufficiently to make suppliers read the signals and translate them into innovations (Edler & Uyarra, 2013). Technical dialogue related to a specific tendering process (Directive 2004/18/EC (8)) is often limited and insufficient for achieving successful innovative procurement as it has been targeted to find out the number of potential suppliers in the market and pricing issues (Länsimies, 2014) whereas early market involvement and more extensive market dialogue have been observed to enable successful public contracts

(Patajoki, 2013). Indeed, the most important challenges for PPI are related to understanding and assessing the market and its opportunities, recognizing procurers' needs and those technical and functional improvements that could be possible through innovation, establishing incentive structures and being able to implement the innovation in the organization (Edler & Yeow, 2016).

Due to the complexity of public procurement transaction and the innovation environment, the role of intermediation may be crucial in implementing PPI in terms of improving the link between different actors (Edler & Yeow, 2016). Guiding organizations and platforms, such as the Procurement of Innovation Platform supported by the European Commission, may act as intermediaries for the market dialogue between procurers and potential suppliers, or share information about PPI and upcoming calls and events (Procurement of Innovation Platform, 2016).

The crucial role of market dialogue in the planning and tendering phases is recognized as an important determinant of the success of the public contract (e.g., Edler & Uyarra, 2013; Edler & Yeow, 2016). Despite this, evidence from actual innovative procurement cases is relatively scarce especially in terms of analyzing the extent and contribution of market dialogue to the public procurement of sustainable innovations. The goal of this paper is to examine the role of market dialogue in the procurement of sustainable innovative solutions. We use case studies and a complementary search for market dialogue procedures in order to answer the following research questions:

- How and to what extent public procurers carry out market dialogue prior to or during the procurement process of sustainable innovations, i.e., eco-innovations?
- What is the contribution of market dialogue to the sustainable outcome of the procurement, i.e., procurement of eco-innovation?
- What is the role of intermediaries, i.e., a third party facilitator or a digital platform in promoting innovative sustainable solutions?

We aim to understand the interactions that public procurers undertake in order to meet the sustainability targets of the procurement. We also study what kind of market engagement processes and dialogue procedures are being used. We focus on the sustainability approach, i.e., to what extent market dialogue has been

undertaken and how different market dialogue procedures have contributed to achieving the sustainability goals of the procurement.

MARKET DIALOGUE IN THE CONTEXT OF INNOVATIVE PUBLIC PROCUREMENT

Public procurement of innovation (PPI) means that contracting authorities act as a launch customer of goods, services or solutions that have not yet been launched or are not commercially available on a large scale (Edquist et al., 2015). PPI occurs when the public authorities procure, or place an order for, a product-service, good or system that does not exist at the time but which could be developed within a reasonable period according to the demands of the procurer (Edquist, Hommen, & Tsipouri, 2000). PPI requires that public organizations are able to understand, define and clearly express their future needs as well as to approach the marketplace and interact with potential producers in a way that stirs market interest (Edler & Yeow, 2016). Thus, innovative public procurement contrasts with 'regular procurement' where governments place orders for 'off-the-shelf' products (Uyarra et al, 2014). However, the objective of PPI is not primarily to enhance the development of new products, but to target functions that satisfy human needs, solve societal problems or support economic goals, and here some form of new products or processes is necessary (Edquist et al., 2015; Edquist & Zabala-Iturriagagoitia, 2012; Edler & Georghiou, 2007; McCrudden, 2004).

Public procurement is covered by the public procurement directives, renewed in February, 2014 (2014/24/EU). Several tendering procedures, namely competitive procedures with negotiation and competitive dialogue, have been aimed to promote innovative procurement. They allow the contracting authority to discuss all aspects of the contract with the bidders before calling for final bids (Haugbølle, Pihl, & Gottlieb, 2015; Lundström, 2011). Although competitive procedures are firmly established in the procurement processes in the EU and have shown to be appropriate legal instruments for purchasing complex and innovative projects (Haugbølle, Pihl, & Gottlieb, 2015; Burnett, 2009; Lundström, 2011) the use of competitive dialogue is still at a low level compared to other procurement procedures such as open procedure (Haugbølle, Pihl, & Gottlieb, 2015; Länsimies, 2014).

The new public procurement directive (2014/24/EC) introduces a new means of awarding tenders – innovation partnership – which gives an opportunity to the tenderer to come up with an innovative solution together with the purchaser. The difference between innovation partnership and pre-commercial-procurement (PCP) is that the former includes procurement of both the development work and the new innovative solution, whereas in PCP the procurer acquires only development work without committing itself to the procurement of the new solution (European Commission, 2007a).

Innovations can also be triggered through output specifications – whereby the public buyer asks for a solution to a specific problem rather than specifying the concrete product or services to buy, while allowing companies leeway to propose the innovative solution (Edler & Uyarra, 2013; European Commission, 2007b). In the public procurement law, technical dialogue (in Directive 2004/18/EC (8)) and preliminary market consultation (in the new Directive 2014/24/EC Article 40) are mentioned as means of obtaining information from the market before launching a procedure for the award of a contract. With these procedures contracting authorities may seek or accept advice which may be used in the preparation of the specifications provided, however, that such advice does not have the effect of precluding competition (2004/18/EC (8)). The preliminary market consultation also aims to inform economic operators of the procuring unit's future plans and requirements (2014/24/EC, Article 40).

It seems that so far *technical dialogue* has mainly represented one-way communication of a certain procurement where the procurer is the initiator and the potential suppliers are informants (Länsimies, 2014). The concept of *market dialogue*, on the other hand, has been used to describe all forms of interaction between the buyer and the supplier prior to a competitive tendering, including technical dialogue (Patajoki, 2013). It is a wider phenomenon than technical dialogue, being as it is an encounter process, usually initiated by the procurer, between the public and the private organizations as well as end customers. Market dialogue aims at a successful contract that serves all participants' needs. (Länsimies, 2014)

Market dialogue should take place at a sufficiently early stage due to the fact that needs and innovative solutions are not usually known beforehand and technology development or modifications may

take more time than is available in the time frame of the formal procurement process (Nissinen, 2013). Further, markets for innovation may not be established, different functions within public organizations may have different expectations, the learning and adaptation costs within the buying organization are often high and the process includes joint risk management (Edler and Yeow, 2016). Especially in case of sustainable innovations, early phase needs analysis and market dialogue can facilitate the implementation of such solutions (e.g., Ecopol, 2013). In addition, the active involvement of end users is essential especially in service development so that the actual needs of users can be harnessed to guide procurement (Nissinen, 2013; Alam, 2002). Thus we see that the market involvement in terms of market dialogue *prior to starting the formal tendering process* is of great importance in innovative public procurement.

MATERIAL AND METHODS

Definition and Scope of Market Dialogue

The definition of market dialogue in this study is based on the definition developed within the context of Finnish municipal procurement (Länsimies, 2014, p. 37), according to which market dialogue, including technical dialogue (2004/18/EC (8)) as a part of it, is a two-way interaction between suppliers and the contracting authority, consisting of the following characteristics:

- Communication between the contracting authority and potential service providers prior to competitive tendering where the company provides expertise and the procurement unit has the power over decisions.
- Market mapping concerning features of the specific industry pricing and common contract terms, as well as the composition of the market.

In addition to the definition above we consider that market dialogue includes the preliminary market consultation described in the new public procurement directive (2014/24/EC, Article 40): “Contracting authorities may seek or accept advice from independent experts or authorities or from market participants. That advice may be used in the planning and conduct of the procurement procedure, provided that it does not have the effect of distorting competition and

does not result in a violation of the principles of non-discrimination and transparency."

Our approach is that market dialogue is a broad range of interaction between different stakeholders in the context of public procurement, including the dialogue before, during and after the procurement process.

Research Methods

Case studies were used to study the phenomena, i.e., procurement of eco-innovations in its real context. The rationale for selecting a case study was to obtain more detailed information about the contextual conditions of a phenomenon (Yin, 1994). In addition, the analysis of case studies was completed from searching other possible means of effective market dialogue and conducting related in-depth interviews.

The methodological part of the study included two steps:

1) **Collection and analysis of cases**: Collection of cases of sustainably innovative public procurement and a descriptive qualitative analysis of the procurement process in terms of the extent and contribution of market dialogue.
2) **Search for effective market dialogue procedures and related interviews:** Search for effective market involvement and market dialogue procedures in public procurement of (eco) innovations and carrying out related interviews with procuring units and / or third party facilitators of market dialogue.

Collection and Analyses of Cases

In this study we focused on sustainable innovations. Sustainable innovation is an innovation towards more sustainable technological and institutional systems and processes, broadly understood as systems for which resource use and waste production remain within appropriate environmental limits and socially acceptable levels of economic prosperity and social justice are achieved (Foxon & Pearson, 2008). In the selected cases the sustainability focus was on energy- or material efficiency, use of renewable energies and/or less environmental impacts. We also refer to these innovations as eco-innovations or cleantech[1] –innovations.

In the selection of cases we collected Finnish procurement cases that were analyzed and documented in a web-based portal www.ymparisto.fi/hankintamappi (in Finnish), which is a collection of Finnish public cleantech procurement cases. The material includes detailed analyses of selected cleantech procurement cases and related market dialogue processes. This data was collected in a parallel research project by semi-structured interviews in 2014 - 2015 (Alhola, 2015). The procurement cases documented in the web portal are considered to be among the best practices and good examples of innovative cleantech procurement as they had been granted or promoted by organizations or research projects that specially aim to promote innovation through public procurement. One of these funding programs was taken by Tekes (Finnish Funding Agency for Innovation), an agency where public procurement units can apply for funding for preparing innovative public procurement (Tekes, 2015). In addition, we looked for cases by Motiva, a Finnish government-funded focal point that gives advice and consultancy to public procurers about sustainable and cleantech procurement (Motiva, 2016). Several public organizations such as The Association of Finnish Local and Regional Authorities, Regional Hospital Districts, the Finnish Transport Agency and other governmental authorities as well as other nationally well-known cases from cities and municipalities were also recognized. Altogether, 35 cleantech procurement cases were screened.

In the selection of cases for deeper analysis we focused on - but were not limited to - 'new to the market' innovations that were - through public procurement - for the first time introduced in global or national markets, which may also be called as developmental public technology procurement (Edquist et al., 2000; Edler & Uyarra, 2013). However, we also accepted few cases in which the sustainable solution was novel or innovative to the purchaser despite having been already introduced or used somewhere else (see OECD, 2005, for classification). The rationale for this was that these kinds of innovative procurement cases play an important role in the diffusion of innovation (Valovirta, 2013). For the deeper analysis, 13 Finnish cleantech procurement cases were selected (Table 1).

TABLE 1
Cases selected for analysis

Case	Sustainability target	Why was this procurement innovative?
Construction and renovation of buildings		
Haltia – The Finnish Nature Centre (2008-2012)	To build 100 % of wooden material. To minimize the building's carbon footprint.	The first Finnish building built from cross-laminated timber (CLT). CLT tech was used in outdoor cladding for the first time in the world.
Solar energy-based swimming hall (renovation), Pori (2010)	Focus on solar energy production and energy storage.	A new solar energy-based construction (of copper) was created during the procurement process.
Near zero energy concept – Leinelä, City of Vantaa (2014)	To define a 'near zero energy' concept for buildings.	The concept was defined and introduced for the first time in the context of the construction of public buildings in Vantaa.
Multi-purpose facility, Municipality of Hämeenkyrö (2014)	To close separate units, and to build a new multipurpose house.	Innovative learning center with focus on high energy efficiency was acquired on a life-cycle basis.
Public transportation		
Biogas buses, City of Vaasa (2014)	To organize low-emission public transportation while promoting local biogas production and create private markets.	Biogas buses were procured for public transportation. New delivery network was developed for biogas manufactured from local waste.
Public transport services, Municipality of Siuntio (2013)	To decrease the need for private driving and to optimize the cost efficiency of public transportation.	Transportation service system connected public transport and local transportation services that were initially driven only for the internal transportation.
Electric car hub, Municipality of Ii (2012)	To be a forerunner in the use of electric cars by investing in the charging network and infrastructure for an electric car hub.	A new infrastructure was built that utilized renewable energy. The use of electric cars has increased also among private consumers.
Energy production and energy-efficiency		

Joint procurement of solar panels, HINKU municipalities / SYKE (2015)	To improve the energy efficiency of public buildings. To buy service instead of products.	Leasing contract in which the monthly cost equals the monthly electricity bill. No extra costs were caused to the procurer.
Energy improvements by ESCO contract, Vantaa (2014)	To improve the energy efficiency of 14 public buildings.	Suppliers presented the means to gain energy efficiency within a preset price band. An ESCO service contract was conducted.
Waste management		
Waste multi-locker collection for households, City of Porvoo (2013)	To improve the recycling rate. To provide more efficient recycling of different waste fractions.	A new waste bin was introduced including separate lockers for different waste fractions (board, paper, glass and metal, and mixed waste).
Water management and sewage		
Water pump system, City of Lappeenranta, Finland (2014)	To acquire a water pump with special technology that would lead to highly improved energy efficiency for water treatment.	The new water pump technology was developed as a result of co-operation between a local start-up and the University (LUT), and was for the first time implemented in practice.
Biowaste and sewage sludge treatment service, Porvoo, (2014)	To improve recycling and reuse of phosphorus and nitrogen.	Recycling of nutrients was included in the procurement process of such service for the first time.
Road infrastructure		
Utilization of soil and ash in road construction - Finnish Transport Agency (2014)	To utilize as much soil and secondary materials in the construction process as possible.	A new combination of used material and ash was developed, which reduced the carbon footprint by 20,000 tons.

Search for Market Dialogue Procedures and Related Interviews

In order to complete the information gained from the case studies, we also searched for other market dialogue procedures from the literature and different public organizations. Important sources were so called forerunner cities and municipalities that have committed themselves to ambitious sustainability targets to be

followed in all their operations, including procurement. In Finland, for example, the HINKU (Carbon neutral municipalities) network, which is a cooperative forum of municipalities, businesses, residents and experts, provided good examples or initiatives for efficient market dialogue (HINKU forum, 2016). We also searched for good and best practices from other cities and networks, such as the Finnish national network on green public procurement (GPP) maintained by Motiva. International examples of good market dialogue procedures were screened including procedures in the 'sustainable cities' and organizations that promote sustainable procurement. Key words in mapping these organizations, networks and links were used, including: 'green public procurement', 'sustainable procurement', 'innovative procurement', 'smart cities', 'sustainable cities', 'market dialogue' and 'online platforms', among others.

The data was compiled from organizations' websites, reports and documents, and completed by interviewing selected procuring units and/or organizers of market dialogue. In order to gain in-depth understanding of the role of market dialogue in different procedures, three semi-structured interviews were carried out with a procuring unit or a third party facilitator of market dialogue.

RESULTS

In the selected cases, the sustainable innovation had resulted as an outcome of the procurement process. In the process, sustainability target was reached by several means (listed below) in which the market dialogue played an important role:

- Identifying the needs of end-users and their willingness to pay.
- Leaving the definition of the subject matter open to some extent allowing the potential suppliers possibilities to suggest innovative solutions how to meet the sustainability goals of the procurer.
- Co-creating the innovative solution together with stakeholders.
- Setting sustainability goals and related contract terms.
- Co-operating towards the sustainability targets with suppliers and other stakeholders also during the contract implementation.

In the analyses we focused on finding out to what extent market dialogue was engaged in the procurement process and how the market dialogue contributed to the sustainably innovative outcome of the procurement or investment. In addition, we searched for other

possible market dialogue procedures that were not necessarily used in the selected cases but can be found in the literature or in practice. These practices were often organized by the procuring unit but can also be carried out by a third party facilitator. For example, we found many platforms (in Finland at least 14 databases) that provide different kinds of value adding services to procurers and suppliers but in this study we focused on those that enable interactive market dialogue instead of being just informative. Below is an overview of the results, which is further discussed in the Discussion chapter.

Extent of Market Dialogue in the Procurement of Eco-Innovations

In the studied cases market dialogue occurred within three dimensions and diverse procedures and communication methods were used (Figure 1). Firstly, market dialogue between procurer and potential bidders was undertaken in terms of market research and technical dialogue within the formal tendering process, i.e., between issuing the contract notice and making the contract decision. Competitive procedures, notably competitive dialogue, were used in the procurement of building construction, for example. However, competitive procedures with negotiations were used as a procurement procedure only in one-third of the studied cases, whereas preliminary consultation with potential bidders prior to the contract notice was undertaken more often and more extensively. Preliminary consultation was seen as a main source of information in the formulation of technical specifications. For example, in the procurement of the biowaste and sewage sludge treatment service, a public enquiry was launched in order to examine the views of potential bidders before proceeding with the tendering process. The main purpose of the preliminary dialogue between procurer and potential bidders prior to the tendering phase was to get information on potential suppliers and / or solutions to the procurers' needs. Technical dialogue during the tendering process, on the other hand, focused on formulating specifications in the calls for tender in a way that the market is able to respond with innovative solutions.

Secondly, market dialogue between procurer and other stakeholders (excluding potential bidders) provided valuable information that helped specify the procurer's needs. For example, in the case of a multi-locker waste collection system in the city of Porvoo, extensive market research was undertaken in order to get information on households' willingness to pay for such service. This

information was meaningful in order to keep the final contract within a certain budget frame. In addition, in the case of the Hämeenkyrö multi-purpose facility, end-users were included in the negotiation phase and decision-making, which helped define the target of procurement, i.e., 'innovative learning environment' more precisely.

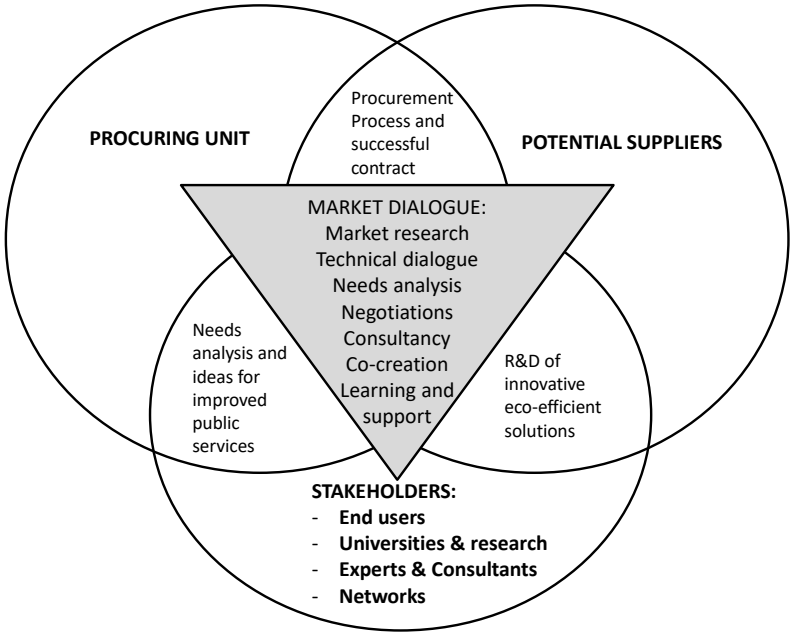
Thirdly, companies and potential bidders co-operated with each other and with other industries, research institutes, universities and schools. This co-operation and dialogue was essential when a new solution was required in order to meet the procurer's needs. For example, in the case of the Pori 'solar-energy based' swimming hall, the co-operation between Satakunta University of Applied Sciences (SAMK) and the supplier was essential. The innovation, i.e., developing a copper-based solution, was in fact not known until during the actual procurement process, in which the procurer had set a requirement for the supplier to co-operate with SAMK. Also in the case of Lappeenranta, the innovative water pump solution resulted from the co-operation between the water pump manufacturer and Lappeenranta University of Technology (LUT). The public procurer had followed the development process during many years and was now able to provide a platform for the prototype in real life through the tendering process by using life cycle cost as a basis for the procurement decision.

Diverse market dialogue procedures and communication channels were identified in the study. Most of the market research and technical dialogue took place prior to tendering, i.e., in the procurement preparation phase. Procurers conducted themselves to market research, i.e., searched information on the latest technology developments as well as mapped user needs by organizing and attending events, i.e., industry fairs, workshops and info sessions. Public procurers also kept themselves informed on the market situation and technology development through co-operation with schools and research institutes. Procurers informed potential suppliers about the upcoming procurement needs and related calls for tender by setting up info sessions or meetings, or by sending a public enquiry about the suppliers' interest towards the idea. In addition, drafts of specifications and/or invitations to tender were sent to potential suppliers for commenting and answering specific questions. Consultants and preliminary studies were also used as a means of extensive market research and in order to find potential

new solutions. Dialogue between other procurers was undertaken in order to map potential risks, to share experiences and to get support.

During the tendering process, notably the competitive procedure with negotiations and competitive dialogue, public procurers carried out the technical dialogue by organizing several rounds of negotiations with potential suppliers that had been selected based on the invitation to tender. For example, in the case of Leinelä, the negotiating procedure helped build a team with special expertise instead of selecting one consulting company to carry out the procurement. After the formal tendering process, i.e., the final contract, procurers used contract follow-up of the implementation of the contract as well as gathered customer feedback by open information channels or by sending a request to end-users.

FIGURE 1
Extent of Market Dialogue in the Studied Public Procurement Cases



In addition, we found several examples of cities or municipalities that have taken market dialogue as a part of their overall procurement strategy (see Table 2). For example, the City of Jyväskylä in Finland is engaged to market dialogue on a continuous basis, which in practice means regular open meetings with potential suppliers. With this dialogue they aim at developing the market toward a more innovative and sustainable direction and prepare the potential bidders for their forthcoming environmental requirements while giving enough time for the suppliers to develop innovative ideas in response. (Laine, 2015) Also in the city of Rauma, a procurement forum, established in 2013, actively encourages public procurers and suppliers to co-operate by organizing pitching events, for example (Rauma, 2015).

Contribution of Market Dialogue to Procurement of Sustainable Innovation

The intent of procurers in the studied cases was to successfully implement an innovative sustainable procurement. In order to support this objective we recognized three main purposes for market dialogue: 1) searching available technical solutions (market research), 2) assessing potential to develop innovative solutions and related technical specification (technical dialogue with suppliers) and 3) defining the procurement needs (extended dialogue with end users, potential bidders and other stakeholders).

The major contribution of market dialogue in the studied cases was to help define the procurement needs and draft the tendering documents, including technical specifications, so that they would support the development of an innovative solution. Procurers saw that the role of market dialogue in this sense was essential.

Market dialogue took a long time, in some cases even many years. Dialogue during this period helped deliver information on the forthcoming needs and encouraged the suppliers to come up with new ideas. Long-lasting dialogue also helped identify important stakeholders, such as procurers with similar experience, and structure the path on how to proceed with the planned procurement. Preliminary studies and consultant works were also important as well as the information gathered from end-users. Information about end-users' willingness to pay was of great importance in accepting the final contract especially in the service procurement. The relation of

costs and quality of the investment was crystallized in many cases during a long preparation process, which made the expectations of the outcome more realistic. Most of all, the long preparatory phase provided the procurer with better knowledge on solutions that exist on the market or could be developed within a reasonable time.

Role of Intermediaries in Market Dialogue Facilitation

A third-party organization, i.e., another public organization or a private consulting company, could be the organizer of a facilitated matchmaking event for the development of ideas and co-creation of an innovative solution (Table 2). An example of such concepts is the Swedish Pitch & Match concept (Malmberg, 2015) that organizes special pitching events to a certain procurement case, for example. Although being generally open in nature, these events also provide the possibility for discussions between the procurer and potential bidders in a way that the bidders do not have to present their preliminary ideas to a public audience.

Some organizations, such as Motiva in Finland, also organize sector-specific 'procurer – bidder' events. These events focus on the challenges in formulating a call for tender or a bid (e.g., Motiva, 2015). Another example of an organized market dialogue is carried out within a research project named InnProBio in the Netherlands. The project aims at testing the first format of how to set up a market dialogue, learn from it and improve the format. The aim is to exchange knowledge between hospitals, public authorities, producers, suppliers, waste recyclers and researchers (InnProBio, 2016). In order to reach the public audience, information about these events can be given in digital platforms, e.g., the Procurement Forum which is an on-line portal and discussion forum for procurers and other stakeholders to join.

In addition to the informative role of many online platforms and discussion forums, several digital collaborative platforms have been used in the implementation of market dialogue in public procurement. The main benefits of these collaborative platforms are gained through the thorough but faster and more efficient planning process, and possibilities to connect experts from different areas effectively. In addition, best and good practices and former experiences can be delivered and applied relatively fast to other procurers and areas through these platforms (Hulkkonen, 2016).

TABLE 2
Different types of market dialogue procedures and related examples

Procedure	Examples
Continuous face-to-face dialogue with procurer and stakeholders	City of Jyväskylä has a strategy of **continuous market dialogue** in PPI, including regular face-to-face meetings with potential suppliers and other stakeholders. The purpose is to share information about forthcoming procurement needs and requirements. (Laine, 2015)
Procurement Forum	City of Rauma has established a **procurement forum** that is a direct communication channel between procurers and potential bidders (Rauma, 2015).
Matchmaking	**BusinessOulu -matchmaking** event aims at better information sharing between procurement and companies (BusinessOulu, 2015).
	Pitch & Match events give an opportunity for companies to pitch for public procurers in an organized event (Malmberg, 2015).
Organized 'buyer – supplier' events	**Organized 'buyer – supplier' events** bring procurers and suppliers or certain sector together to discuss about best practices and challenges in carrying out a successful contract (Motiva, 2015).
Research projects,pilots	**InnProBio project** tests a new dialogue format to explore the possibilities of biobased procurement (InnProBio, 2016).
Networks	**National network on GPP** (in Finland), established by Motiva, is a network of 30 procuring units meeting regularly in which they share best practices on PPI (Motiva, 2016).
	Sustainable city –network provides a number of tools to help local governments in PPI (ICLEI, 2016).
	Network of cleantech procurement in Helsinki region meets regularly and share experiences on cleantech procurement (Koivusalo, 2015).
Collaborative platforms	**Solved** is an international cleantech collaboration platform, which collects around 700 experts from 250 organizations globally to work for a pre-set challenge, e.g. developing an innovative procurement process (Hulkkonen, 2016).
	Innovillage is a web service providing an environment for co-designing and co-preparing public procurements and for collaboration during the contract period (Innokylä, 2015).
	The Procurement Forum, managed by ICLEI, is a meeting point of international stakeholders to discuss, share and learn from one another and to improve public procurement practices (Procurement of Innovation Platform, 2016).

Based on the case studies and the review of other market dialogue practices, we categorized the different market dialogue procedures as follows:

Procuring Unit as Organizer:

- Continuous face-to-face dialogue and organized events between procurer and supplier for informative purposes about forthcoming procurement and investment needs of the procuring unit.
- Continuous face-to-face dialogue and organized events extended to several stakeholders, e.g., end users prior to a specific tender competition (needs analysis) and post contracts (feedback and service quality improvements).
- Market research for actively searching new technologies and being receptive to market and supplier information about new innovations.
- Active participation and learning from other procurers (e.g., procurer networks, networks for sustainable cities).
- Legal procedures and related technical dialogue and preliminary consultancy related to a specific tendering process, e.g.,:
  - public enquiry
  - competitive procedures with negotiation and competitive dialogue

Facilitator:

- Organized 'procurer – supplier' events in certain sectors, usually general in nature and not necessarily related to a specific procurement, organized by a third party organization, usually an organization that promotes sustainable procurement.
- Organized pitching events for a specific procurement case prior to the formal tendering process, events organized by a third-party consultant or organization.
- Online platform completing or replacing the face-to-face discussions meant for different stakeholders, e.g., procuring units, industry experts, potential suppliers etc. in order to make the facilitation of the planning process more effective and being accessible despite long distances.
- Consultant in the tendering process working in co-operation with the procurer.

DISCUSSION

This study identified three dimensions for the analysis of the extent and contribution of market dialogue in the context of innovative sustainable procurement. Firstly, we recognized the scope of market dialogue in terms of involvement of different interest groups, i.e. 'buyer – supplier' dialogue, 'buyer – other stakeholders' dialogue and 'suppliers – other stakeholders' dialogue. Secondly, we identified market dialogue relative to different phases of the procurement process and over time, i.e., prior, during and after the formal tendering process, as well as on a continuous basis. Thirdly, different market dialogue procedures were identified in terms of the organizer of the dialogue, i.e., a procuring unit or a third party facilitator.

Extensive Market Dialogue Promotes Innovation and Risk Management

Market dialogue played an important role in the public procurement of sustainable innovations. The most important contribution of market dialogue to the procurement of eco-innovations related to identifying the procurer's needs, informing the market about forthcoming needs and formulating tender specifications so that they would promote innovative solutions. Indeed, market dialogue between the procurer and supplier often focused on the procurement process and formulation of technical specification whereas the market dialogue with other stakeholders such as end users, industry experts and educational institutes helped define the procurement needs.

Market dialogue between procurers and end-users was especially important not only in defining needs but also in engaging end-users and other stakeholders to the procurement objectives. This could help the procuring unit to better manage risk and encourage to PPI instead of drawing back on buying traditional solutions. The cases revealed that the strong commitment of end-users early in the process and the sustainability objectives of the innovative procurement led to a more broad acceptance of risk of potential technical failure especially in case of a piloted technology. The practical implication of this could be that in case of a potential realization of technological risk, one individual, i.e., the main procurer, would not have to bear all the consequences. Engaging end-

users in the early phase of the innovative procurement and justifying a certain level of risk related to innovative procurement could indeed reduce the risk-averse behavior of the procurer, which has been recognized as one of the main barriers to innovative procurement (e.g., Georghiou, Edler, Uyarra, & Yeow, 2013).

Dialogue and co-operation between companies, research institutions, universities and schools provided new ideas which indeed could end up as pilots for public procurement. In turn, although not highlighted in this study, it has been argued that taking part in the public tendering process and/or dialogue may help companies learn about the logic or public procedures, especially if they have never before tendered or co-created with the public sector (Alhola et al., 2016). Especially, in the procurement of eco-innovations, a fruitful dialogue process often resulted from the parallel interactions of all the dimensions discussed above, e.g., parallel discussion and dialogue between buyer, supplier and other interest groups. Thus our study supports the view of previous studies, according to which the procurement professionals should focus more on collaboration and dialogue with all members of the network to be able to create value propositions for the end-users that eventually will result in real customer value (Vargo & Lusch, 2008).

Our study focused on market dialogue between the buyer and external stakeholders. In addition, the importance of internal stakeholders and internal communications has been raised (e.g., Edler & Yeow, 2016; Länsimies, 2014). Internal communication in the studied procurement cases included communication between substance experts of the procuring unit, procurement professionals and the decision makers in the municipality council. The role of substance experts was important in innovative procurement as they had know-how of technologies and services, whereas procurement professionals knew the legal aspects of the tendering process. Cleantech procurement in many cases overlapped many sectors, and thus internal communication and involvement of substance experts from different fields, e.g., technical, social and educational departments, could provide improved and better quality services. In addition, the early stage communication and commitment of the council members to the sustainability goals of the procurement was essential.

Early Phase Market Dialogue Stimulates Innovations

Market dialogue prior to the tendering process was highlighted as having a major contribution to the procurement of an eco-innovation. Although it was difficult to assess to which extent innovative and sustainability targets would have been gained without extensive market dialogue or by solely using an open procedure, the procurers clearly saw that market dialogue, notably market research and dialogue prior to the formal tendering process, played an important role in formulating the innovative sustainability targets for procurement. On the other hand, competitive procedures, particularly the negotiation phase, seemed to promote the sustainable and innovative procurement especially in terms of drafting the tender specifications. Thus, our study supports the view that competitive procedures with negotiations could promote innovative procurement (e.g., Lundström, 2011; Haugbølle, Pihl, & Gottlieb, 2015) especially in relatively broad and complex procurement cases. However, our study revealed that innovative solutions can be gained also by other procurement procedures, e.g., open procedures. A thorough and extensive market dialogue prior to the formal tendering process, including discussion and feedback about technical specifications, allows the procurer to choose an open procedure and emphasize or compete on price or pre-set price band, and still gain the innovative solution. Nevertheless, no matter the procurement process chosen, the extensive market dialogue provided a sounder basis for identifying the environmental criteria in a way that promoted innovation but was still within reach to the potential suppliers. In addition to the market dialogue prior to and during the tendering process, post-contractual negotiations after awarding the contract may stimulate the overall success of the procurement process in terms of promoting joint problem solving, reducing risk and transaction costs, as well as helping to commit to common targets (Meijers, Dorée, & Boes, 2014).

Based on the findings of the study, one could argue that the more complex and unmet the procurement need is the more market dialogue is needed. However, in a few cases such as in the deployment of electric cars in the municipality of Ii, the procurement was innovative to the procurer and region despite extremely little market dialogue being undertaken. This may apply to procurement cases in which the objective is clear and the market supply is well-

known. Thus, the procurer should recognize when an extensive market dialogue should take place and when it is not needed as there may be transaction costs that must be borne (Edler & Uyarra, 2013). The innovativeness in the case of electric cars was in fact in the process, i.e., procurement of a leasing service. Leasing service procurement was also applied in the procurement of buildings and the leasing of solar panels. Procuring services instead of products could indeed transfer the technical or quality risk of the functioning and maintenance of the technology from the procurer to the supplier of the leasing service, which, in turn, could lessen the procurer's need to understand all the product's technical details and thus the need to undertake an extensive market research.

Diverse Methods Can Be Used for Effective Market Dialogue

Diverse communication methods were used to carry out the dialogue. Online platforms, although so far scarcely used in the realized procurement cases, could be used as a tool and working environment for the co-creation of an innovative solution. Many tests and pilots exist in this area, one of which was the joint procurement of solar panels, in which the market dialogue was initiated in one of the online discussion forums (Hankintamappi –forum). However, participants of the joint procurement preferred more traditional communication channels such as email, phone calls and face-to-face meetings. This may be partly due to the reluctance or unwillingness to adapt new practices related to sustainable procurement (Gormly, 2014) or just because the project was relatively small and focused. We suggest that digital collaborative platforms could be applied especially in large projects e.g., in developing smart systems or in creating a local eco-system that is based on complex interactions between different parties. The online platforms for market dialogue seemed to work well also in a definition and creation of procurement concepts or procedures that support the implementation of municipal strategy or political targets.

In addition to collaborative platforms, different forums and networks can be utilized in order to share experiences and best practices, and to gain information and advice. Case studies indicated that learning from others and previous experiences provide valuable information in the formulation of the procurement and undertaking the market dialogue. So far, it seems that procurers tend to act as the initiator and facilitator of market dialogue at least in Finland,

although the search for other market dialogue procedures indicated that in practice pitching events and digital platforms provided by a third party facilitator are gaining more attention as a promising means to carry out market dialogue in an innovative context. The coordination of different actors and activities in relation to a specific policy instrument such as procurement is very likely to require effective coordination among different institutions (Rolfstam, Phillips, & Bakker, 2011). Thus, benefits of digital and collaborative platforms arise from the effectiveness of coordination in terms of time, broad expertise and reachability of stakeholders and experts despite the geographical distances.

Market Dialogue Should Play a Role in the Procurement Strategy

Common for the procurement of sustainable technological solutions, i.e., cleantech was that the planning and preparation of the procurement had taken a relatively long time. This may be partly due to the fact that technology development may take time (see e.g., Gupta & Wilemon, 1990) or just because the procuring needs are not clear and end-user preferences not known in PPI (e.g., Edler & Yeow, 2016). In the studied cases, technology was either new or existing technology was modified to the needs and conditions of the procurer. In many cases the experiences and references from other procurers were of great importance and information was gathered also from abroad. Thus, a thorough market dialogue and market research played an important role in the cleantech sector procurement.

Public procurement can be a major source of innovation and improve the value of services delivered to the local community as well as increase the technological competitiveness of the local industrial and research system (e.g., Edquist et al., 2015; Uyarra et al., 2014; Valovirta, 2015*b*; Vecchiato & Roveda, 2014; Edler & Georghiou, 2007). In this context, regional foresight might help identify both long-term societal needs and technological possibilities that could match these needs (Vecchiato & Roveda, 2014). In several studied cases market dialogue had indeed helped recognize and utilize local conditions. However, public procurement does not allow for favoring the local suppliers and thus market dialogue should be conducted in a manner that provides equal opportunity for all suppliers to participate in tender competition. However, preliminary market dialogue with stakeholders is possible from the legal point of view as long as the dialogue is accessible to all potential bidders, none of the

suppliers is given more information than the others, and the dialogue is documented properly (Mäkelä, 2011).

Our study revealed that early stage market dialogue can overcome some of the major hindrances that hold back the majority of public procurers from purchasing innovative solutions. The recognized barriers, such as a dominant emphasis on price rather than quality, formulation of too prescriptive specifications, lack of interaction with markets, risk-averse behavior or procurers and lack of competence of procuring organizations (Georghiou et al., 2013; Uyarra et al., 2014) could be managed through effective market dialogue. For example, lack of knowledge and expertise on the use of practices that favor innovation and insufficient management skills as having accounted for failures in PPI projects (e.g., Uyarra et al., 2014) could be captured by using effective collaborative online platforms that reach experts from certain areas.

The above mentioned barriers have been recognized also in Finland (e.g., Leskinen, 2014; Kajala, 2015). Successful public contracts in particular are hindered by the lack of end-user and company involvement and the view on procurement as a strictly transactional legal process (Länsimies, 2014). We agree with the previous studies (e.g. Valovirta, 2015*a*; Edler & Uyarra, 2013; Edler & Yeow, 2016; Edquist et al., 2015; Uyarra et al., 2014; Rolfstam, Phillips, & Bakker, 2011) that in order to overcome the recognized barriers, procuring units need to improve and adopt novel skills, internal coordination and management practices as well as link different stakeholders to the procurement process.

We consider that innovative public procurement of sustainable solutions, in order to become a systematic way of procuring in Finland, should be seen as a new type of procurement culture, in which market dialogue should be seen as an integral part of the public procurement process especially in large or complex procurements. In turn, this might require the definition of public procurement of innovation to go beyond just including 'the moment where a public procurer places an order for something which does not exist' (Rolfstam, Phillips, & Bakker, 2011; see Edquist, Hommen, & Tsipouri, 2000 for definition). Especially in case of procuring sustainable innovations, the market dialogue prior to placing the order was of great importance in terms of developing the innovative solution. Since the procurement law only governs competitive

tendering, municipalities tend to focus solely on following the procedure and leave the part that is not governed by law to very little consideration. Therefore the procurement defined by the law does not include most activities that a successful procurement process would require (Länsimies, 2014). Although the current market dialogue procedures may still in practice focus on the technical dialogue after issuing the contract notice, some procurers have begun to see the strategic role of market dialogue in the procurement function, especially in relation to innovative sustainable procurement. Continuous market dialogue in the form of holding periodic info sessions, for example, is a solution to keep the potential suppliers informed about and better prepared for future needs of the procuring unit. Given that the development of many innovative solutions has taken a long time, even many years, to mature to the stage of commercialization, more focus could be given to the strategic nature of market dialogue.

CONCLUSIONS

The main purpose of market dialogue in the public procurement process is to end up with a successful contract. So far market dialogue has mainly focused on a certain upcoming procurement process until recently when procurers have begun to develop their strategic procurement processes, build competence in procurement and continuously inform potential suppliers about long-term requirements as well as develop collaboration with various other stakeholders.

The amount of market dialogue prior to the tendering process does not indicate the result of the tender competition. The innovativeness of certain procurements can be assessed objectively only after the contract has been implemented and realized. However, we consider that the extent to which market dialogue is engaged entails the innovative approach of the procurement and stimulates innovative solutions. Further studies could take place in order to measure the effectiveness of market dialogue in relation to the innovation. More research is also needed in order to understand the impact of sustainable procurement strategy including market dialogue to the procuring unit's success in the public procurement of innovations.

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NOTES

1. Cleantech means new technology and related business models that offer competitive returns for investors and customers while providing solutions to global challenges. Cleantech represents a diverse range of products, services and processes, all intended to provide superior performance at lower cost while greatly reducing or eliminating negative ecological impacts and improving the productive and responsible use of natural resources (Cleantech Group, 2014).

REFERENCES

Alam, I. (2002). "An Exploratory Investigation of User Involvement in New Service Development." *Journal of the Academy of Marketing Science, 30*(3):250-261.

Alhola, K. (2015). *Hankintamappi Cases.* [Online). Available at: www.ymparisto.fi/hankintamappi (Documentation in Finnish)

Alhola, K., Saramäki, K., Manninen, K., Lehtoranta, S., Pursimo, J., Judl, J., Linjama, J., Pietiälinen, O-P., Huuhtanen, J., & Tainio, P. (2016, October). *Cleantech in Public Procurement – Final Report*. Helsinki, Finland: Finnish Environment Institute.

Burnett, M. (2009). "Using Competitive Dialogue in EU Public Procurement: Early Trends and Future Developments." *EIPAScope,* 2:17-23. European Institute of Public Administration, Maastricht.

BusinessOulu (2015). "Oulu is growing and developing. We see to that." [Online]. Available at http://www.businessoulu.com/en/frontpage/en/frontpage [Retrieved November 4, 2015].

Cleantech Group (2014). "What Is Cleantech?" [Online]. Available at http://www.cleantech.com/about-cleantech-group/what-is-cleantech. [Retrieved January 14, 2014].

"Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on Public Procurement and Repealing Directive 2004/18/EC." *Official Journal of the European Union 28* (3).

"Directive 2004/18/EC. Directive of The European Parliament and of The Council Of 31 March 2004 on the Coordination of Procedures for the Award of Public Works Contracts, Public Supply Contracts and Public Service Contracts." *Official Journal of the European Union* L 134/114-240.

Ecopol (2013). "Championing Eco-Innovation Policy." (Eco-Innovation Policy Roadmap: ECOPOL Recommendation Paper). [Online]. Available at Http://Www.Ecopol-Project.Eu/ [Retrieved November 2, 2014]

Edler, J., & Georghiou, L. (2007). "Public Procurement and Innovation: Resurrecting The Demand Side." *Research Policy*, *36(*7):949-963.

Edler, J. & Uyarra, E. (2013). "Public Procurement of Innovation." In S. Osborne, S. & L. Brown (Eds.) (2013), *Handbook of Innovation In Public Services.* Chapter 15. London, UK: Edward Elgar.

Edler, J., & Yeow, J. (2016). "Connecting Demand and Supply: The Role of Intermediation in Public Procurement of Innovation." *Research Policy, 45:414-426.*

Edquist, C., Vonortas, N.S., Zabala-Iturriagagoitia, J.M., & Edler, J. (2015). *Public Procurement for Innovation.* London, UK: Edward Elgar Publishing.

Edquist, C., & Zabala-Iturriagagoitia, J.M. (2012). "Public Procurement for Innovation as a Mission-Oriented Innovation Policy." *Research Policy, 41*:1757–1769.

Edquist, C., Hommen, L., & Tsipouri, L. (2000). *Public Technology Procurement and Innovation.* Norwell, MA: Kluwer Academic Publishers.

European Commission (2015). *Closing the Loop: An EU Action Plan for The Circular Economy* (Communication from the Commission. COM/2015/0614 Final). Brussels, Belgium: Author.

European Commission (2014). *Public Procurement*. [Online]. Available at Http://Ec.Europa.Eu/Trade/Policy/Accessing-Markets/Public-Procurement/ [Retrieved March 3, 2016].

European Commission (2011, January 26). *A Resource-Efficient Europe: Flagship Initiative under the Europe 2020 Strategy*. (Communication from The Commission COM(2011) 21). Brussels, Belgium: Author.

European Commission (2010a, March 3). *Europe 2020. A Strategy for Smart, Sustainable and Inclusive Growth*. (Communication from The Commission. COM(2010) 2020 Final). Brussels, Belgium: Author.

European Commission (2010b, June 10). Europe 2020 Flagship Initiative Innovation Union. (Communication from the Commission. COM(2010) 546 Final. Brussels, Belgium: Author.

European Commission (2010c, November 10). *Energy 2020 A Strategy for Competitive, Sustainable and Secure Energy*. (Communication from The Commission. COM(2010) 639 Final. Brussels, Belgium: Author.

European Commission (2007a). *Pre-Commercial Procurement: Driving Innovation to Ensure Sustainable High Quality Public Services in Europe*. (Communication from the Commission. COM(2007) 799 Final. Brussels, Belgium: Author.

European Commission (2007b). *Guide on Dealing with Innovative Solutions in Public Procurement. 10 Elements of Good Practice*. (Commission Staff Working Document SEC(2007)280. Proinno Europe). Brussels, Belgium: Author.

European Union (2014). *Public Procurement as A Driver of Innovation in SMEs and Public Services. Guidebook Series How to Support SME Policy from Structural Funds*. Brussels, Belgium: Author.

Finnish Government (2013, June 13). *Government Resolution on the Promotion of Sustainable Environmental and Energy Solutions. (Cleantech Solutions) in Public Procurement*. Helsinki, Finland: Author.

Finnish Government Program (2015, May 29). "Finland: A Land of Solutions Strategic Programme of Prime Minister Juha Sipilä's Government." Helsinki, Finland: Author.

Foxon, T., & Pearson, P. (2008). "Overcoming Barriers to Innovation and Diffusion of Cleaner Technologies: Some Features of a Sustainable Innovation Policy Regime." *Journal of Cleaner Production,* 16S1:S148-S161.

Georghiou, L, Edler, J., Uyarra, E., & Yeow, J. (2013). "Public Procurement as an Innovation Policy Tool: Choice, Design and Assessment. Technological Forecasting and Social Change." Cited in Uyarra, E. (2013), "Preview of Measures in Support of Public Procurement of Innovation." Nesta Working Paper (13/17).

Gormly, J. (2014). "What Are the Challenges to Sustainable Procurement in Commercial Semi-State Bodies in Ireland?" *Journal of Public Procurement, 14*(3): 395-445.

Gupta, A., & Wilemon, D. (1990). "Accelerating the Development of Technology-Based New Products." *California Management Review, 32*(2):24-44.

Haugbølle, K., Pihl, D., & Gottlieb, S. (2015). "Competitive Dialogue: Driving Innovation through Procurement?" *Procedia Economics and Finance*, *21*: 555-562.

HINKU Forum (2016). Towards carbon neutral municipalities. [Online]. Available At Http://Www.Hinku-Foorumi.Fi/En-US. [Retrieved March 25, 2016].

Horwitch, M., & Mulloth, B. (2010). "The Interlinking of Entrepreneurs, Grassroots Movements, Public Policy and Hubs of Innovation: The Rise of Cleantech in New Youk City." *Journal of High Technology Management Research*, *21*: 23-30.

Hulkkonen, S. (2016). Interview: Santtu Hulkkonen, CEO Solved, Helsinki, 2.4.2016

ICLEI (2016). "Sustainable Local Economy and Procurement." [Online]. Available at http://www.iclei.org/en/activities/agendas/sustainable-local-economy-and-procurement.html [Retrieved April 10, 2016].

Innokylä (2015). "Tietoa innokylästä." [Online]. Available at https://www.innokyla.fi/en/tietoa-innokylasta/innovatiivinen-hankinta [Retrieved December 10, 2015].

InnProBio (2016). "Stimulating bio-based products use in the public space." [Online]. Available at http://innprobio.innovation-procurement.org/home/ [Retrieved March 6, 2016].

Kajala, J. (2015, September). "Innovatiiviset Julkiset Hankinnat: Miten Kurotaan Umpeen Puolet Suomen Kestävyysvajeesta?" *Impulsseja.* Helsinki, Finland: Kalevi Sorsa Foundation.

Koivusalo, S. (2015). "Pääkaupunkiseudun cleantech hankintojen – verkosto". Presentation in the seminar of Sustainable public procurement, 8.5.2015, Tampere, Finland

Laine, M. (2015). Interview: Marjo Laine, Head of Strategic Procurement, City of Jyväskylä, Finland, 15.1.2015

Leskinen, R. (2014). "Kestävät Julkiset Hankinnat Osana Resurssiviisasta Yhteiskuntaa." Valonia, Finland. (In Finnish)

Lundström, I. (2011). "The Change in Local Authorities' Service Procurement: A Study of Problems and Their Causes in Public Procurement of Services in Finnish Municipalities." *Acta No. 227.* Helsinki, Finland: Association of Finnish Local and Regional Authorities. (In Finnish, Abstract In English)

Lundvall, B.A. (Ed.) (1992). *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*. London, UK: Anthem Press.

Länsimies, A. (2014). Market Dialogue in Public Procurement – Defining Market Dialogue with Service-Dominant Logic. (Master's Thesis). Espoo, Finland: Aalto University.

Malmberg, B. (2015). "Sustainable Business Hub. Pitch and Match." Paper Presented at the SCINNO Seminar, December 3, Helsinki, Finland.

Mazzucato, M. (2015). "The Innovative State. Governments Should Make Markets, Not Just Fix Them." *Foreign Affairs, 94*(1): 61-68.

Mccrudden, C. (2004). "Using Public Procurement to Achieve Societal Outcomes." *Natural Resources Forum*, 28(4): 257-267.

Meijers, S., Dorée, A., & Boes, H. (2014). "Increased Cooperation through Immediate Post Contractual Negotiation." *Journal of Public Procurement, 14*(4): 567-583.

Motiva (2016). "Motiva – Focal Point for Sustainable and Innovative Public Procurement" [Online]. Available at http://www.motivanhankintapalvelu.fi/in_english [Retrieved April 1, 2016].

Motiva (2015, October 1). "Buyer – Supplier Event' on Renewable Energy. Vaasa. [Online]. Available at Http://Www.Motivanhankintapalvelu.Fi/Ajankohtaista/Seminaariaineistot/Puhtaan_Energian_Tilaaja-Toimittaja_Tilaisuus_1.10.2015. [Retrieved January 13, 2016]

Mäkelä, E-R. (2011). "Tekninen Dialogi – Ratkaisu Moneen Ongelmaan Julkisissa Hankinnoissa?" (Edilex 2011/25). Helsinki, Finland: Edita.

Nissinen, S. (2013, September 4). Public Procurement: Renewal or Bureaucracy? *Tekes News*. [Online]. Available at Https://Www.Tekes.Fi/En/Whats-Going-On/Blogs-2013/Public-Procurement-Renewal-Or-Bureaucracy/ [Retrieved March 2, 2016]

OECD (2005). *Oslo Manual – Guidelines For Collecting And Interpreting Innovation Data*. (3rd ed.). Paris, France: OECD and Eurostat.

Patajoki, U. (2013). *Towards a Successful Contractual Relationship – Public Service Procurement from a Small Business Perspective*. (Master's Thesis). Helsinki, Finland: Aalto University.

Procurement of Innovation Platform (2016). "Procuring Innovations." [Online]. Available at Http://Www.Innovation-Procurement.Org/About-Ppi/ [Retrieved April 10, 2016]

Rauma (2015). "Procurement Services." [Online]. Available at http://www.rauma.fi/tietoa-kaupungista/keskusvirasto/hankintapalvelut [Retrieved December 9, 2015]

Rijkswaterstaat (2014). *Ministry of Infrastructure and the Environment. Public Procurement of Innovation Policy Framework*. Amsterdam, the Netherlands: Author.

Rolfstam, M., Phillips, W., & Bakker, E. (2011). "Public Procurement and the Diffusion of Innovations. Exploring the Role of Institutions and Institutional Coordination." *International Journal of Public Sector Management*, *25*(5):1-21.

Tekes (2015). "Smart Procurement". [Online]. Available at http://www.tekes.fi/en/programmes-and-services/tekes-programmes/smart-procurement/ [Retrieved October 15, 2015].

Uyarra, E. (2013). "Preview of Measures in Support of Public Procurement of Innovation." *Nesta Working Paper* (13/17). Manchester, UK: NESTA.

Uyarra, E., Edler, J., Garcia-Estevez, J., Geourghiou, L., & Yeow, J. (2014). "Barriers to Innovation Through Public Procurement: A Supplier Perspective." *Technovation 34*:631-645.

Valovirta, V. (2015*a*). "Innovatiivisilla Hankinnoilla Parempia Palveluita. (Better Services through Innovative Procurement." [Online]. Available at Http://Www.Hankinnat.Fi/Fi/Malleja-Ja-Lainsaadantoa/Hankintauutisia/Kolumnit/Innovatiiviset-Hankinnat/Sivut/Default.Aspx [Retrieved April 4, 2015]

Valovirta, V. (2015*b)*. "Building Capability for Public Procurement Of Innovation." In Edquist et al. (Eds.), (2015). Public Procurement for Innovation. London, UK: Edward Elgar Publishing. (pp. 65-86).

Valovirta, V. (2013, August 28). "Julkinen Sektori Uusien Teknologioiden Kehittäjänä, Huippuostajat-Ohjelman Käynnistysseminaari." [Online]. Available at Www.Vtt.Fi/Sites/Procuinno/Documents/S8.Pdf. [Retrieved August 10, 2015].

Vargo, S., & Lusch, R. (2004). "Evolving to a New Dominant Logic for Marketing." *Journal of Marketing*, *68* (1):1-17.

Vecchiato, R., & Roveda, C. (2014). "Foresight for Public Procurement and Regional Innovation Policy: The Case Of Lombardy." *Research Policy*, *43*: 438-450.

Yin, R.K. (1994). *Case Study Research, Design and Methods* (2nd ed.). Thousand Oaks: CA: SAGE Publications,