

PUBLIC SECTOR INNOVATIONS AND THE DEMAND-SIDE INNOVATION POLICIES

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Abstract

The public sector innovations are important additions to private and social efforts towards development oriented changes in society. These innovations aim at improving the efficiency and societal value of public services. In order to do so, the new organisational arrangements as well as public-private partnerships are often called for. In these situations, the novel service configurations are designed by public policy makers, but the actual service provision might be delegated to private companies or to non-governmental organisations (NGOs). This kind of combined execution creates strong connection between public sector innovations and demand-side innovation policies. The purpose of this study is to offer the possible ways to combine public sector innovations with demand-side innovation policies in Estonia. This would allow building strong ties between innovative advances in private and public sectors, thus enhancing the change towards knowledge-based society.

Keywords: public sector innovations, demand-side innovation policies, Estonia

JEL Classification: O31, O32, O33, O38

Introduction

Knowledge-based society builds development on innovative solutions. Traditionally more attention is devoted to private sector initiatives in providing such novel market solutions. However, in the modern world, resources are often limited, while the expectations related to the quality and accessibility of publicly provided services increase (see also Micheli et al. 2012). Communities face an increasing number of problems that cannot be successfully solved with traditional public policy actions (Bland et al. 2010). These tendencies create eminent need for innovative new processes, solutions and strategies in the public sector. (Ibid.)

Some of these public innovations are strictly procedural and aimed at increasing the public sector efficiency. Others reflect much more extensive changes in the role of various policies concerning societal processes. Sometimes it involves extensive developments in service provision pattern, for example by delegating the policy

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execution to private sector or to NGOs. This is perhaps the most straightforward connection between public sector innovations and initiation of private service provision. Public procurement of ICT solutions or other technological elements required for re-shaping of the public service concepts offers another connection between public sector innovations and demand-side facilitation of innovative developments in private companies. The potential leadership role of public organisations as the initiators of innovations should also give a boost to innovative mindset among people and companies. When the public sector manages to set aside the adverse image of being perhaps most bureaucratic and rigid part of society the other sectors might be led by positive example and supportive policies.

Although public sector innovations and private innovations have several common characteristics, there are some important differences. Public sector innovations should advance the public good and increase the public value (Bland et al. 2010). Thus, the main benefits of these innovations should clearly address public interests. Yet, this does not mean that such innovations cannot gain additional power from complementarities with private demand. Such potential for mutually reinforcing public and private innovations suggests that public sector innovations should indeed be used as one of the tools in facilitating similar private initiatives. However, this should be done very cautiously, because mistakes in reshaping public service provision could result in negative impact that is reinforced by misguided shifts in private sector. Thus, the public-private innovative initiatives involve social risks.

The purpose of this study is to offer the possible ways to combine public sector innovations with demand-side innovation policies in Estonia. The analysis outlines the features of public sector innovations and the connections of these innovations with the private innovations. Then the viewpoint is reversed and author seeks to connect demand-side innovation policy tools with various public sector innovations. Based on this dual approach, policy recommendations are formulated concerning the enhancement of ties between public sector innovations and demand-side innovation policies.

The paper starts with the discussion of public sector innovations, especially in the comparison and in relation to private sector innovations. The next section views the potential connections from the viewpoint of demand-side innovation policy tools. The third section provides an analytical evaluation based on the examples of demand-boosting public innovations in Estonia. The fourth section recommends the policies that could enhance the role of public sector innovations in facilitating demand for private innovations. The concluding section summarizes the results and limitations of this research as well as suggests the paths for future research.

Public sector innovations and their role in facilitating private innovativeness

Public sector has been described by rigidity, inefficiency, inflexibility, resistance to change, risk aversion and hierarchical structures that create excess inertia and tendency to utilize existing knowledge more and more instead of gaining new knowledge (see Micheli et al. 2012; Vogel, Frost 2009; Vigoda-Gadot et al. 2008).

These barriers to innovation do not suggest that public sector organisations would be capable of using the new ideas or approaches that challenge traditional understanding. Yet, in the dynamic world, the landscape of public service provision has to change as well. Numerous new problems arise for which traditional methods fail to produce adequate solutions (Bland et al. 2010). Therefore, the public sector must be innovative as well.

There seems to be no uniform and widely accepted definition of the public sector innovations. Several authors (Salge, Vera 2012; Micheli et al. 2012; Potts, Kastle 2010; Luke et al. 2010; Bland et al. 2010) interpret the phenomenon by using the general concepts of innovation and then adjusting them to the characteristics of public sector. Majority of these definitions include the generation, development or acceptance and adoption of new ideas and activities. In public sector, it should challenge the traditional wisdom, increase the public good and create public value (Bland et al. 2010). That is why public sector innovations should not be solely efficiency oriented, as they sometimes tend to be, but avoid causing suffering and public neglect in the process. This highly social dimension of such innovations undoubtedly increases the risks of adopting the new approaches and policy schemes. Thus, the responsibility of the innovator is usually greater than in the private sector.

However, Potts and Kastle (2010) provide arguments against the expectations that public sector innovations should or could be risk-free and aimed always on cautious success. Failures in innovation are to be seen as natural. Potts (2009) argues that public services are too focused on efficiency, which does not allow for failures in experimenting with innovative solutions. He suggests using the elimination processes based on negative policy experiments as the deliberate choice for finding good new policy options (Potts 2010).

Schoeman et al. (2012) outline that public sector innovation means usually new services, processes or governance structures and contractual models. This shows that, similarly to private innovations, the public sector innovations tend to be multifaceted and diversified in nature. Luke et al. (2010) argue that public sector institutions and state-owned enterprises are becoming not only more innovative, but also more entrepreneurial in nature. Whereas, the entrepreneurship in public sector reflects conscious search for innovative change, new revenue sources and enhanced services in partnership with citizens. Innovations to achieve more efficient and effective solutions as well as organisational and strategy shifts in public sector are other signs of entrepreneurship. (Ibid)

The connection between entrepreneurship and innovations in public sector relates to the other aspects that might provide incentives and capabilities to innovate. Rosenblatt (2011), for example, analysis the usage of innovation awards in public sector from the perspective of individuals and organisations. His results indicate that despite several positive effects, such measures tend to have many negative consequences as well, including resentment and shift of focus to winning the award. Savory (2009) stresses the importance of converting knowledge translation capabilities of public service providers into the practice-based public innovations.

Thus, the public sector employees have considerable potential as technology and knowledge brokers facilitating the creation of public value. Salge and Vera (2012) outline yet another important factor that influences the benefits of public sector innovations, namely customer and learning orientation in public organisations. Both these orientations play an important role in increasing the quality of public services. The differences between private sector innovations and public sector innovations have been summarized by Estonian Development Fund. Table 1 offers the focal aspects of this comparison.

Table 1. The differences between private and public sector innovations

	Private sector	Public sector
Principal goals	Profits, stability and increased income	Policy implementation
Structure	Different size companies and possibilities for newcomers	Complex system of organisations with differing (somewhat contradicting) tasks
Performance measurement	Return on investments	Different performance indicators and goals depending on the field
Management	Some managers are independent; others have restrictions posed by stock holders, corporate control or resource limitations. Successful managers get well remunerated and promoted.	Tries to resemble private management practices, but actually subordinated to strict political control. Successful managers are often paid less than private managers on similar positions are.
Customer relations	Market may be business-to-consumer or business-to-business. Companies have different closeness with customers, but customer feedback is vital in final decisions about innovation.	Final customer is population considered citizens. The sector has adopted the market-based approaches and public is viewed as clients or consumers.
Supply Chain	Most companies belong to one or several supply chains organized by larger companies.	Usually public sector depends on private suppliers and is therefore an important market for companies
Employees	Personnel are very diverse and relations with management range from distrust to harmony. Companies try to establish loyalty and customer focus, but employees are often motivated economically by securing adequate income.	In several countries, public sector employees are often in labour and professional unions. Employees are usually interested in status and salary, but several join public service for idealistic reasons.
Knowledge sources	Companies are relatively flexible in buying in innovation related knowledge from consultants, associations and public researchers, but smaller companies might lack funds for it.	Despite large resources, some parts of public sector might restrict access to private knowledge sources (except suppliers). Public knowledge sources (universities) might be oriented to other parts of the public sector.
Time horizon	In several sectors short term, but in infrastructure can be very long term	As a rule short term: policy-based changes done within election period

Source: Estonian Development Fund (2008)

The links between private and public sector innovations are most obvious in supply chain and in knowledge sourcing. In the first case, the public sector innovations depend extensively on private supplies. In the latter case, the private innovations get required knowledge also from public sources. These two aspects as well as other initiatives (for example the use of private management practices or market-based logic in public organisations) suggest that innovations cannot always be strictly divided into private innovations and public sector innovations. Sometimes these two innovation types are highly interwoven and very collaborative in nature.

However, despite these similarities and links, Potts and Kastle (2010) object the view that public sector innovations should be built on the models and best-practices from private sector. The incentive schemes in these sectors are different and the differences have to be taken into account. In addition, the learning from best-practices tends to provide problematic results even within private sector, because conditions differ. Yet, Smith and Starkey (2010) show with example how private sector governance methods can be suitable for implementing the innovations even in the public sector. Thus, there are various opinions about the appropriateness of private sector practices in the framework of public sector innovations.

Moore and Hartley (2008) focus specifically on the special category of public sector innovations, namely innovations in governance. They argue that innovative changes in public sector governance introduce network-based decision making between organisations as well as new financing and production systems. These innovations help to find new resources, manage private rights and responsibilities and influence value distribution. Much like public sector innovations in general, the innovations in governance should support public justice and societal development as well as efficiency and effectiveness. The governance aspect of knowledge sharing across organisational boundaries has been investigated by Pardo et al. (2001). They find that it is difficult to share tacit and interaction-bound knowledge across public agencies, which might have different practices and values. The policy and legal constraints as well as misaligned goals do inhibit the knowledge sharing between public organisations. Despite these detrimental influences, the knowledge sharing between public agencies is still possible and it must occur to support multi-organisational collaborative innovations.

Veggeland (2008) argues that public sector innovation in regulatory regimes, defined through the principles, norms, rules and decision-making procedures, are highly influenced by path dependence and administrative traditions. In the European Union, innovative governance on the national level is influenced by the supra-national EU level. Positive and self-reinforcing feedback from that higher level might set a path from which it is difficult to break out. In most cases, the path dependence represents lock-in to the past traditions and their continuation. As such, it represents a serious challenge in promoting the innovativeness among tradition-bound groups. Dodd et al. (2011) outline several problems related to EU level innovation policy, such as too narrow focus and failure to change. They propose comprehensive concept of total innovation that should integrate private or market innovations, social innovations and public sector innovations in the localised manner

to meet successfully the future challenges. The localised approach stresses the need to benefit from emerging initiatives instead of EU-wide subordination. The latter might indeed reinforce path dependence and reduce the reaction times.

The issue of collaborative innovations follows the suite of contemporary system models about innovations in the private sector. Sørensen and Torfing (2012) argue that public sector innovations are often not initiated simply by the supply factors or demand-side factors, including the role of public managers, politicians or private contractors as the initiators of public sector innovations. Instead, the modern public innovations tend to require collaboration between various social and political actors so that their differences are constructively managed. The collaborative innovations may involve contributions by private and public actors or at least by several government agencies, meaning collaboration within the public sector. Sørensen (2012) calls for the need to develop a collaborative view on the accountability, because it is natural to expect changes in accountability when the collaborative forms of governance are used. New Public Management (NPM) paradigm initiated since late 1970s makes politicians clearly accountable for policy innovations, but shares the accountability between public and private parties in case of service innovations. New collaborative governance requires mixed accountability standards. In short, the collaborative innovations introduce the need for shared accountability by public officials and other involved actors.

Micheli et al. (2012) analyze the possibilities to establish new business models in public sector collaboration with private companies. In that contribution, they summarize the types of contractual arrangements that public sector organisations typically use to cooperate with private sector. These arrangements are provided in Table 2.

Table 2. Contractual arrangements for public-private innovation collaboration

Name of the arrangement:	Nature of arrangement:
Outsourcing	External provider from the private sector takes over the delivery of a public sector service or function
Concessions	Public sector contract or permit that allows a private company to operate on other party's property
Private finance initiative	Partnership where the delivery of public services involves private sector investment into infrastructure
Joint venture	each party contributes resources and a new business is created in which the parties share the risks and benefits
Privatisation	The sale of public assets (fully or partially) to private individuals or companies
Commercialization partnership	The collaborative establishment of an income stream or generation of economic value from a tangible or intangible public-sector asset without detracting from its public-sector mission

Source: based on Micheli et al. (2011)

The arrangements differ in terms of the intellectual property management and ownership variation. In case of concessions, public partner would own the intellectual property and in case of outsourcing the private company. In case of commercialization partnership, the distribution of intellectual property rights tends to be object of negotiations between parties. (Micheli et al. 2012) The investigation of commercialization partnerships shows that they help to overcome barriers to the public sector innovation and benefit public sector, private partners as well as citizens. However, the success of these partnerships depends on the capacity and ability of parties to collaborate with each other and to focus on outcomes. Then private involvement can help to open up markets for collaborative public services. (Schoeman et al. 2012; Micheli et al. 2012)

Bienkowska et al. (2010) show how the collaborative interaction of private and public innovations takes place via semi-public organisations (for example research institutes) that involve industry, public universities and government. They argue that such diversity of actors as well as funding opportunities is very important element of a successful innovation system. Vogel and Frost (2009) suggest, based on the analysis of think tanks in Germany, that explicit rhetorical support by the important actors helps the public sector innovations to be widely recognised. These two examples indicate that public-private collaborations function as an influential tool in facilitating the public sector innovativeness and its acceptability in a society.

Grady and Chi (1994) stress the involvement of clients of agency services in the public sector innovation process. This shows that successful public sector innovations require customer orientation just as much as private innovations. However, higher level public organisations were not seen as very supportive groups in case of innovative changes. In some respect, this indicates that perhaps the most serious barriers to public sector innovations are not raised by objecting citizens or by potential private partners. The sector itself and intra-sectoral disparities between organisations and goals offer more challenges than external influences. Vigoda-Gadot et al. (2008) explore public sector innovations from perspective of citizens. Their findings on the basis of international respondents show that responsiveness, leadership and vision are important preconditions for public sector innovations, while such innovations influence directly and indirectly the trust in and satisfaction with public administration. Thus, among other risks, the public sector innovations involve considerable image related risks, but also image related rewards.

To conclude, the public sector innovations represent an important yet diverse sub-set of innovations in society for which there is growing need. Public sector innovations should in addition to efficiency seeking address the public good and increase public value. They are often interpreted based on models used in private sector, but because of the differences in incentive schemes and other characteristics this approach is debated and challenged. Public innovations involve numerous governance issues and potential barriers that include inter-organisational disparities and path dependence. Given that both parties have adequate capacities for knowledge sharing and collaboration towards outcome, public and private innovations can be successfully interwoven in order to reinforce each other by using various arrangements.

The demand-side innovation policy tools and public-private innovations

The recent economic crisis has shown that traditional public policy approaches and governance schemes may be inadequate for the sustainable growth. Benner (2012) argues on the basis of Nordic experiences that in addition or instead of financial rescue plans, more extensive policy changes are needed. Multilayer transformation of Finnish and Swedish economies in 1990s called for stringent macro economy, changes in social policies (including employment issues) and focal role for innovation policy. The view that innovations are very important for long-term growth of economies is shared by Janasz (2010). He stresses the need for well-balanced combination of industry level knowledge generation and improved access for capital as the elements of innovation policy. Paraskevopoulou (2012) considers the link between public policy and innovation. Even if public policies do not directly address innovation, they still have important implications to innovations by regulatory effects. Such non-technological regulatory policies can contribute to the achievement of innovation policy targets, while innovation policy tools can compensate for negative regulatory influences. Samara et al. (2012) find on example of Greece that the institutional conditions, as part of innovation policy, tend to have highest impact on innovation performance within national innovation system. This might be true for countries with similar innovation development score, including Estonia. Thus, the innovation policy has an important role in reshaping the growth perspectives of post-crisis economies as do general regulatory aspects and institutional conditions.

However, from the perspective of economic doctrines Audretsch and Link (2012) argue that although Schumpeterian notions of innovation, entrepreneurship and creative destruction seem to be more popular policy guiding terms than ever, the actual reactions to economic downturn seem still follow neoclassical and Keynesian doctrines. Thus, the actual public policies do not sufficiently reflect the importance of innovations and entrepreneurship. Yet, these are very relevant for responding to the actual challenges of globalization.

The successful conversion to innovation-supporting public policies is likely to require knowledge diffusion, policy learning and policy innovation. These three aspects are closely linked. Autant-Bernard et al. (2013) warn, however, that knowledge diffusion about regional innovation policies is a complicated task, which requires an accurate knowledge of the local characteristics and region's comparative position among others. Then it is possible to create strategies for public-private, intra-inter firm, intra-inter industry and local-global knowledge flows. Borrás (2011) argues that policy learning takes place on the level of public officials, networks and policy communities, whereas the impact of learning on the innovation systems depends on the implementing capacities of relevant organisations. Marsden et al. (2011) combine the policy learning and policy innovation perspectives within the municipal level comparison. They conclude that policy innovations are closely linked to learning and policy transfers, which are often motivated by strategic needs and

curiosity. In this process, the public officials use their trusted network of peers. The organizations with strong culture of learning build strong and broad networks too.

Zhu (2012) argues that local policy innovations and transfer of successful experiences to other localities has been characteristic to China's reform policies. He outlines the role of policy entrepreneurs in promoting the civic engagement and popularity of new innovative policies. Suwa and Jupesta (2012) see the policy innovation as an important tool for technology diffusion. Thus, they link the changes in the public sector policies to the facilitation of the private contribution towards new publicly desirable technologies (see also Pham et al. 2011). However, such connections are not always straightforward. Clarke (2011) claims that the net impact of competition policies on innovativeness of the companies is somewhat unclear. High level of competition creates the pressure from competitors to innovate, but it is likely to facilitate price competition as well, thus reducing economic returns from innovation. Empirical results suggested that stricter competition policies might facilitate the introduction of new products, but decrease the introduction of new processes. (Ibid.) This shows how the demand-side oriented public policies might have various and complex influences on the market situation.

Furthermore, Peters et al. (2012) found that unlike domestic technology-push innovation policies, which foster innovative output within national borders, the domestic and foreign demand-side innovation policies increase innovative output with considerable spillovers from nation to nation. Although, this could be seen as internationally positive phenomenon, the national politicians are predominantly interested in domestic demand and might have reduced incentive to use demand-side innovation policy measures. This result suggests a need for supranational demand-side policy schemes, to overcome the potential negative impact of cross-border spillovers on country-level political preferences. (Ibid.) Some policy issues, like the environmental protection and the sustainable usage of resources, which can be more diversely addressed with the demand-side policies (as suggested by Caviglia-Harris et al. 2003), are inherently more supranational than national in nature.

In Europe, the supranational policymaking is reflected by EU-level policies and guidelines. Recent reports suggest that innovation concept has evolved towards multi-layered openness and networking, which requires new approach to innovation policy (Renda 2012; Anvret et al. 2010). Anvret et al. (2010) propose that future innovation policy should be integrated, market-based and demand-driven, whereas the multi-level and yet coordinated innovation policies are connected with increased accountability for policy actions. This accountability relates to improved decision-making, measurement, monitoring and reviewing within the innovation support systems (Ibid.). Renda (2012) shows based on survey results that current innovation support policies are indeed perceived as too complicated and fragmented in nature. Majority of respondents (91%) found that EU could do much more to increase the demand for innovation for example by creating the special unified agency and by improving knowledge transfer and partnerships between sectors (Renda 2012). Multi-level innovation policy means that supranational policies work in alignment with regional and national level policies. Tanev et al. (2011) reflect Danish

experiences on integrating the paradigms of user-driven innovation, open innovation and value co-creation into innovation policies. They stress the relevance of innovation support, innovation networks, education-competencies, entrepreneurship and intellectual property protection as the areas of current innovation systems that have to be targeted with improved policy approaches. These policies have to be developed within the frameworks of national innovation systems. (Tanev et al. (2011) Thus, the increased need for demand-side innovation policy measures relates to the shifts in innovation paradigms that are adopted into the policy practice.

The demand-pull innovation theories stress that the ability to produce innovations is wide-spread, but innovations require the market opportunity, in other words demand. This market demand determines the resource allocations between various innovations. The modern innovations are not the results of supply push factors, as early views suggested. They are the result of complex interaction between supply push and demand pull. This enables to promote innovations by improving the demand conditions for innovative products, services and processes. That purpose is served by the demand-side innovation policies. (OECD 2011) The demand-side innovation policy measures are often linked to such policy aims like sustainability, energy efficiency, infrastructure or health care (Edler 2005). These aims of innovation policies combine the innovations' facilitation and societal values related to common good. The demand-side innovation policy is 'a set of public measures to increase the demand for innovations, to improve the conditions for the uptake of innovations and/or to improve the articulation of demand in order to spur innovations and the diffusion of innovations' (Edler 2009, p. 5).

These demand-side policies are used because the innovation policy needs to help overcome market and/or system failures. It is equally aimed at the realisation of societal goals and policy needs determined by policymakers. Countries often consider the industrial or economic policy that calls for the modernisation by innovations and tries to promote innovation production in local, national or regional companies as well as to create lead market potential.(see Edler 2009) Thus, the demand-side innovation policy has more to it than dealing with deficiencies of the market for innovative solutions and with the innovation initiation or diffusion problems. The policy needs and goals of politicians involve the risk of enacting biased solutions and potentially corruption. Transparent goal-setting and public accountability could help to reduce these dangers. The demand-side innovation policy tools are summarized on Figure 1.

Edler (2010) analyzes the conditions that characterize the lead markets. These include the signals that buyers demand innovative solutions, certain pressure from perceived problems in a market and the critical mass of demand. The economic ability of companies to pay higher entry costs, leading-edge regulations, learning and adaptation capabilities of suppliers, technological competencies for value creation and supportive services are important contributors too (Edler 2010). The demand for innovation-based solutions needs to be appropriately stimulated by lead market policies (Appelquist et al. 2009). The innovation policy should on the introduction of measures, including new ways of using the public procurement, and

support for user-driven innovation projects. The policy should be flexible and synchronised. This requires quick reaction to the problems, reduced complexity of the policy portfolio as well as wider policy scope. These policies focusing on the demand factors for innovation could facilitate the modernisation of economy and public services as well as accelerate the catching up process of less-developed countries or regions (Edler 2011).

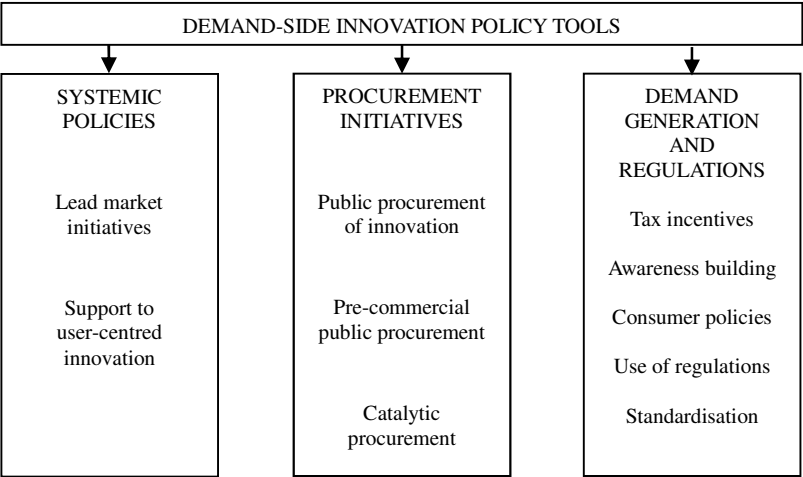


Figure 1. The demand-side innovation policy tools (Source: based on Izsak, Edler 2011, p. 6 and OECD 2011, p. 53).

Successful policy in support of innovations facilitates an increase in productivity by encouraging the companies to modernise and improve their production systems. Leading technologies and processes make the activities of companies and ultimately the entire economy more efficient. However, as the cross-border spillovers indicate (see Peters et al. 2012), an innovation support policy should be related with the analysis of domestic capabilities. In case the domestic innovative capabilities are low, the demand-side policies might contribute more to the import of innovative products and services than to the development of domestic innovations. Cross-border knowledge transfers are relevant too. The national-level innovation policies should still focus predominantly on creating the conditions for domestic innovations. (see also Edler, Georghiau 2007; Edler 2009)

Although the demand-side facilitation of innovations might seem to be a very contemporary idea, not all the tools used for such innovation policies are new. In 1970s and 1980s, the public procurement as a policy measure that can impact innovations was already analyzed. (Edler, Georghiou 2007) The modern approaches on subject are still offering a considerable contribution by introducing more integrative and interactive viewpoints. Each policy tool is discussed in a broader context to account for the general impact of the entire policy portfolio. Indeed, the

demand-side innovation policies have their own narrower focus, but they should be monitored and governed in the wider framework of economic policies.

The EU expert group led by Esko Aho outlined already in 2006 the need for demand-side innovation policy initiatives. The report concluded that harmonised regulations, standards, public procurement, intellectual property rights, and innovative culture are the five key issues to be addressed. (Aho et al. 2006) Aho report as well as other contributions (see Moran et al. 2007; Zuleeg et al. 2007 for details) indicate the EU-level call for better balance between supply-side and demand-side innovation policy measures.

Such policy shift requires increased focus on the demand-side measures. Yet, it would not mean a complete policy switch towards solely demand-side policies. Instead, the innovation policy mix should build on the complementarities between the supply-side and the demand-side instruments (Smits and Kuhlman 2004; Edler, Georghiou 2007). Izsak and Edler (2011) argue that in Europe there is a general trend towards the increased usage of demand-side approaches in the strategies and policies. The demand-side policies are now adopted by majority of EU countries. In several countries, it has become an explicit part of recent innovation strategies. However, most EU countries still give priority to the supply-side instruments. Thus, the demand-side policy measures are gradually adopted in the context of national R&D and innovation strategies with variable speeds but general trend is there. According to Izsak and Edler (2011), there is a certain danger that the demand-side innovation policy measures are adopted prematurely and with high transaction or learning costs. This tends to happen when new trends emerge in European policies.

In terms of demand-side policy tools, there is a clear focus on innovative public procurement and growing popularity describes pre-commercial procurement. However, Edquist and Zabala-Iturriagoitia (2012) stress that the public procurement for innovation (PPI) should be clearly differentiated from traditional public procurement. The latter is aimed at purchasing of off-the-shelf products. Whereas, PPI focuses on the procurement of results in the form of solving societal problems or satisfying novel needs. Only PPI should be viewed as part of demand-side innovation policy mix. (Ibid.) This procurement tool should be used in combination with other innovation support measures to achieve more effective policy outcomes. In connection to the pre-commercial procurement, the European Commission (2008) states that its scope should be clearly on pre-commercial R&D services, it should apply risk-benefit sharing with private suppliers and it should be competitive in nature in order to exclude the possibility of state aid. As such, the pre-commercial procurement of problem solutions should facilitate public-private cooperation for innovation in the competitive, but still integrated, manner (European Commission 2008). The links with EU-level standards, procurement guidelines and industrial policy regulations indicate that the demand-side policy measures are indeed somewhat supranational. In that setting, the national R&D and innovation potential can be effectively supported by using agile systems and good responsiveness to changes in economy and business environment. This presumes public sector innovativeness, which is supported by demand-side policies and

subsequent collaboration with the private sector and non-government organisations. As was shown in previous section, the public procurement is one of the main links.

Gault (2012) brings in an important point about demand-side innovation policies by focusing on the fact that user innovations as well as public sector innovations are not oriented to the market in the strict sense of the word. It poses methodological challenges even or perhaps especially when market-based approaches are adopted, because then markets and demand formation tend to get broader meaning, which is potentially confusing. Strategic centres for science, technology and innovation introduced by Nikulainen and Tahvanainen (2009) offer an example of such multi-actor collaboration bodies, which are not necessarily market oriented. They tend to involve public support, user communities and private partners. Thus, not all demand-side innovation policy initiatives are strictly market oriented. Some of them seek to combine the market-based approach with public value and community benefits. This implies that demand-side innovation policies can incorporate the multi-purpose collaborative measures, which increase demand for innovations, but at the same time enhance the public sector capabilities for entrepreneurship, innovation and knowledge sharing.

To conclude, the demand-side innovation policies are important complements to the supply-side measures. These policies rely upon diverse tools, some of which facilitate not only private market for innovations, but also public sector capabilities to innovate. Thus, the demand-side innovation facilitation (perhaps the procurement initiatives and user-centred support activities in particular) serves as an important gateway between public sector and private sector innovations as well as between national and supranational policy levels. Now the author introduces some examples of demand generating public sector innovations from Estonia, based on public information, and then offers policy recommendations for improving the links between public innovations and demand-side innovation policies.

The examples of demand-side public innovations in Estonia

ICT innovation in Estonia

Estonia is known as the leading production site for Skype service as well as becoming known for other information technology solutions. The usage of ICT is common in public sector as well. Estonia was one of the early adopters of e-government solutions that enhance the decision-making processes. Estonian Tax and Customs Board has adopted elaborate e-taxation and e-customs systems. Based on digital identification, using ID card, these systems enable to file personal income tax declaration as fast as in approximately 30 seconds, because majority of information is pre-filled by integrated reporting systems, and average employee who has no major deductions to report has to just review the info and confirm. The filing of annual reports by companies into the business registry has been innovated as well. By now, the reports are submitted into the online form, which enables to process the data for various statistical and governance purposes without further need to enter it manually or to standardise it additionally. The shift to this solution required change

of procedural habits by entire private sector as well. Estonia intends to continue the focus on using the possibilities offered by ICT for increasing the governance efficiency. Recently former CEO of major software developer, focusing and public sector IT solutions, was appointed as the vice-chancellor of IT matters by the Ministry of Economic Affairs and Communications. He has also been the leader of ICT Association. This shows that policy makers in Estonia seek to improve the ICT based innovations by developing more systematic and integrated policy initiatives.

CO2 emission quota countertrade and ideas for public innovations

Interesting source for public sector innovation projects in Estonia has been the CO2 trade. Because these deals are based on the non-monetary exchange, Estonian officials came to an idea to use the quota sold to Mitsubishi Corporation for providing social workers in Estonian municipalities with 500 electric vehicles as well as to build the nation-wide network of charging stations and offer monetary support for non-public buyers of electric vehicles by paying up to half of the price. This project has been perhaps one of the largest initiatives in support of electric transport by public sector. The social workers have adopted these vehicles relatively well. Even winters did not produce major setbacks. However, private interest in these vehicles remains low despite the price support. There is one small company in second largest city Tartu that started taxi services using Nissan Leaf electric vehicles. The network of charging stations was built on the basis of public procurement contract won by Scandinavian multinational ABB. In Tartu there is emerging public-private partnership with the municipal transport partner company for using biogases produced from sewage waste as the fuel in city buses. Other important deals involve the project for purchasing new modern and energy efficient streetcars as well as large scale housing renovation program towards energy savings on heating during the wintertime. However temporary such deals might be, they still have certain long term effect in terms of experiences with innovative ideas.

Municipality funded public transport system for the city residents

Since January 2013, the capital of Estonia Tallinn stopped asking transportation fee in the form of tickets from the resident taxpayers who use public transport. This means that for the residents of Tallinn the public transport system is fully covered from municipal budget and only visitors are obliged to purchase tickets. Yet, in order to determine the residency status of passengers, the local government supported an investment into innovative electronic validation system. Thus, residents are now required to have the validation card and validate each journey by brushing it over the controller. There is an important political side effect to this novel idea. Namely, the discrimination based on residency status might encourage people to become official residents of Tallinn even in post-urbanisation situation, when they actually live in small municipalities nearby and migrate to work in Tallinn. In Estonia, the citizen's residency status determines the municipality to where the share from income tax revenues is allocated. Thus, the capital loses certain amount of ticket revenues, but might even gain budget revenues from the increase in official city population. The role of public transportation in Tallinn has

been facilitated by marking down the extensive network of priority bus lines that increase the speed of public transport services, while potentially reducing the benefits of private vehicles in congested areas. This example illustrates very well the multi-purpose nature of certain public sector innovations, whereas it has strong elements of creating shift in private demand.

Research and Innovation Policy Monitoring Programme and popularisation aspect

In 2011, Estonian Ministry of Education and Science launched the Research and Innovative Policy Monitoring Programme from 2011 to 2015. This programme contains seven larger work packages and numerous smaller studies (see TIPS homepage 2013) made in close cooperation between the University of Tartu and Tallinn University of Technology, which are the two largest public universities in Estonia. However, it is not so much the programme itself that is innovative, but the reporting and governance structure. Each study is related to the frequent knowledge sharing with public officials from the Ministry in the form of research seminars.

These seminars are not solely reporting meetings between the interested public party and the service provider. The frequency of meetings helps to evolve them into mutual knowledge sharing experiences where public policy makers can pinpoint their knowledge gaps and prioritised knowledge inputs. It does not mean politically biased research results, but refined aims of collaboration for monitoring purposes. Private sector enters into the mix as well, because in case of several studies, the companies or industry associations are extensively used as providers of input data. Thus, universities function as innovative gatekeepers and knowledge translators between the business sector and public sector officials.

Sadly, the Ministry of Economic Affairs and Communications is less involved into this knowledge exchange programme, but it fosters the public-private partnership by mentoring the competition of infant innovative business ideas called 'Ajujaht' (brain hunt) through its executive agency Enterprise Estonia. Albeit the sustainability and development of this very public awareness building event is warranted by public involvement, the education within the competition relies considerably on the private sponsors and business leaders as corporate mentors. The longevity of this initiative is important in order to build successfully on the experiences of earlier years as well as to portray the evolvement of innovation networking and know-how over time.

Suggestions for linking the public sector innovations and demand-side policies

Despite these positive examples, the Estonian R&D and innovation policy in general is still dominated by supply-side policy measures. Cunningham (2009) argues that Latvia and Lithuania seem to have ongoing policy debate about demand-side innovation policy measures, but Estonia does not. There are initiatives of public procurement for innovation that include changes in the regulatory environment and subsidies to boost the usage of local energy resources, the collection of used packages, wind energy production and changes in waste collection. However, these reflect often the impact of EU-level policies on local standards. They are not

innovative or unique in the international context, but still new in the local setting. The results of this analysis and the examples of policy practices in Estonia allow making the following recommendations for policy development.

Public sector innovation initiatives in Estonia could benefit from increased customer and learning orientation by public organisations, including ministries and public agencies. Customer orientation does not refer to strictly market-based view in the public policy procedures, but to gaining the broader understanding about the needs of users. Learning orientation suggests that public officials as well as organisations should acquire knowledge and capabilities from more open interaction with other actors. Thus, the user-centred and open innovation paradigms suggest the increased need for public-private networking.

The public procurement initiatives should be even more devoted to solution seeking properties that enhance innovative capabilities and entrepreneurial incentives of all involved parties. The interactive problem solving process tends to be by nature more innovative than adoption of off-the-shelf solutions. In this process, the public sector can provide the tools for socially desirable outcomes, which are not always marketable in commercial terms. The private suppliers introduce potentially the element of capability building and competitive strive to excellence into such interactive procurement process.

The competitive pre-commercial procurement of R&D services seems to be a great policy tool to facilitate the risk-benefit sharing between public sector and private partners. It requires, however, the advances in intellectual property rights distribution practices among partners. Therefore, it is relatively high risk policy tool in terms of potential legal conflicts about the fruits of collaboration. Yet, these pre-commercial initiatives represent a direct link between public sector innovativeness and increase in demand for private R&D contributions. As such, the pre-commercial procurement is likely to advance the development capabilities of all parties involved.

Similar opportunities and challenges relate to commercialisation partnerships between public agencies and private collaboration partners. The negotiations about intellectual property rights allocation might be even more complicated, because commercialisation phase involves already identifiable value streams. Given that such partnerships are aimed at additional value offerings, which do not set the core public value provision in danger, they are still recommended. However, the intellectual property rights distribution remains focal political issue that might either facilitate, if done mutually agreeably, or inhibit the execution of last two policy suggestions. The relatively small experience in this field of public-private negotiations in Estonia could be viewed as considerable development gap.

There is a need for more integrated approach towards using the demand-side innovation policy tools in combination with public sector innovations. This suggests that the governance should be more flexible and not locked-in to the path dependence of particular public agency. Therefore, public policy should encourage collaborative projects between various public agencies that deliberately disregard

their traditional subordination in order to facilitate inter-organisational knowledge sharing and supra-organisational teamwork. It is easier said than done, but potential benefits of new innovative policy networks are likely to outweigh the efficiency-seeking properties of well-settled policy routines.

The link between public sector innovations and demand-side innovation policies could be strengthened by adopting latter as well-defined multi-purpose tools. For example, the awareness building measures could address public as well as the public sector officials in particular. By combining these external and internal policy perspectives, the sectors gain an improved understanding of each other's incentive schemes. This facilitates successful collaboration. At first, the multi-purpose use might seem as potential source for confusion, but in time, the layered nature of various demand-side policy measures will help to leverage the public sector capabilities in a refined manner.

The demand-side innovation policies are characterised by international spillovers. This suggests that the national-level policies should be streamlined with supranational and regional initiatives. However, the public sector should apply 'think global act local' approach, instead of imitating best practices without sufficient localisation. The networking for policy transfers is important as well, but the policy and/or service innovations require more recombinant transfer of elements in order to find most effective match with local demands. Recombination means that it is the policy elements, which have to be understood, scrutinised and perhaps rearranged in locally more suitable fashion.

The demand-generating public sector innovations should be based on the private sector paradigms about collaborative innovation, but in an elaborated fashion by integrating public sector incentive schemes into these models. Thus, such innovations involve much more complex and intricate layouts than solely private collaborations. Yet, without the incorporation of public sector incentives into the private demand facilitation, the good intentions are likely to run into serious execution problems simply because of long-term misalignment with the logic of public policies.

The primary success factor for diffusing the impact of private sector innovations into public sector and vice versa, seems to be the ability of various actors to communicate and transfer knowledge. That is why the collaboration and learning are in the spotlight of these policy recommendations.

Conclusions and implications

The public sector has been seen as bureaucratic, rigid, inefficient and resistant to changes. However, the modern challenges and the increased need for public services have forced it to seek new innovative ways. The public sector innovations represent a diverse set of multi-purpose innovations in a society. These innovations address not only efficiency and effectiveness, but also public good and increase public value. The models used for private innovations are applied to public sector innovations as

well, but because of the differences in incentive schemes, this approach is debated. There are various governance issues and barriers to public sector innovations, like for example inter-organisational disparities and path dependence. If public and private partners have adequate capacities for knowledge sharing and collaboration towards outcome, then public and private innovations can be linked and reinforced.

The modern economic policy for growth should rely more upon paradigms that involve entrepreneurship and innovation policies. This requires knowledge diffusion, policy transfer and policy innovation, whereas the policy innovation is an important tool for technology and demand generation. The demand-side innovation policies are complex policies with potential side effects and spillovers, but important complements to the supply-side measures. The demand-side policy measures are diverse. They facilitate not only the private market for innovations, but also public sector capabilities to innovate. The demand-side innovation facilitation, via the procurement initiatives and user-centred support in particular, is an important link between the public sector and private sector innovations. The demand-side measures connect also the national and supranational policy levels in the framework of EU.

In Estonia, there are several examples of public sector innovations with demand-side effects, including user-centred ICT solutions, environmental projects, municipal transport innovations and knowledge sharing/awareness building initiatives. In general, however, the innovation policy is still too focused on supply-side measures. The policy recommendations include increase in customer and learning orientation of public organisation (see also Grady, Chi 1994; Salge, Vera 2012), public procurement in the form of solution seeking (see also Edquist, Zabala-Iturriagoitia 2012), competitive pre-commercialisation and commercialisation partnerships with risk-benefit sharing (see also European Commission 2008; Schoeman et al. 2012; Micheli et al. 2012), collaborative projects between public agencies to foster integration (see Pardo et al. 2001), multi-purpose demand-side measures aimed simultaneously at external (society) and internal (public sector) changes, recombinant policy transfers with local adaptation (see also Autant-Bernard et al. 2013), adjusted underlying paradigms (see also Potts, Kastle 2010).

The limitations of this study relate to the fact that public sector innovation discourse and innovation policy discourse have some overlapping aspects, which might lead to certain cause and effect confusions in interpretation. There is no sufficient empirical evidence about the pre-planned multi-purpose use of some demand-side measures.

The theoretical implications relate to a fact that the demand-generating public sector innovations offer a new path for scientific discourse that addresses the versatile and complex nature of demand-side innovation policy measures as the vital elements for the public sector innovations that require public-private collaboration.

The managerial implications relate to numerous business opportunities offered by the pre-commercialisation and commercialisation public-private partnerships that might help to create intellectual property valuable beyond the national borders.

The future research should focus on the analysis of negative and positive effects or spillovers that occur by using the demand-side innovation policy measures. The possibilities for localised demand-side policy measures should be studied as well.

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AVALIKU SEKTORI INNOVATSIOONID JA NÕUDLUSPOOLSED INNOVATSIOONIPOLIITIKAD

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Teadmispõhine ühiskond rajab oma arengu innovaatiliste lahenditele. Harilikult pühendatakse selliste uudsete turulahendite pakkumisel enam tähelepanu erasektori algatustele. Kuid kaasaja maailmas on ressursid sageli piiratud, samal ajal kui ootused avaliku sektori pakutavate teenuste kvaliteedile ja juurdepääsetavusele üha kasvavad. Kogukonnad puutuvad järjest enam kokku selliste probleemidega, mida tavapäraste poliitikameetmetega ei õnnestu edukalt lahendada. Need tendentsid loovad avalikus sektoris silmatorkava vajaduse uute innovaatiliste protsesside, lahendite ja strateegiatega järele.

Mõned neist avaliku sektori innovatsioonidest on pelgalt protseduurilised ja suunatud avaliku sektori efektiivsuse tõstmisele. Teised arengud kajastavad aga palju ulatuslikemaid muutuseid ühiskondlikke protsesse puudutavate erinevate poliitikate rollis. Vahel tähendab see ulatuslikke arenguid teenuspakkumise mustris, delegeerides näiteks poliitika elluviimise tegevused erasektorile või kolmanda sektori organisatsioonidele. See on vast kõige otsesem seos avaliku sektori innovatsioonide ning erasektori poolse teenuspakkumise algatamise vahel. Avaliku sektori teenuskontseptsioonide ümberkujundamiseks vajalike kommunikatsiooni- ja infotehnoloogiliste lahendite avalikud hanked pakuvad samuti seose avaliku sektori innovatsioonide ja eraettevõtete innovaatiliste arengute nõudluspoolse soodustamise vahel. Avaliku sektori organisatsioonide potentsiaalne eestvedaja roll innovatsiooni algatajatena peaks samas andma tõuke innovaatilise mõttelaadi levikule inimeste ja ettevõtete seas. Kui avalik sektor suudab kõrvale heita oma negatiivse varjundiga imago kui arvatavalt kõige bürokraatlikum ja paindumatum ühiskonna osa, suunab see positiivse näitena ja toetavate poliitikatega uuendusmeelsusele teisi sektoreid.

Kuigi avaliku sektori innovatsioonidel ja erainnovatsioonidel on mitmeid ühiseid tunnuseid, on neil ka mõningaid olulisi erinevusi. Avaliku sektori innovatsioonid peaksid edendama avalikku hüvist ja suurendama avalikkusele pakutavat väärtust.

Seega peaksid nende investeringute peamised kasud olema selgelt suunatud avalikkuse huvide teenimisele. Siiski ei tähenda see, et avalikud innovatsioonid ei võiks saada lisajõudu täiendavatest seostest eranõudlusega. See potentsiaal vastastikku tugevdavate avaliku sektori ning erainnovatsioonide tekkeks viitab sellele, et avaliku sektori innovatsioone tuleks tõepoolest kasutada ühe vahendina samasuunaliste erainitsiatiivide soodustamiseks. Seda tuleks aga teha siiski väga ettevaatlikult, sest eksimused avalike teenuste pakkumise ümberkujundamisel võivad tuua kaasa negatiivse mõju, mida tugevdavad veelgi eksliku impulsi ajal

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toimuvad nihked erasektoris. Seega avaliku ja erasektori ühised innovaatilised algatused kätkevad endas sotsiaalseid riske.

Käesoleva uuringu eesmärgiks on pakkuda võimalikke viise avaliku sektori innovatsioonide ja nõudluspoolsete innovatsioonipoliitikate seostamiseks Eestis. Analüüs toob esile avaliku sektori innovatsioonide tunnused ning innovatsioonide seosed erainnovatsioonidega. Seejärel pöördub vaatenurk ümber ning autor püüab leida seoseid nõudluspoolse innovatsioonipoliitika meetmete ja avaliku sektori innovatsioonide vahel. Tuginedes antud kahesuunalisele vaatele, sõnastatakse avaliku sektori innovatsioonide ja nõudluspoolsete innovatsioonipoliitikate vaheliste seoste arendamist puudutavad poliitikasoovitused.

Avaliku sektorit on vaadeldud kui bürookraatlikku, jäika, ebaefektiivset ja muutustele vastuseisvat. Siiski on kaasaegsed väljakutsed ja suurenev vajadus avalike teenuste järele sundinud sedagi sektorit otsima innovaatilisi arenguviise. Avaliku sektori innovatsioonid esindavad ühiskonnas mitmekülgsed ning mitme-eesmärgiliste innovatsioonide kogumit. Need innovatsioonid pole suunatud mitte üksnes efektiivsuse ja tõhususe suurendamisele, vaid avalike hüvede pakkumisele ning avalikkusele pakutava väärtuse suurendamisele. Erainnovatsioonide selgitamiseks kasutatavad mudelid on kasutusel ka avaliku sektori innovatsioonide juures, kuid stiimulisüsteemide erinevuse tõttu diskuteeritakse selle lähenemise asjakohasuse üle. Avaliku sektori innovatsioonidega seonduvad erinevad halduslikud raskused ja tõkendid, nagu näiteks organisatsioonidevahelised erinevused ning rajasõltuvus. Kui avalikel ja erapartneritel on aga piisavalt võimekusi teadmuse jagamiseks ning ühise väljundi suunas koostööks, siis saab avaliku sektori ja erainnovatsiooni seostada ning sealäbi tugevdada.

Kasvu saavutamisele suunatud kaasaegne majanduspoliitika peaks rohkem tuginema majandusteaduslikele paradigmatidele, mis hõlmavad ettevõtlikkuse ja innovatsiooni alaseid poliitikaid. See nõuab teadmuse jagamist, poliitikate ülekannet ja poliitikate innovatsiooni, kusjuures poliitikate innovatsioon on oluline meede tehnoloogiate ja nõudluse tekitamiseks. Nõudluspoolsed innovatsioonipoliitika on potentsiaalsete kõrval ja välismõjudega keerukad poliitika, mis on samas pakkumispoolsete meetmete olulisteks täienditeks. Nõudluspoolseid poliitikameetmeid on väga mitmesuguseid. Nad ei soodusta mitte üksnes innovatsioonide eraturu arengut, vaid avaliku sektori innovatsioonivõimekusi samuti. Nõudluspoolne innovatsiooni soodustamine, eriti läbi hankealgatuste ja kasutajakeskse toe pakkumise, on oluline ühenduslülid avaliku sektori innovatsioonide ja erasektori innovatsioonide vahel. Samas loovad nõudluspoolsed meetmed Euroopa Liidu raamistikus ühenduse ka riiklike ja rahvusüleste poliitikatasandite vahel.

Eestis on mitmeid näiteid avaliku sektori innovatsioonidest koos nõudluspoolse jõuga. Näiteks kasutajakesksed info- ja kommunikatsioonitehnilised lahendused, nagu e-valitsus, e-maksuamet, e-tolliamet ning üksikisiku tuludeklaratsiooni ja ettevõtete majandusaruannete esitamise veebipõhised lahendused, mis on muutnud ühtlasi üksikisikute ja ettevõtete käitumisjoonist. Saastekvootidega kauplemise tulemusena algatatud sotsiaaltöötajate elektriautode, üleriigilise laadimisvõrgu

ehitamise ja elektriautode soetajatele toetuse pakkumise projekt on samuti avaliku sektori innovatsiooni ning innovaatilist eranõudlust põimiv. Samalaadselt innovaatilised on reoveest toodetud biogaasil sõitva linnatranspordi edendamine Tartus ning hoonete soojapidavamaks renoveerimise ja trammide kaasajastamise algatused keskkonnasuunaliste innovatsioonidena. Tallinna linnakodanikule tasuta ühistranspordile üleminek jaanuaris 2013, koos innovaatilise ühiskaardi abil staatuse valideerimissüsteemi juurutamisega, on avaliku sektori innovatsioon kohaliku omavalitsuse tasandil. Teadmusvahetuse aspektiks on huvitavaks näiteks Teadus- ja Innovatsioonipoliitika Seireprogrammi (TIPS) raames toimuvad regulaarsed seminarid, kus osalevad aktiivselt Haridus- ja Teadusministeeriumi töötajad. See on loonud omalaladse vastastikku lähendava õpikogemuse ning viib ühtlasi valmivate uuringute kaudu kokku erasektori kui infosisendi ja avaliku sektori kui infotarbija.

Teadlikkuse tõstmise aspektist on jätkuvalt oluline konkurss Ajujaht ning selle arenemine ajas. Üldiselt on Eesti innovatsioonipoliitika aga jätkuvalt keskendatud pakkumispoolsetele meetmetele.

Analüüsi tulemused ja näited Eesti poliitikapraktikate kohta võimaldavad teha poliitikate arendamiseks mitmeid soovitusi. Need ongi koos mõningate analüütiliste kaalutlustega alljärgnevalt põhjalikumalt ära toodud.

Eesti avaliku sektori innovatsioonialgatused võiks saada kasu kasutajakesksuse ja õppimisorientatsiooni suurendamisest avaliku sektori organisatsioonides, sealhulgas ministeeriumites, ametites ning sihtasutustes. Kasutajakesksusena ei mõelda siinkohal mitte kitsalt turupõhise vaate rakendamist avaliku poliitika protseduuride juures, vaid laiema arusaama omandamist kasutajate vajadustest. Õppimisorientatsioon aga tähendab, et nii avaliku sektori ametnikud kui organisatsioonid peaksid omandama teadmuse ja võimekusi käies avatumalt läbi teiste seotud osapooltega. Seega kasutajakeskse ja avatud innovatsiooni paradigmatel baasil ilmneb suurenenud vajadus avaliku ja erasektori koostöök.

Avalikud hankealgatused peaksid olema senisest veelgi enam pühendatud lahenduste otsimise tunnustele, mis arendaksid kõigi kaasatud osapoolte innovatsioonivõimekusi ning ettevõtlusvalmidust. Interaktiivne probleemidele lahenduse otsimise protsess kipub juba olemuslikult olema innovaatilisem kui niioelda riulist võetud valmislahenduste sisseostuhange ja kasutuselevõtt. Selles protsessis saab avalik sektor pakkuda vahendeid sotsiaalselt soovitud väljunditeni jõudmiseks, mis ei ole alati kommertsiaalselt turustatavad. Erasektori hankijad aga panustavad sellesse interaktiivsesse hankeprotsessi potentsiaalselt võimekuste arendamise aspekti ning konkureeriva püüdluse eesrindlikkuse suunas.

Konkureerimisena teostatud kommertsfaasi eelsete uurimis- ja arendusteoste hange näib olevat väga hea poliitikameede soodustamiseks arendusriskide ning kasude jagamist avaliku sektori ja erapartnerite vahel. See eeldab samas arengut partnerite vahel intellektuaalomandi õiguste jaotamise praktikate osas. Seega on tegu suhteliselt kõrge riskiastmega poliitikameetmega, mille rakendamisel võivad tekkida õiguslikud vaidlused koostöö tulemite kuuluvuse üle. Siiski loovad just need

kommertsfaasi eelsed algatused otse seose avaliku sektori innovaativsuse ning eraurimis- ja arendustöõpanuste nõudluse kasvu vahel. Sellisena edendab hange juba kommertsfaasi eel tõenäoliselt kõigi kaasatud osapoolte arenguvõimekusi.

Samalaadsed võimalused ja väljakutsed on seotud avaliku sektori ja erasektori koostööga kommertsialiseerimispartnerluste vormis. Läbirääkimised selle üle, et kuidas jagada intellektuaalse omandi õigused, võivad osutada veelgi keerukamaks kui eelmise meetme puhul, sest kommertsialiseerimise faasis on õigustega seonduvad väärtusvood juba palju selgepiirilised. Eeldusel aga, et need partnerlused on suunatud täiendavate väärtuspakkumiste leidmisele, mis ei sea ohtu avaliku teenusega seotud tuumikväärtuse pakkumist, on seesugused partnerlussuhted meetmena siiski soovitatavad. Siiski jääb intellektuaalse omandi õiguste jagunemine keskselt poliitiliseks küsimuseks, mis võib kas soodustada, kui toimub vastastikusel nõusolekul, või takistada kahe viimase poliitikasoovituse rakendamist. Eesti suhteliselt väikest avaliku ja erasektori läbirääkimiste kogemust selles valdkonnas võib vaadelda märkimisväärse arengumahajäämusena.

Nõudluspoolsete innovatsioonipoliitika meetmete kasutamine koostoimes avaliku sektori innovatsioonidega vajab senisest lõimitumat lähenemist. See tähendab, et halduslahendused peaksid olema paindlikumad ning vältima lukustumist konkreetse avaliku organisatsiooni rajasõltuvusse. Seepärast peaks avaliku sektori poliitika soodustama seesuguseid koostööprojekte erinevate avaliku sektori agentuuride vahel, mis teadlikult eiravad nende traditsioonilisi alluvussuheteid, et edendada seeläbi organisatsioonidevahelist teadmuvahetust ning organisatsioonideülest meeskonnatööd. Seda on lihtsam öelda kui teha, kuid uute innovaatiliste poliitikavõrgustike potentsiaalsed kasud kaaluvad tõenäoliselt üles isegi hästi paika pandud poliitiliste rutiinide efektiivsust taotlevad omadused.

Seost avaliku sektori innovatsioonide ja nõudluspoolse innovatsioonipoliitika vahel saaks tugevdada võttes nõudluspoolsed poliitikameetmed kasutusele hästi määratletute ja mitme-eesmärgilistena. Näiteks innovatsiooniteadlikkuse kasvu meetmed võiksid kõnetada nii avalikkust laiemalt, kui olla samas erisuunatud just avaliku sektori töötajate harimisele. Nende väliste ja siseste vaatenurkade kombineerimisega poliitikakujunduses omandavad ühiskonna sektorid parema arusaama üksteise stiimulitest. See omakorda soodustab edukat koostööd. Algul võib mitme-eesmärgiline kasutus näida isegi segaduste potentsiaalse allikana, kuid ajapikku aitab nõudluspoolsete poliitikameetmete mitmekihilisus kasutada avaliku sektori võimekusi jõulisemalt ning täpsemal moel.

Nõudluspoolseid innovatsioonipoliitikaid iseloomustavad rahvusvahelised välisefektid, mis tähendab, et neist saavad kasu ka välismaised innovaatilised lahenduste pakkujad. See loob vajaduse viia riigi tasandi poliitika kooskõlla rahvusüleste ja regionaalsete algatustega. Siiski peaks avalik sektor seejuures rakendama „mõtle globaalselt kuid tegutse lokaalselt“ lähenemist ja mitte imiteerima mujal edu toonud lahendusi ilma neid piisavat kohalikele oludele kohandamata. Võrgustikkoostöö poliitikate ülekandmiseks on küll samuti oluline, kuid poliitika ja/või teenusinnovatsioonid avalikus sektoris vajavad siiski pigem mitte

tervikiipoliitikate vaid poliitikate elementide ümbermõtestavat ülekannet, et leida kõige tulemuslikum sobivus kohalike nõudmistega. Ümbermõtestamine tähendab, et need on just poliitikate üksikelemendid mida on tarvis mõista, sügavuti analüüsida ning vajadusel ümber paigutada kohalikesse oludesse sobivamal moel.

Nõudlustloovad avaliku sektori innovatsioonid võiksid tugineda küll erasektori paradigmatel osapoolte koostöös toimuvate innovatsioonide kohta, kuid seda siiski laiendatud moel ehk lõimides avaliku sektori stimuleerimissüsteemid nendesse mudelitesse. Seega seondub selliste innovatsioonidega märksa keerukam ja peenekoelisem ülesehitus kui pelgalt erasektorit haaravate koostööde puhul. Siiski ilma avaliku sektori tegevusstiimulite lülitamiseta eranõudluse soodustamise, on tõenäoline, et head kavatsused jäävad tõsiste elluviimisprobleemidega lihtsalt pikaajalise kokkusobimatuse tõttu avaliku sektori poliitikate loogikaga.

Erasektori innovatsioonide mõju avalikku sektorisse leviku ning vastupidise leviku esmane edutegur on erinevate osapoolte suutlikkus tõhusalt teid arendada ja teadmused üle kanda. Seetõttu ongi toodud soovitude keskmes just koostöö- ja õppimisaspektid.

Käesoleva uuringu piirangud seonduvad asjaoluga, et avaliku sektori innovatsiooni teaduslik diskursus ning innovatsioonipoliitika diskursus on mõningate aspektide osas kattuvad. See võib luua teatud segadust põhjus-tagajärg seoste tõlgendamisel. Samuti puudub piisav empiiriline tõendusmaterjal selle kohta, et mõningad nõudluspoolsed poliitikameetmed on teadlikult kavandatud mitme-eesmärgilistena.

Uuringu teoreetilised järeloomid seonduvad sellega, et nõudlustloovad avaliku sektori innovatsioonid pakuvad ainet uueks teaduslikuks diskursuseks, mis keskenduks just nõudluspoolse innovatsioonipoliitika meetmete mitmekülgele ning komplitseeritud olemusele avaliku ja erasektori koostööd eeldavate avaliku sektori innovatsioonide keskse elemendina.

Juhtimiselasteks järeloomiteks on kommertsfaasi eelsete või kommertsialiseerimise alaste avaliku ja erasektori partnerlussuhetega seonduvad rohked äriõimalused, mille abil võidakse luua intellektuaalset omandit, mis omab väärtust väljaspoolgi riigipiire.

Tulevased uuringud peaksid keskenduma nõudluspoolsete innovatsioonipoliitika meetmete kasutamise käigus ilmnevate negatiivsete ja positiivsete mõjude või välisefektide analüüsile. Riikliku tasandi tarbeks kohandatud nõudluspoolsete poliitikameetmete rakendusõimalused vajaksid samuti senisest enam uurimist.