Work package 4
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International validation of results work package 3 PSI-CO based on LIPSE

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Public sector innovation through collaboration (PSI-CO)

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1. Objective of the report

1.1 The objectives and research questions of the international validation

Innovation in the public sector is a 'magic' concept, which is increasingly embraced by practitioners working at different levels of public administration (Bekkers, 2016; Pollitt & Hupe, 2011). Thus far, research has mainly focused on internal organizational barriers, drivers and the role of public agents in innovation (Borins, 2001; Hartley, 2005). Recently, public sector innovation literature increasingly emphasizes innovation capacity. Innovation capacity is the ability of organisations to set up collaborations in and beyond governmental levels with societal actors like citizens (Bommert, 2010). Especially this innovation capacity can be of essential value to go beyond the ability of single public actors to deal with emergent and persistent policy challenges. Innovation capacity is strongly linked to collaborative innovation. PSI-CO defines collaborative innovation as "*a collaborative approach to innovation and problem solving in the public sector that relies on harnessing the resources and the creativity of external networks and communities (including citizen networks as well as networks of nonprofits and private corporations) to amplify or enhance the innovation speed as well as the range and quality of innovation outcomes*" (Nambisan, 2008; p.11).

Despite its promise, we know little about the conditions which affect collaborative innovation arrangements. It is unclear which organisational, individual and network conditions are important to design, foster and sustain collaborative innovation and how they reinforce each other. The Belgian Research Action through Interdisciplinary Research on 'Public Sector Innovation through Collaboration' (BRAIN- PSI-CO) focusses on entangling collaborative innovation within the public sector in Belgium. It does so by focusing on seven research questions which apply to different aspects of collaborative innovation (Figure 1). These research questions are answered in PSI-CO's work package 3 (Verhoest, Steen et al., 2018).

PSI-CO's work package 3 offers a cross-case analysis on ten cases dealing with collaborative innovation. This delivered case-related principles about how and under which circumstances collaborative governance arrangements result in policy and service innovations and how the governments' meta-governance, individual conditions, and organizational conditions foster or inhibit this. As to the individual conditions PSI-CO focused on the skills, attitudes, positions and incentives of civil servants empowering and motivating them to participate, engage in transformative learning and develop ownership (see also the conceptual framework in figure 1). As to organizational conditions PSI-CO focused on the red tape of public organizations ('hard aspects') and on organizational culture and leadership as exponent of the 'soft' conditions.
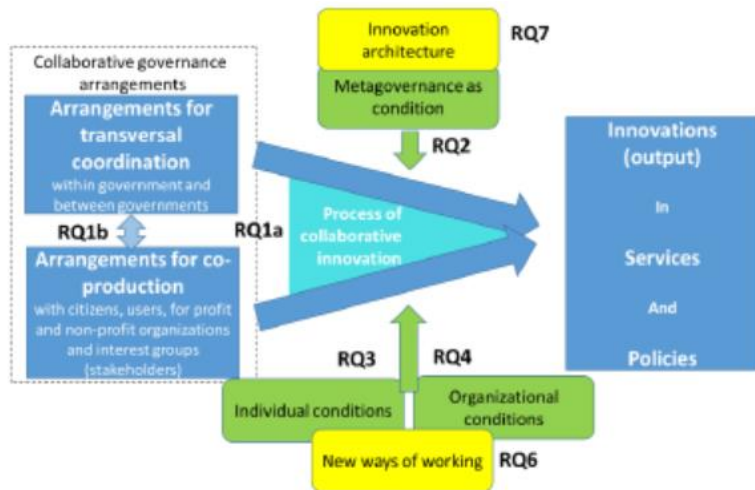
Figure 1. Collaborative innovation by transversal coordination and co-production

We are interested in how PSI-CO's results compare to earlier research and can be generalized to other contexts. Therefore, we conduct an international validation with findings of the LIPSE project (Learning from Innovation in Public Sector Environments). The LIPSE research project, funded by the EU's FP7 framework, made a major contribution to this by researching drivers and barriers to successful social innovation in the public sector in 11 EU countries (Belgium, Denmark, Estonia, France, Germany, Italy, Romania, Slovakia, Spain, the Netherlands and the United Kingdom) and 7 policy sectors (LIPSE, 2018). LIPSE had 7 work packages (see figure 2) (Bekkers, 2016):

Figure 2: Work packages in LIPSE

The main goal of LIPSE was stated to be to "collect new insights on five building blocks of social innovation in the public sec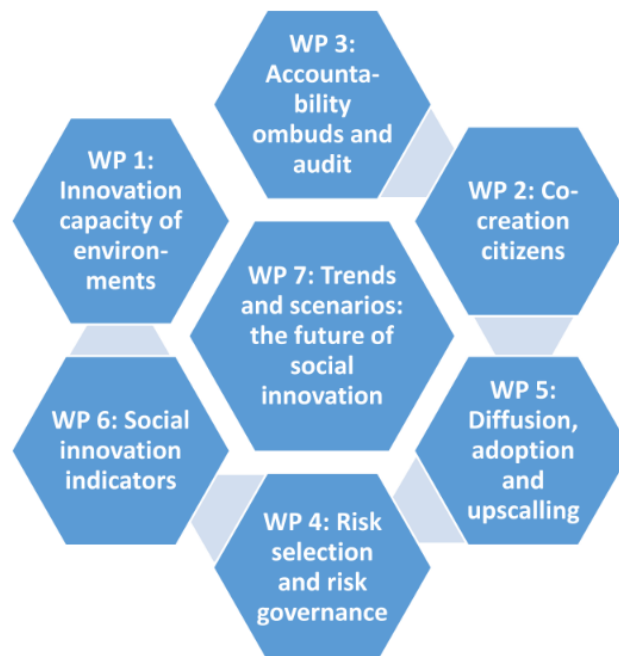tor: 1. Innovation environments, 2. Innovation inputs, 3. Innovation tools and processes, 4. Innovation outcomes, diffusion and upscaling, and 5. Feedback loops in innovative systems" (Tõnurist, Lember, & Rattel, 2016; p.83). With a variety of EU member states represented, the effects of different governance and state traditions could be taken into account. Therefore, the project first mapped institutional environments to study the effect of social capital, innovation champions and leadership. This was done by using survey research and social network analysis. The project also looked at citizens' input into public innovation processes through participation, complaints and co-creation. This was done by a) analysing secondary administrative datasets from ombudsmen and national audit offices, b) case studies in social and welfare services and urban and rural regeneration, and c) large scale survey research. The project also examined the how risk was managed in innovation processes by using surveys, interviews and document analysis. Moreover, LIPSE generated research on innovation diffusion and adoption and assessed what factors contribute to the successful upscaling of ICT-driven social innovations, with a focus on teleworking (as a new way of working) and e-procurement. Finally, the project developed a comprehensive set of public sector social innovation indicators and explored future trends in social innovation through scenario-mapping.

Although LIPSE thus did not specifically focus on collaborative innovation, strong similarities exist between PSI-CO and LIPSE, e.g. regarding co-production and network analysis. This document brings together core insights on collaborative innovation from LIPSE and PSI-CO and gives general guidelines on collaborative governance arrangement and conditions.

This leads us to the following research question:

What does combining insights from LIPSE and PSI-CO tell us about PSI-CO's conclusions about how and under which conditions collaborative governance arrangements foster the initiation, adoption and diffusion of innovations in policies and services?

This research question is answered based on an analysis of core documents from PSI-CO and LIPSE as well as informal interviews with the main relevant researchers of both projects.

The document is build up as follows. First, we expand on main themes that were highlighted in PSI-CO's conclusions of work package 3. We compare those themes to discover to what extent PSI-CO's conclusions are validated, complemented or put in another light by LIPSE. We do this by relating PSI-CO's findings to theories as set out in LIPSE and by relating empirical findings across themes in LIPSE and PSI-CO. We follow the structure of the PSI-CO project and look at three levels of analysis: network, organizational and individual. By doing this we bundle knowledge to refine and add upon WP3's

conclusions about conditions for collaborative innovation. These conclusions build directly upon the conclusions in PSI-CO's work package 3 on collaborative innovation in the public sector.

2. Comparing LIPSE and PSI-CO

LIPSE and PSI-CO work package 3 are different in focus: LIPSE focusses on public sector innovation in a more general sense, while PSI-CO elaborates on collaborative innovations in the public sector. Nevertheless, we identified comparable themes in both projects. Below we show how LIPSE and PSI-CO touched upon similar themes on three levels: networks, organizational, and individual. We show to what extent these topics differ, to what extent they have similar findings, and what they add to each other. First, we however explore how collaborative innovation is defined in both projects.

2.1 Defining collaborative innovation

2.1.1 Innovation as a virtue

PSI-CO defines innovation as "an intentional and proactive process that involves the generation, practical adoption and spread of new and creative ideas, which aim to produce a qualitative change in a specific context" (Sørensen & Torfing, 2011). Collaboration is defined as "the process through which two or more actors engage in a constructive management of differences in order to define common problems and develop joint solutions based on provisional agreements that may coexist with disagreement and dissent" (Gray, 1989; Hartley, Sørensen, & Torfing, 2013). PSI-CO defines collaborative innovation as "a collaborative approach to innovation and problem solving in the public sector that relies on harnessing the resources and the creativity of external networks and communities (including citizen networks as well as networks of nonprofits and private corporations) to amplify or enhance the innovation speed as well as the range and quality of innovation outcomes"(Nambisan, 2008; p. 11). The latter definition points out the involvement of external parties in an innovation process to achieve a goal of increased speed, range and quality of innovation. Although we agree with this definition, but we would like to add that collaborating can be a virtue in itself, not necessarily leading to increased range and quality of innovation outcomes.

In LIPSE's work package 7 on trends and scenario's this is explained (Bekkers, 2016). First, it is emphasized that innovation in the public sector is need-oriented in a way that outcomes of innovation meet the needs of society or societal groups in a long lasting way (Cels, de Jong, & Nauta, 2012; Mair, 2010; Mulgan, Tucker, Ali, & Sanders, 2007). In the definition of Nambisan (2008) on collaborative innovation and Sørensen & Torfing's (2011) definition of innovation this element dominates. These

definitions have in common that innovative activities and services are motivated by the ambition to meet a societal need. They are oriented at 'producing qualitative change in a specific context' (Sørensen & Torfing, 2011) or 'amplify or enhance the innovation speed as well as the range and quality of innovation outcomes' (Nambisan, 2008). But what do outcomes refer to? In a public context this means being oriented at delivery of a public good which can be considered beneficial to society (Bason, 2010; Bates, 2012; Cels et al., 2012; Mulgan et al., 2007). Addressing societal needs implies more than market driven values such as efficiency or effectiveness. In contrast, adding public value could also be contributing in terms of equity, access, freedom or participation (O'Flynn, 2007).

De Vries, Bekkers, & Tummers, (2015) add to this through their systematic review of innovation in the public sector. They classify goals as fitting in the logic of consequence and logic of appropriateness. Goals fitting within the logic of consequence would be efficiency and effectiveness. Goals fitting within the logic of appropriateness refer to the legitimacy of government and the trust that citizens have in governments to deal with societal problems, implying for instance the involvement of citizens in the policy process (e.g. Carter & Bélanger, 2005). To this end, collaborative innovation can be a goal in itself, if it is seen as being a virtue of public organizations to collaborate with private partners on innovative topics.

We conclude that collaborative public sector innovation can be defined with a focus on innovation outcomes, which include public value. However, collaborative innovation can also be a goal in itself.

2.1.2 Putting the collaboration in collaborative innovation

Even though LIPSE does not explicitly focus on collaborative innovation, it is argued that some forms of collaboration are inherent to innovation in the public sector. Bekkers (2016) for instance states that in order to develop and implement social, and thus need-driven, innovations, the government needs end users and other relevant stakeholders to participate in this development and implementation of innovations. Moreover, end users and stakeholders can fulfill indispensable roles in the monitoring and adoption of these innovations. That is why social innovation is viewed as a process of open co-creation with these actors (Bason, 2010; Lee, Hwang, & Choi, 2001). One could even claim that because of the necessity for these actors to collaborate and cooperate with government, social innovation is by definition a process of collaborative innovation (Bommert, 2010; Gloor, 2005; Sørensen & Torfing, 2011).

This view is in line with a paradigm shift in government that entails viewing citizens as having resources and potential, rather than viewing them as victims of social injustice (Bason, 2010; Bekkers, 2016). This paradigm shift causes the emergence of new social relationships and collaborations between actors,

which are the object of study in PSI-CO's work package 3. These new arrangements, that emerge between public and private actors, are game changers, because they present a discontinuity from traditional ways in which societal problems were solved (Bates, 2012; Brown & Osborne, 2012).

Interestingly, PSI-CO adds to this that collaborative innovation does not only happen outside of the public domain, through connecting private and public actors. In fact, collaborative innovation can also happen between public actors, being either governments or organizations with public goals. PSI-CO's work is in that way not limited to only public-private constructions, but rather studies collaborations defined in a broader sense.

We conclude collaboration is needed to tackle social problems. This is in line with a paradigm shift in government which views citizens as having resources and potential rather than viewing them as victims of social injustice. Moreover, PSI-CO shows that collaboration can also be between public partners and does not necessarily has to be public-private.

3. Network conditions

3.1. Klijn and Koppenjan's categories

Section 3.2 of PSI-CO's work package 3 report explores how metagovernance can be a condition for collaborative innovation. It does so by dividing metagovernance strategies into four different categories, as distinguished by Koppenjan and Klijn (2010): introducing process rules, arranging structure, exploring content and connecting strategies. For definitions on this topic we refer to PSI-CO's work package 3 (Verhoest, Steen et al., 2018). Concerning metagovernance, we see the most obvious similarities in LIPSE's work package 2 (Voorberg et al., 2015) . This work package considers co-creation. Co-creation is defined as the involvement of citizens in the initiation and/or the design process of public services to (co)create beneficial outcomes (Voorberg, Bekkers, & Tummers, 2014b). This means that in co-creation a collaboration between two different actors occurs: civilians and government. This allows metagovernance arrangements to take place, governing the relationships between these two different actors. LIPSE's work package 2 and its accompanying systematic review by Voorberg et al. (2015) do not explicitly use Klijn and Koppenjan's categorization. However, metagovernance is implicitly mentioned concerning arranging, connecting and exploring content. We discuss this below. Introducing process rules is not evident in work package 2 from LIPSE.

3.1.1. Arranging

Work package 2 of LIPSE does not specify which factors are influential when it comes to arranging. In PSI-CO's work package 3 it is stated that networks come about in many ways, often by a small group of initiators and drawing from existing contacts. In LIPSE it becomes clear that formal structures can constitute the emergence of informal networks as well (Lewis et al., 2015).

In LIPSE, we find that in the case of co-creation, organizations can adapt to facilitate collaboration, for instance by or allowing 'a free space' where stakeholders can experiment with new civil initiatives (Denmark) (Voorberg et al., 2015). On the other hand, we see that organizations do not always adjust their ways of working, which may results in frustration of stakeholders. In this way we see that indeed arranging can be a metagovernance condition for collaborative innovation, and not conducting arranging metagovernance activities might hamper innovation.

A condition for arranging might be that stakeholders are easily identifiable. In Estonia, it was stressed that since civil initiatives often lacked a recognizable form of organization (such as a company or a foundation), public officials had problems with how to categorize them (Voorberg et al., 2015). This created problems because this categorization was needed to fit municipal procedures and parameters that were about co-creation. This could be seen as an example of red tape. We come back to this in section 5.3 of this document.

We conclude that PSI-CO shows that networks come about in different ways, for instance by drawing from existing contacts or constituted by formal structures. LIPSE adds that not adapting to facilitate collaboration can frustrate stakeholders. However, red tape can make it difficult for organizations to adapt.

3.1.2. Connecting

PSI-CO's work package 3 associates connecting strategies to projects being goal-seeking. If the goal is not clear, projects tend to have more attention for shared decision-making. However, if the goal is clear, energy is being directed to the practical aspect, which translates into meeting deadlines or 'getting things done'. The lack of clear goals can moreover be demotivating. LIPSE does not focus on the connection between goal-seeking and connection strategies to a great extent. It is mentioned that stating a clear goal can induce a sense of ownership in citizens, which is positive for co-creation (Voorberg et al., 2015). The opposite occurred in one PSI-CO case: a clear goal was missing and with that little ownership existed. Moreover, the Belgian country context becomes evident as PSI-CO expands its conclusions by pinpointing the language barrier as an important connection aspect.

In work connected to LIPSE, connecting strategies are mainly directed at removing obstacles for co-operation (Voorberg, Bekkers, & Tummers, 2015). It is mentioned that organizational actions are desired to overcome barriers imposed by the negative influence of factors. These factors range from financial challenges to resistance to co-creation with citizens to obtaining building permits. Meta governance actions relating to these problems can be installing a policy that supports co-creation (Pestoff, 2009), appointing a policy entrepreneur to promote co-creation (Fuglsang, 2008) and enhancing discretionary autonomy for professionals (Gill, White, & Cameron, 2011).

This use of connecting strategies in case of barriers is corroborated by PSI-CO. PSI-CO identified that the metagovernor communicated one to one with involved actors in case of deadlocks. A metagovernor is a person who coordinates interactions in a network. The involvement of the metagovernor in creating solutions seemed to differ in accordance with the type of project. If actors were for instance free to implement the innovation in the way they saw fit, solutions to barriers were often created by the actor, and facilitated by the metagovernor. This happened because having support for the project, and with that the involvement of those actors, was more important than implementing a one-size-fits-all solution. In another project, actors were however working with one central system, and problems with that system required a general solution that would work for everyone.

Moreover, LIPSE's work package 2 pinpoints incentives as an important factor in initiating co-creation (Voorberg et al., 2015). Here, we consider an incentive to be a factor that motivates or encourages someone to engage in collaborative innovation. LIPSE shows us three things about incentives. Firstly, incentives can have different characteristics. Incentives can for instance be political, if a political agenda which urges co-creation exists. PSI-CO stated this as well. A factor contributing to collaborative innovation can for instance be that the innovative practices are viewed as priority by minister and home organization. An incentive can also be the interdependence of actors, incentives can be related to the topic of the innovation and incentives can be financial. Incentives can even be related to the more general ambitions of collaborating. In the case of co-creation this means that an incentive is for example the desire for tailor made solutions for citizen's needs. PSI-CO adds to this that some actors are collaborating simply because they are necessary for the project. Secondly, incentives are not necessarily a driver. If incentives are different for different stakeholders, this can cause disagreement about the direction of the project (Voorberg et al., 2015) . Thirdly, the lack of clear incentives can make it difficult to cooperate. To some actors it must be specified what the added value will be. This is connected to goal clarity as mentioned in PSI-CO. If a goal is missing, will some actors choose to not participate in the collaboration?

Moreover, while LIPSE focusses on incentives for initiating collaboration, PSI-CO points more to incentives in the collaboration process itself. For instance, implementing quick wins is important: cases with milestones were evaluated positively because this works very motivating. This is often easier to realize in projects with a clear end goal.

We conclude that clear goals can have positive effects on collaborative innovation, even though a lack of goal clarity relates to more shared decision making in a project. Connecting strategies can be used to overcome barriers, but solutions depend on the involvement of actors in the project. Incentives can have different characteristics. They can range from being pollical to being financial. However, incentives can also be a barrier and lead to frustration. Incentives can be an important factor in initiating collaboration but can also be important later in the process.

3.1.3. Exploring content

Concerning exploring content, LIPSE focuses mainly on conflicts. In LIPSE's work package 2 it is stated that (Voorberg et al., 2015; p.55):

> *We conclude that co-creation, relying upon the collaboration between multiple stakeholders, does lead to positive collaboration between citizens and public organizations. However, our cases show that it is far from self-evident that these collaborations are run smoothly. Differences in preferences, expectations and interests and the absence of a clear leader ensure that sometimes a lot of time is being lost by discussing the priorities and direction of the co-creation project.*

Relating to this is that PSI-CO shows that synergy, which refers to "the power to combine the perspectives, resources, and skills of a groups of people and organizations" (Lasker, Weiss, & Miller, 2001) is strongly correlated with innovativeness. In the quote mentioned above, a lack of synergy seems to be problematic. Moreover, LIPSE explicitly shows that metagovernance strategies, and a clear metagovernor, for exploring content might be beneficial to smooth the process. PSI-CO also emphasized too much exploring could give a feeling of being lost, if the network does not have a specific goal to work towards. Leadership is essential to prevent this.

PSI-CO's work package 3 moreover elaborates on different strategies exploring content: having the right people with the right knowledge, having a specific methodology to explore content, creating subgroups and creating a measurement tool to see what the impact of the proposed innovation is and if they are going they right way. We believe these methods are especially important for successful collaborative governance and advice policy makers to pay special attention to recommendations regarding these strategies.

We conclude that metagovernors can have an essential role in smoothing processes. Moreover, different strategies exist to explore content such as creating subgroups.

3.2 The metagovernor

After reviewing different strategies for meta governance, we explore the role of the metagovernor. PSI-CO's work package 3 highlights the role of metagovernor in the collaborative innovation process. PSI-CO defines a metagovernor as a person who coordinates interactions in a network. Studies on metagovernance use different categorizations and concepts. For instance, Sørensen (2014) distinguishes four ways in which metagovernors can act, as seen here in table 1:

Table 1: Four ways metagovernors can act based on Sørensen (2014)

	Limited intervention	**Strong intervention**
Hands-off	1) Policy and resource framing	2) Institutional design
Hands-on	3) Facilitation	4) Participation

This is not totally different from Klijn and Koppenjan's strategies above. However, it is useful to show PSI-CO mainly focusses on hands-on metagovernance and focusses less on hands-off metagovernance. It is important to note that the role of meta-governor as a hands-on metagovernor of the process might be more important than hands-off metagovernor who only sets conditions for collaboration. We see this in research by Klijn & Koppenjan (2016), in which they researched the effects of contract characteristics on public-private partnerships in the Netherlands. They found that the sole feature with a significant impact on perceived performance was the possibility of imposing sanctions. Other contract terms did not seem to matter. Therefore, they advise to look beyond contract features to study performance in public-private partnerships.

LIPSE does not focus on the concept metagovernors or identify metagovernors as such. However, LIPSE did study the role of boundary spanners. Boundary spanning refers to individuals within an innovation system who have, or adopt, the role of linking the organization's internal networks with external sources of information (Tushman, 1977). Metagovernors can be seen as a type of boundary spanner. PSI-CO shows that one the one hand, metagovernors have an active role in organizing different networks, even creating subgroups. In this sense the metagovernor is not only the boundary spanner, but the metagovernor creates these boundaries, organizes these boundaries, as well. On the other

hand, the metagovernor is a boundary spanner in the sense that the metagovernor is involved in most subgroups and the network is centralized around the metagovernor for this reason. So metagovernors are boundary spanners. Are then all boundary spanners also metagovernors? No. For instance, in PSI-CO we see that all other participants in the network in some way are boundary spanners, by representing their own organization and the network. However, these people might not be metagovernors.

In PSI-CO it becomes clear that metagovernors are related to innovation in three ways. First, being a metagovernor is related to higher scores on perceived innovative outcomes. Second, the metagovernor is often the starting point for the creation of the network specific for the innovation. Third, as we have seen above, metagovernors can connect, they can be boundary spanners. PSI-CO also indicates that cases that scored low on innovative outcomes, generally also consisted of networks low in density. Density is the number of existing connections divided by the number of possible connections. We come back to density in section 4.1.1 of this document.

This connectedness relates to the boundary spanning in LIPSE in the sense that more boundary spanning activities are strongly and positively correlated with self-rated internal innovativeness (Lewis et al., 2015). This indicates that people who regard their municipality as innovative also see their municipality engaging in plenty of boundary spanning. In line with that, boundary spanning and comparative innovativeness are also positively correlated: those who see their municipality as more innovative than others, also see the municipalities doing more boundary spanning.

We conclude that different concepts exist to study metagovernors, but that focusing on hands-on governance might be more important than focusing on hands-off metagovernance. Metagovernors are boundary spanners, but not all boundary spanners are metagovernors. Metagovernors are related to innovation, for instance by being a starting point in a network and boundary spanning activities are related to innovation.

4. Individual conditions

We start by exploring the relational position of individual actors are embedded in networks and then move onward to individual conditions for collaborative innovation. PSI-CO focusses on individual learning as an essential element in collaborative innovation processes.

4.1. Relational position of individuals in networks

4.1.1. Density and redundancy

PSI-CO pays attention to the density of networks. Density refers to the number of actual connections divided by the number of possible connections. A higher number thus means people are more well connected: the network is more 'dense'. PSI-CO shows that networks low in density are those in which members are voluntarily involved in the innovation process (in contrast to networks in which members are obliged to participate due to the legal mandate of their home organizations) and where actors are not that dependent on each other. Low density also occurs in cases which are characterized by subgroups that are formally created by the metagovernor and that have limited interconnections between them. PSI-CO shows through ERGM analyses that two main determinants explain the interaction in networks: the reciprocity and the role of the metagovernor. Reciprocity means you get what you give: if you share information, information will get shared with you. A metagovernor seems to take on a crucial role in the network and being a metagovernor is positively related to interaction with others.

The above is related to the concept of redundancy as found in LIPSE (Lewis et al., 2015). Redundancy occurs if an actor has many ties that could provide the same information. Redundancy is regarded as inefficient because the same information can be gained from a smaller number of contacts. As such, the less dense networks in PSI-CO do not seem to require close contacts, which case a highly dense network would be high in redundancy.

Nevertheless, defining redundancy is not necessarily straightforward. Different views exist on redundancy and on how opportunities for connection might be exploited. Burt (2005) claims that connections mainly serve to get access to different resources and connections must mainly be done between unconnected actors or groups (Lewis et al., 2015). Contrastingly, Coleman (1988) sees connection between many types of actors, creating higher density and redundancy, as beneficial for support and resources. In this sense, it is hard to define when a tie is redundant and when it is not.

In LIPSE and PSI-CO we see that both dense and less dense networks exist, and their ties seems to be based on their function. As mentioned earlier, PSI-CO showed us that when density is not needed, networks are not dense. However, in other cases density is needed, for instance when actors rely on each other, then networks are dense. Thus, density and redundancy are not 'one-size-fits-all' concepts. LIPSE shows a similar view. Sometimes ties seem redundant, but redundancy can have a different

meaning in a public sector environment, where cohesion and support are needed to get things done in the organization (Lewis et al., 2015). Future research should focus on conceptualizing redundancy by identifying conditions when a tie is redundant.

We conclude that two main determinants explain interaction in network: reciprocity and being a metagovernor. Less dense networks do not require close contacts, so less density might be based on reducing redundancy. Defining redundancy is not straightforward and public sector redundancy might be different than private sector redundancy. Future research should focus on conceptualizing redundancy.

4.1.2. Centrality, redundancy and weak ties

LIPSE touches upon centrality and distinguished four types of centrality (Lewis et al., 2015). Firstly, in degree-centrality, is a measure of the importance of individuals. It is based on the number of nominations they have received from others. Secondly, out-degree centrality represents the number of ties that have been nominated by an individual. Thirdly, betweenness centrality is a measure of actors who are 'in between' other actors who are not directly connected. Fourthly, closeness centrality measures how close an actor is to all others in the network. Moreover, LIPSE studies work networks and strategic information networks. Work networks are networks around who people work with the most on projects. Strategic information networks are networks of people getting strategic information from each other.

LIPSE found that self-rated innovativeness is related to out-degree centrality for the work network (Lewis et al., 2015). This indicates that people who have more ties to other people when working on projects, see their municipality as more innovative. However, no relationship between in-degree centrality and self-rated innovativeness was found. For strategic work networks in-degree or out-degree centrality was also not connected with self-rated innovativeness. This could be because self-rated innovativeness is measured on the municipality level, and centrality on the individual level, and there is no strong connection between the two.

PSI-CO researches centrality differently, based on contact outside of meetings in the different cases. This goes beyond LIPSE as LIPSE mentions that innovators who are more able to working through relationships outside formal structures are more able to get things done but doesn't study this empirically (Lewis et al., 2015). PSI-CO defines centrality in terms of three concepts: information exchange outside meetings, frequency of contact outside of meetings, and trust. We will focus on the first two. Information exchange outside meetings refers to the centrality degree which 'represents the

number of actors an individual has sent to and receive information from, controlling for network size. In this sense, it only counts the number of relationships characterized by both information giving and information reception. It represents a proportion of the network with which the individual exchanges information outside the meetings' (Verhoest, Steen et al., 2018; p.77). Frequency of contact refers to 'the centrality degree represents the number of actors an individual has contact with at least monthly, controlling for network size. In this case, centrality degree represents a proportion of the network with which the individual has at least monthly contact' (Verhoest, Steen et al, 2018; p.77)

PSI-CO finds that sharing information with more actors outside meetings increases the likelihood of policy learning. However, having frequent contact outside meetings decreases the likelihood of policy learning. On a similar note, LIPSE mentions a strong and positive correlation between the level of external contact and self-rated internal innovativeness. This means that people who have more contact with others outside the municipality also rate their municipality as being more innovative.

PSI-CO connects the results concerning frequency of contact outside meetings and policy learning to weak ties. Weak ties are important as they allow actors to break 'groupthink' that occurs in situations where everyone knows each other very well. Instead, weak ties with people less known can provide access to different resources, including different types of ideas (Lewis, 2010). LIPSE points to the importance of weak ties in networks (Grannovetter, 1973). This could be tied to the earlier measured redundancy: having contact outside of meetings in itself might not lead to learning if information is repeated, information is redundant. However, sharing new information outside of the meetings than inside the meetings leads to learning, and is not redundant.

We conclude that people who have more ties to other people when working on projects see their municipality are more innovative. Moreover, PSI-CO shows that sharing information outside of meetings increases policy learning, while only frequent contact does not. However, in LIPSE people who have more contact with others outside the municipality also rate their municipality as being more innovative. These conclusions could be tied to redundancy: a high frequency of contact might be connected with sharing redundant information. Moreover, especially using weak ties might give access to different resources.

4.2 Information exchange

PSI-CO sees learning is a process of knowledge acquisition (Heikkila & Gerlak, 2013). PSI-CO defines three types of individual learning as especially important for collaborative innovation: policy learning (learning about the content), relational learning (learning about the actors), and political learning (May, 1992; Klijn & Koppenjan, 2016). Earlier we have seen that frequency of contact outside of

meetings is related to lower levels of policy learning. LIPSE does not focus on the individual conditions for learning, but rather focused on organizational learning. However, organizational learning can be seen as a sum of individual learning within an organization, so individual learning is important for organizational learning as well (van Acker et al., 2015).

4.3 Attitudes

PSI-CO emphasizes public service motivation, perception of collaborative fairness, trust propensity and expertise to be important for learning. Below we elaborate on motivation and trust.

4.3.1 Motivation

PSI-CO shows that having an attraction to public policy making (one dimension of public service motivation) is connected to relational learning. People who are attracted to policy-making are willing to participate in policy processes and to contribute to the society. This is explained by the notion that individuals who have a higher attraction to public policy making seems to be more curious about the situation of the other actors. LIPSE does not connect public service motivation to innovation outcomes explicitly but does see willingness to participate in policy processes as an important aspect for innovation.

In LIPSE's work package 2 on co-creation willingness is defined as 'intrinsic motivations as to why citizens decide to participate in co-creation projects' (Voorberg et al., 2015; p.44). They conclude that in the case of co-creation the willingness of citizens can be a driving force. However, willingness can also hamper the innovation process. For instance, a high rate of willingness could result in frustration, as willingness comes with expectations. If these expectations are hard to be made into reality by bureaucratic structures or other citizens with contrary expectations, people could be disappointed. It could also be that public officials get frustrated by too much willingness. On the one hand they do not want to temper the enthusiasm, but on the other hand strong individual convictions are not always of added value. PSI-CO's work package 3 notes something similar: in two innovations that failed, expectations were not met. This can lead to frustration. Quick wins and clear goals could contribute to lessening frustration.

We conclude that attraction to public policy making can lead to relational learning and willingness can be driving force. However, willingness only seems leads to positive outcomes under the condition that expectations are met.

4.2.2. Trust

PSI-CO shows that for relational and political learning it is important to be perceived as a trustworthy person. People who are perceived as competent, honest and benevolent are more likely to receive information about personal or organizational interests and resources, as well as political games. This is logical as trustworthy persons are more likely to deal with sensitive information in an appropriate way. In LIPSE's work package 3 we see a similar finding: trust was seen as an important factor for organizational learning (van Acker et al., 2015). They emphasized that to learn, a process needs to be characterized by cooperation and open informal communication as well as by a relationship characterized by trust. On top of that, trust has been connected to performance in public-private partnerships. Warsen, Nederhand, Klijn, Grotenbreg, & Koppenjan (2018) shows that trust correlates significantly with perceived performance in Dutch public-private partnerships and is associated with a good cooperation process.

LIPSE adds that trust can differ in character and influence dependent on the level of in the public sector and the type of collaboration. In LIPSE's work package 2 for instance saw that in some cases there was a reluctance of civil servants to deviate from routines and a lack of trust in competence of citizens. This differed in accordance with different levels (Voorberg et al., 2015). For instance, at higher strategic levels, public officials are inviting and open towards co-creation. Contrastingly, street-level bureaucrats are often less inviting and open towards processes of co-creation. However, the influence of this attitude was dependent on the type of co-creation initiative. For instance, if there is a strong dependency relationship in a co-creation network, attitudes of public officials were influential. However, if the initiatives were developed independently from government, the attitudes were not that influential. In sum: it all depends on how much actors need each other.

Moreover, trust can be a condition but an outcome as well. In the case of learning, learning can generate trust, which will lead to more learning. For instance co-creation can lead to more social capital (Voorberg et al., 2015). Social capital refers to the extent in which trustworthy relations between actors form a fertile breeding ground for co-creation. In LIPSE's WP1 we even observed a case in which trust was innovative as a governance strategy (Lewis et al., 2015). In Copenhagen, an innovative system based eldercare services no longer on time spend working but on so-called flexible visits, having trust as fundament for the functioning of this system.

We conclude that trust is important for individual as well as organizational learning and performance. Moreover, trust can differ in character and influence dependent on the level of in the public sector and the type of collaboration and trust can be an outcome or strategy.

4.2.3. Skills

Other individual factors exist which are important for innovation. Sometimes people for instance need certain skills for adoption and upscaling (Nasi et al., 2015). An example could be ICT skills which was critical in a case of Autonomous Province of Trento for the internal diffusion of telework. This also happened in other cases. For instance a project in Spain, working with advanced technology, people were excluded from participating because they lacked the necessary skills to work with that technology (Voorberg et al., 2015).

In the case of co-creation, professional skills are important for collaboration (Voorberg et al., 2015). In fact, in Estonia it was reported that it is not always easy to work with lay-men. In those cases, people might be very willing to contribute to a project but lack the skills to come up with solutions. Sometimes these professional skills refer to being able to work within the public apparatus. In Germany, a case existed in which people possessed the core skills to work on the project but did not know how to work their way with regulations and other bureaucratic requirements.

Moreover, in PSI-CO it became evident that also the perception of skills of other actors matter. It is important that people acknowledge the skills of another. If the skills are thus present, but people are not being perceived as skillful, this is not enough for learning and innovation.

5. Organizational conditions

5.1 Leadership

Leadership can be both a barrier and enabler to innovation in any organization. Leadership styles can influence to what extent a staff member can put forward new ideas, and if these ideas are incorporated and implemented (Lewis et al., 2015). PSI-CO indicated that different types of leaders exists, based on the attitude they have towards innovation: Leaders can have a negative attitude, an uninterested attitude, an ambivalent attitude, a rhetorical support of, a hands-on positive attitude towards and a pressuring attitude towards collaborative innovation.

PSI-CO's work package 3 stated that positive attitude towards collaborative innovation has positive effects on innovation. Moreover, it is important to note that rhetorical support is not enough, and hands-on support is desired in some of those cases. However, PSI-CO shows that being positive to innovation can also have a downside: if leaders start to pressure innovation just for the sake of innovating, it can have perverse effects. PSI-CO revealed that a negative or uninterested attitude from leaders towards collaborative innovation did not affect the motivation or involvement of the individual members of the network representing their home organisations. They did however view this is as a practical barrier. The importance of supportive leadership was corroborated by Nasi et al. (2015) who described that in the case of upscaling, top-down support from managers was a powerful driver.

PSI-CO found no relationship between transformational leadership and the organization's continued support for the collaborative innovation and success of the cases. This could be because of the data, but LIPSE shows this finding could have another reason. In Ricard, Klijn, Lewis, & Ysa, (2017) study on leadership on the basis of LIPSE cases, they argue that it is time to broaden the perspective of leadership research towards other types of leadership than only transformational leadership. They do this based on their data, which indicates that an ideal-type leadership style for innovation is mostly perceived as a mix between transformational leadership along with a more collaborative/interpersonal leadership style. LIPSE does validate that indeed leaders differ in terms of their management style. Table 2 shows an overview of leadership styles found in municipalities Barcelona, West-Lothian, Rotterdam and Copenhagen. As said earlier, these leadership styles are based on a mixture of several leadership qualities.

In LIPSE it is concluded that risk takers, motivators and collaborators seem to be correlated to a higher level of self-rated and comparative innovation. More specifically, it is stated that the extent to which leaders can mobilize resources mobilization is positively related to innovation in LIPSE. In LIPSE, having a short-term orientation and being risk averse are negatively correlated with self-rated innovation and comparative innovativeness.

We conclude that it is time to broaden the perspective of leadership research towards other types of leadership than only transformational leadership. Different types of leaders can de distinguished in terms of attitudes or other characteristics. In general, leaders that are positive to innovation and have a hands-on have a positive influence. If a leader is too positive it can however also have negative effects. Being a risk taker, motivators, collaborators is also beneficial for levels of self-rated and comparative

Table 2: Leadership styles found empirically in municipalities (Lewis et al., 2015).

Short-term	Short-term perspective, not a long-term perspective, not visionary.
Risk averse	Does not learn from mistakes and not willing to risk mistakes from others
Collaborator	Committed to colleagues and organization, willing to sacrifice self-interest, works collaboratively, good at learning from mistakes, long-term perspective
Knowledgeable	Knowledgeable, good at gathering information, problem oriented
Risk-taker (often together with motivator)	Willing to risk mistakes, works collaboratively, involves others in key decisions, committed to colleagues and organization, open to new ideas, good at learning from mistakes
Motivator (often together with risk-taker)	Inspirational, provides intellectual stimulation, displays a long-term perspective, visionary, visible, good communication skills
Rule follower	Always follows procedures, knowledgeable, problem-oriented, displays a short-term perspective
Bureaucrat	Always follows procedures, good at gathering information, committed to colleagues and organization
Problem solver	Takes decisions alone, displays a short-term perspective, good at learning from mistakes

5.2 Organisational culture

PSI-CO's work package 3 researched different types of organizational cultures, based on the model (figure 3) by Quinn & Rohrbaugh (1983). This figure shows two different axes: control vs flexibility and internal vs external. Control vs flexibility refers to the extent to which the organization wants to control

their employees. The internal vs external axis refers to if an organization is focused towards the organization itself or towards clients and users.

Figure 3: Different organizational cultures (Quinn & Rohrbaugh, 1983)

PSI-CO concluded that a hierarchical culture was dominant in the regional and federal public sector. In the non-profit sector a group culture was dominant. Developmental and rational cultures also existed but were rarely dominant. Hierarchical cultures were correlated with low to medium organizational support and rational cultures were correlated with high organizational support for collaborative innovation projects. According to the PSI-CO research, if organizations collaborate with other organizations with the same culture this is beneficial for innovation. This is even more important than including organizations with innovative cultures. We see a similar conclusion in Voorberg et al., (2015). They found that a lack of compatibility in the involved public organizations frustrates the co-creation process. For instance, long and complicated procedures around granting subsidies and creating financial sustainability slowed down the co-creation process. Also, organisations are not eager to adapt their organizational structures. In real life, this happens to a very limited extent

LIPSE zooms in on control by emphasizing the risk-averse culture prominent in many public organizations. Voorberg et al. (2015) conclude that a risk-averse culture can be a barrier for the co-creation process. On the other hand, a supportive administrative culture can be a driver for co-creation. Nasi et al. (2015) show a negative correlation between a bureaucratic culture and the status of innovators. They emphasize it is a barrier to innovation beyond the specific type of adopted considered.

Whether the culture is risk-averse or supportive depends among others on whether countries have a decentralized structure and/or a tradition of co-creation and citizen involvement (Voorberg et al., 2015). In addition, Nasi et al. (2015) explain that the willingness to follow rules can come forth out of

a historical context. For instance, in Slovakia civil servants have a strong 'culture of conformity' that originated during the communist regime.

LIPSE mentions three ways to reduce the effect of a risk adverse/bureaucratic culture on innovation: an atmosphere of learning, political attention and good leadership. Flemig & Osborne (2014) note that the current stigma of risk can be avoided or minimized by public service organizations by creating an atmosphere of learning. Innovation sometimes does not happen because of fear of failure. What could also have an effect is political attention. Political attention can diminish the risk averse character of administrative culture. However, political attention can also strengthen a risk-averse culture by making co-creation a political issue for which public officials can be held accountable in case of failure of the innovation process (Voorberg et al., 2015). According to Hood's (2012) blame game, the costs of potential failure outweighs the potential benefits of innovation. Nasi et al. (2015) state that a bureaucratic culture as a barrier can be overcome by good leadership.

We conclude that hierarchical cultures were correlated with low to medium organizational support and rational cultures were correlated with high organizational support for collaborative innovation projects. PSI-CO also found that a developmental culture and group culture are nurturing environments for innovations. Yet, hierarchical cultures are better in achieving innovation goals. Moreover, being risk adverse or bureaucratic can be a barrier for innovation and collaboration. Whether the culture is risk-averse or supportive depends among others on countries' institutional traditions. There are at least three ways to reduce the effect of a risk adverse/bureaucratic culture on innovation: an atmosphere of learning, political attention and good leadership.

5.3 Rules and red tape

Flemig & Osborne (2014) emphasize that rules can be seen as a hard approach to manage risk. Establishing rules is done from a top-down, higher policy-level. At this level standards are set for how behaviors should be conducted. This leads to standardization of how risk is managed but can leave little room for adaptations to the problem at hand. Red tape are a special type of rules. PSI-CO defines red tape are rules and procedures that negatively affect performance (Bozeman, 1993). In PSI-CO different types of red tape are researched based on Pandey, Coursey, & Moynihan (2007): personnel, budget, procurement, communication and information red tape. Respondents report all these types of red tape and two additional types are found: collaboration red tape and control/registration red tape. Collaboration red tape and procurement red tape affect collaborative innovation in the most direct way.

In LIPSE, we see red tape could cause problems in terms of compatibility. For instance in the case of co-creation, we saw that some actors had difficulties fitting in existing procedures and parameters (Voorberg et al., 2015). Also, long and difficult procedures can slow down the co-creation process. Despite of this organizations are not eager to adapt their existing procedures. In practice this happens very rarely. A reason for this might be that public organizations are subject to public accountability. In some cases, when an accountability regime is too rigorous, public institutions might become obsessed with following rules. This turns accountability from a means to evaluate performance to a goal in itself (Bovens & Hart, 2005).

Flemig and Osborne (2014) state that risk approaches and innovation do not necessarily have to be in each other's way, if obstructing rules are minimized and regularly reviewed in terms of relevance. The latter relates to PSI-CO's notion that rules are not always seen as an obstruction and red tape is largely subjective. Rules can actually constitute the emergence of informal networks and offer a safe environment for risk taking and motivating others (Bekkers, 2016). In LIPSE's work package 1 it is for instance found that the formal structure of the organization shapes the informal networks. In some way this means that the slowness of the formal structure is compensated by the dynamic and flexible nature of the informal networks (Lewis et al., 2015). On top of that it is found in work package 1 and 4 that rules, procedures and routines, as well as hierarchy create stability and predictability (Flemig & Osborne, 2014; Lewis et al., 2015). This offers a safe space for risk taking and motivating others. For instance, in large organizations with many routines, more developed systems of risk governance can exist. Also when a clear line of hierarchy is in place, it is evident who is responsible for what (Flemig & Osborne, 2014).

We conclude that rules are a hard form of risk management. Red tape is a specific type of rule. Red tape can take on many forms: personnel, budget, procurement, communication, information red tape, collaboration red tape and control/registration red tape. Collaboration red tape and procurement red tape affect collaborative innovation in the most direct way. LIPSE corroborates red tape could cause problems in terms of compatibility. However, risk approaches, rules and innovation are not always in each other's way and rules can actually have positive effects on innovation.

5.4 Other organizational conditions

5.4.1. Feedback, accountability and organizational learning

LIPSE's work package 3 pays special attention to specific aspects of organizations that can have an effect on an innovations survival rates (van Acker et al., 2015). As opposed to PSI-CO, this work package

focusses more on what happens after an innovation has been created. In LIPSE's work package 3 it became clear that feedback, accountability and learning (FAL) are important for the survival of an innovation. They conclude that organizations with strong feedback loops, a strong sense of accountability and organizations that learn are more likely to produce sustainable innovations. To illustrate this, we show which statistically significant relationships were found between learning, accountability and feedback in table 3 below.

Table 3: Highest correlating items FAL-model (van Acker et al., p.88)

FAL dimension	Item; Organizations are characterized by...
Learning	A culture of adversarial debate and openness for constructive criticism.
Learning	Encouraging experimentation and alternative ways of getting work done.
Learning	Not penalizing responsible staff members if a creative attempt to solve a problem fails.
Accountability	Employees who feel responsible for the performance of the organization
Accountability	A culture of transparency about results towards external stakeholders
Feedback	Staff members who express their concerns, ideas and suggestions about the functioning of the organization.
Feedback	The feedback information from staff members having great impact on the strategic decisions made by the organization.
Feedback	The feedback information from costumers having great impact on the strategic decisions made by the organization.
Feedback	The reports from the ombudsman institution having a great impact on the strategic decisions made by the organizations.

Although the feedback, accountability and learning model is different from the individual learning and organizational culture described above, we do see some similarities. For instance, organizational learning can be seen as learning by a sum of individuals (van Acker et al., 2015). Moreover, learning and feedback culture might be the most present in a culture high in flexibility (see figure 3). On top of

that, accountability can have an external or internal focus. Nevertheless, more research should indicate how these factors truly relate to each other. For now, we can conclude that feedback, accountability and organizational learning are related to the sustainability of innovations.

5.4.2 Organizational slack

Other organizational factors can be found in a literature by Vries et al. (2015). They mention that especially organizational 'slack' is mentioned most often and an antecedent of public innovation. Organizational slack can also be a determinant of diffusion (Bhatti, Olsen, Administration, & 2011, 2011; Nasi et al., 2015). Slack refers to for instance size, personnel and ICT facilities. For instance, if the organization is big, it has more slack because there are more opportunities for ideas to grow and more skills that can be exploited. Apart from size, the wealth and capacity of an organization is often discussed as a slack antecedent (Bhatti et al., 2011). This also matters for upscaling. For instance in the case of e-procurement, implementation cost can form a barrier (Cattaneo, 2012 as cited in Nasi et al., 2015). In sum, organizational slack is an antecedent of public innovation.

5.4.3 Upscaling

Lastly, we want to pay specific attention to upscaling. Upscaling has been mentioned before. For instance, we saw that for upscaling, specific skills, leadership and organizational resources can be needed. PSI-CO'S work package 3 does not focus on upscaling, while LIPSE does. Therefore we see opportunities to add knowledge from LIPSE here. Bazurli, Cucciniello, Mele, Nasi, & Valotti (2014) have conducted a literature review in which they were interested in theoretical frameworks about upscaling. They note that literature on upscaling in the public sector lacks empirical evidence and conceptualizations. In fact, they found only three works on the issue of upscaling.

Their findings can be summarized as follows. Davies & Julie (2015) show that whereas upscaling in the private sector is successful if products can be standardized, the upscaling of public sector innovation depends on context. If we for instance look at an innovation that considers co-creation, there is a large relational aspect to it. Moreover, upscaling is also connected to political antecedents. Other work by Mulgan & Albury (2003) indicates that government has usually two tools for upscaling. The first is 'law, central direction and administrative command'. The second is 'dissemination of evaluations of pilots, case studies and best practice'. Sometimes these tools don't work as they want to push the innovation on to others, rather than stimulating others to adopt the innovation. Stimulating factors like incentives and change management might be more successful. Other work treats upscaling specific to e-procurement and mentions barriers to upscaling such as resistance of concerned actors, legal constraints and scarce awareness of benefits (Cattaneo, 2012 as cited in Barzuli et. al. 2014).

We conclude upscaling in the public sector depends on context and political antecedents, pushing the innovation on to others might not be effective while stimulating others to take up the innovation is and upscaling has barriers such as scarce awareness of benefits.

6. Conclusion

In this section we add to the conclusions as provided by PSI-CO's work package 3 based on the analysis in comparison with LIPSE. We present our conclusions by referring to the work package 3 conclusions per topic. First, we mention what PSI-CO adds concerning these topics, then we highlight comparisons with LIPSE and lastly, we add knowledge as found in LIPSE on the three topics. We present this in table 4.

Table 4: Conclusions of international validation LIPSE/PSI-CO

Topic	PSI-CO	LIPSE/PSI-CO comparison	LIPSE
Defining collaborative innovation		- Social innovation is need oriented.	- Innovation could also be a virtue in itself.
Collaboration in public sector innovation	- Collaboration can be between public-private partners but also public-public.	- Collaboration is needed to tackle societal problems.	- New collaborative arrangements can be the result of a paradigm shift.
Arranging		- Networks come about in different ways, for instance by drawing from existing contacts or constituted by formal networks.	- Not adapting to facilitate collaboration can frustrate stakeholders. Red tape can make it difficult for organizations to adapt.

Table 4 (continued): Conclusions of international validation LIPSE/PSI-CO

Topic	- PSI-CO	- LIPSE/PSI-CO comparison	- LIPSE
Connecting	- Lack of goal clarity relates to more shared decision making in a project. - Solutions depend on the involvement of actors in the project.	- Clear goals can have positive effects on collaborative innovation. - Connecting strategies can be used to overcome barriers - Incentives can have different characteristics.	- Incentives can be an important factor in initiating collaboration. - Incentives can also be a barrier.
Exploring content	- Different strategies exist to explore content such as creating subgroups.	- Leaders can have an essential role in smoothing processes.	
The metagovernor	- Metagovernors are related to innovation, for instance by being a starting point in a network.	- Focusing on hands-on governance might be more important than focusing on hands-off metagovernance. - Metagovernors are boundary spanners, but not all boundary spanners are metagovernors.	- Different concepts exist to study metagovernors. - Boundary spanning activities are related to innovation.

Table 4 (continued): Conclusions of international validation LIPSE/PSI-CO

Topic	PSI-CO	LIPSE/PSI-CO comparison	LIPSE
Density and redundancy	- Two main determinants explain interaction in network: reciprocity and being a metagovernor.	- Less dense networks do not require close contacts, so less density might be based on reducing redundancy.	- Defining redundancy is not straightforward. - Public sector redundancy might be different than private sector redundancy. - Future research should conceptualize redundancy more clearly.
Centrality	- Sharing information outside of meetings increases policy learning, while only frequent contact does not.	- Conclusion of PSI-CO could be tied to redundancy: a high frequency of contact might relate to sharing redundant information. - Using weak ties might give access to different resources.	- People who have more ties to other people when working on projects see their municipality are more innovative. - People who have more contact with others outside the municipality also rate their municipality as being more innovative.

Table 4 (continued): Conclusions of international validation LIPSE/PSI-CO

Topic	PSI-CO	LIPSE/PSI-CO comparison	LIPSE
Motivation	- Attraction to public policy making can lead to relational learning.	- Willingness only seems to lead to positive outcomes under the condition that expectations are met.	- Willingness to participate can be driving force.
Trust	- Trust is important for relational learning.	- Trust can be an outcome or strategy.	- Trust is important organizational learning and performance. - Trust can differ in character and influence dependent on the level of the public sector and the type of collaboration.
Skills	- Possessing skills is not enough. Actors must also be perceived as skillful by other actors.		- Skills are important for adoption and upscaling, such as technological skills. - Professional skills are important for collaboration.

Table 4 (continued): Conclusions of international validation LIPSE/PSI-CO

Topic	- **PSI-CO**	- **LIPSE/PSI-CO comparison**	- **LIPSE**
Leadership	- In general, leaders that are positive to innovation and have a hands-on have a positive influence. If a leader is to positive to innovation it can however also have negative effects.	- Different types of leaders can de distinguished in terms of attitudes or other characteristics.	- It is time to broaden the perspective of leadership research towards other types of leadership than only transformational leadership. - Being a risk taker, motivators, collaborators is also beneficial for levels of self-rated and comparative innovativeness.

Table 4 (continued): Conclusions of international validation LIPSE/PSI-CO

Topic	- PSI-CO	LIPSE/PSI-CO comparison	LIPSE
Organizational culture	- Hierarchical cultures were correlated with low to medium organizational support and rational cultures were correlated with high organizational support for collaborative innovation projects.		- A risk adverse or bureaucratic culture can be a barrier for innovation and collaboration. - Culture depends on countries' institutional traditions. - Three ways to reduce the effect of a risk adverse/bureaucratic culture on innovation: an atmosphere of learning, political attention and good leadership.
Rules and red tape	- Red tape is a specific type of rule. - Red tape exist in many forms. - Collaboration red tape and procurement red tape affect collaborative innovation directly.		- Rules are a hard form of risk management. - Red tape could cause problems for compatibility. However, rules and innovation are not always in each other's way and can also be positive.

Topic	PSI-CO	LIPSE/PSI-CO comparison	LIPSE
Feedback, accountability and learning			- Feedback, accountability and learning are related to the sustainability of innovations.
Organizational Slack			- Organizational slack is an antecedent of public innovation.
Upscaling			- Upscaling depends on context and political antecedents. - Pushing the innovation on to others might not be effective while stimulating others to take up the innovation is. - Upscaling has barriers such as scarce awareness of benefits.

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