Coordination Mechanisms and Network Performance: The Spanish Network of Smart Cities

Olga Gil [*3]

UDK 35.072:35.076(46)
352.07.01(46)

This paper analyses the Spanish Network of Smart Cities (RECI) from the point of view of coordination mechanisms and network performance, focusing in particular on policy learning capabilities and efficiency-based policies. The paper seeks to analyse the extent to which the RECI network has the capacity to bring about successful outcomes in smart city public policies in Spain. The selection of this particular case is based on an interest in understanding changes in public policy management at the local level in contemporary Spain, and it is also motivated by the fact that city governance networks arise in other geographical settings. Thus there is a challenge and a need to sharpen analytical tools in order to understand the features, impact, and success of these networks on a global scale.

Keywords: smart cities, Spain, networks, performance, perceptions, public policies, policy learning

[*] Olga Gil, PhD, Associate Professor, Camilo José Cela University, School of Communication, Madrid, Spain (izvanredna profesorica, Sveučilište Camilo José Cela University, Madrid, Španjolska, e-mail: olgagil@olgagil.es)

1. Introduction[1]

It is often assumed that coordination mechanisms contribute to the success of a governance network under certain conditions (Cristofoli et al, 2012). To what extent is this assumption valid in the case of the RECI network (*Spanish Network of Smart Cities – RECI network*), formed by a group of Spanish cities in 2012? Under this assumption, which portrays a coordination mechanism as a tool for success, a group of mayors in Spain launched a network that grew from 20 cities in 2012 to over 60 cities in 2015.

This paper seeks to analyse the extent to which the RECI network has led to successful public management in Spain through organisational change. The selection of this particular case is based on an interest in understanding changes in public policy management at the local level in contemporary Spain, and it is also motivated by the fact that city governance networks arise in other geographical settings; thus there is a challenge to understand the features, impact, and success of these networks on a global scale.

In trying to understand the extent to which the RECI network leads to successful public management, the paper also makes a contribution to understanding new trends in governance in cities, and to the literature on mayor governance in complex networks as well as on network performance.

We find RECI´s network favouring innovation capacity at the local level stemming from a networked way of operation. However, while it is assumed that coordination mechanisms contribute to the success of the governance network, the positive contribution of coordination mechanisms depends on particular conditions.

This research on the Spanish Network of Smart Cities (RECI) follows Accordino (2013) framework, merging research strands in the areas of e-government, ICT, and research in social sciences and the humanities studying the impacts of ICT and the digital transformation of democratic process.

The paper proceeds as follows: first, it builds on the literature on networks, presenting the streams of literature relevant to network governance that will help to ground the analysis. Secondly, the case study is introduced, where the RECI is presented against the backdrop of the literature on network governance, based on desk research and interviews with the FUNDETEC chief executive officer and innovation director, and further interviews with RECI members. Finally, the conclusions are presented.

[1] The author wants to express her gratitude to the four anonymous reviewers who provided very helpful suggestions for the improvement of the first manuscript.

2. Local Governance Networks

The current literature on local governance stresses the increasing involvement of mayors in complex governing networks, including public and private bodies (Copus, 2015, p. 335). In these networks, mayors have to devise strategies to influence and to try to shape policy decisions taken by individual players (Copus, 2015, p. 335). A second stream of literature points at the role of mixed groups as essential components of the governance structure regulating service ecosystems in cities (Connolly et al., 2014). There is also another interesting stream of literature, studying the conditions for success in shared-governance networks, developed by Cristofoli et al. (2012).

These three streams of literature contain interesting insights in view of the attempt to understand networked governance and how coordination mechanisms contribute to organisational change, and eventually to the success of the governance network. The first interesting insight shows the importance of the soft power of mayors to influence public and private bodies. The second interesting insight points to the relevance and the shape of service ecosystems within the framework of city governance. The third insight which helps to understand network governance comes from the stream of literature studying shared governance. This stream claims that network success would depend on: 1) the importance of formalised coordination mechanisms, 2) formalised rules to increase the liability for decisions made, 3) well-organised network meetings, contractual agreements, and informal relationships (Cristofoli et al. 2012) and 4) contracts with partner organisations that are also key to understanding the performance of these networks.

In the recent development of public network literature, scholars have set aside their interests in network structure and have focused on the abilities of the network manager as a predictor of network performance. This focus on the network manager is based on the assumption that managerial skills have an impact on network performance (Kickert et al., 1997; Agranoff & McGuire, 2001; Mandell, 2001; Meier & O'Toole, 2001). Some authors even argue that in some cases network managers play an even bigger part than the network structure and mechanisms (Kort & Klijn, 2011).

Against this backdrop, public network management abilities may be split into two broad categories: nurturing the network and steering it. Abilities of the former kind are typical of network "facilitators" and "mediators", while those of the latter kind are associated with network "leaders" (Agranoff & McGuire, 2001, 2003; McGuire, 2002; Cristofoli et al., 2014).

The network mediator is expected to be able to foster an environment for good partner interaction to nurture the network. This is done by establishing working rules to govern partner participation, promoting information exchange between network partners, maintaining harmony, and developing ways of coping with strategic and operational complexity (Kickert et al., 1997; Agranoff & McGuire, 2001; O'Toole & Meier, 2004; Cristofoli et al., 2014).

The network facilitator/mediator is also expected to build commitment to the mission and the goals of the network, not only among network members but also among external stakeholders (Agranoff & McGuire, 2001; Cristofoli et al., 2014).

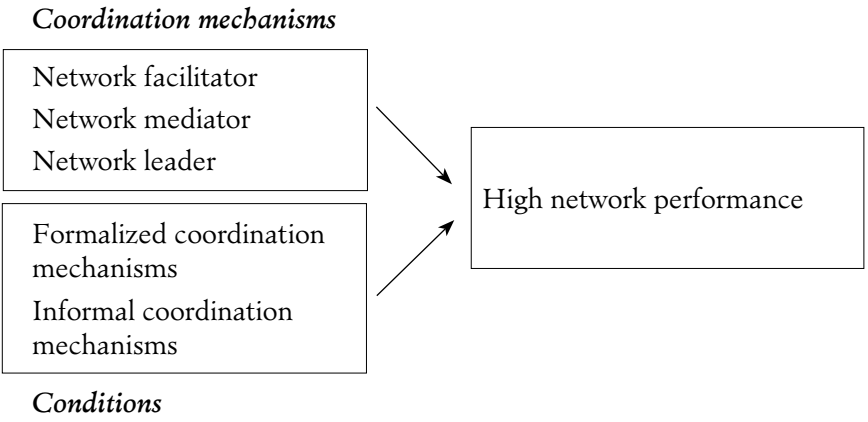
According to Cristofoli et al. (2014) when it comes to steering the network, the network leader is expected to be able to perform three tasks: action planning, activating, and re-planning. Action planning consists of establishing clear missions, and developing focused strategies and measures for the network and for the organisation in which the leader works (Agranoff & McGuire, 1998; Mitchell et al., 2002). Activating consists of selecting the appropriate players and resources for the network (Mitchell & Shortell, 2000; Agranoff & McGuire, 2001, 2003); tapping the skills, knowledge, and resources of others; gaining trust and building consensus (Agranoff & McGuire, 2001). Re-planning, again according to Cristofoli et al. (2014), consists of altering and repositioning the network objectives when important changes occur in the network environment (Shortell et al., 2002).

The third stream of literature, which studies the conditions for success in shared-governance networks, makes a distinction among three forms of network governance: shared/participant governance, lead organisation governance, and Network Administrative Organisation, according to Provan and Kenis (2008).

3. Theoretical and Methodological Framework

Bringing these streams of literature together, for the purpose of this analysis, the ability of the network manager to run the network and the mechanisms for the coordination of the network partners constitute predictors of network governance. These predictors underlie the theoretical framework suggested by Cristofoli et al. (2014), which is also used in this work and is presented in Figure 1. The theoretical framework allows us to better understand organisational change.

Figure 1: Theoretical framework



Source: adapted from Cristofoli et al., 2014.

4. The Case Study – The RECI Network

In the previous section we have built on the literature on networks, presenting three relevant streams of literature predicting network performance and the theoretical framework. The case study of the RECI (Red Espaòola de Ciudades Inteligentes, or the Spanish Network of Intelligent Cities) is the focus of this section. Here the RECI is presented against the backdrop of the theoretical model based upon the literature on network governance.

4.1. The Governance Network

The RECI is an initiative sponsored by elected mayors in Spain. Starting from a network of 20 cities in 2012, by 2015 the RECI had developed as a knowledge-sharing platform among local Spanish city administrations in over 60 member cities. There is also a network mediator and facilitator – the staff technical office, which is a foundation called FUNDETEC. The RECI has been promoted by the Councillor of Santander, Iòigo de la Serna. De la Serna was also president of the Spanish Federation of Cities and Provinces (FEMP) until 2015, and is currently president of the Council of European Municipalities and Regions (CEMR).

The RECI network was initially set up in 2012 with four purposes, aimed at the local level: 1) efficient automation of service infrastructure, 2) reduction in public expenditure, 3) improvement of public services, and 4) boosting local economic activity. This platform offers a formalised coordination mechanism. In this regard, the RECI functions as a network facilitator and mediator.

The platform available to local governments hosts technical documents of use in the field of automation and public service improvement. These documents help to design future policies aimed at scalable technological projects, which might be replicable in other cities.

4.2. Dimensions of Cooperation

The RECI offers the opportunity to use information and communication technology (ICT) to gather and share instantaneous data from which practical knowledge can be extracted. The RECI works within the limits of local competencies in Spain; thus health and education are outside the scope of sharing practices. However, continuous education may be addressed within the RECI network.

Local managers are in charge of feeding and curating the library of ICT resources that may subsequently be retrieved by other local managers. Curation is carried out on a content management platform, donated by Santander City Hall. These resources allow for the spread of innovative bidding documentation in city halls among member cities.

Cooperation among cities is at the helm of the RECI network. Cooperation has a main dimension, focused on sharing among the RECI members. Sharing occurs among technical staff, civil servants, and hired labour, all with the same needs for information. Cooperation is enabled through the shared content platform as well as through informal networks.

Network membership is free for cities. The network leverages the potential of physical and virtual social networks to engage technical members participating *pro bono*. Time and availability from the local technical staff are the main tools for – and limitations to – cooperation. Far from party politics, the focus among this technical staff is on technical questions. This entails a mix of formal and informal coordination mechanisms.

There are three traction levels experienced by member cities. The most active ones have a strong traction effect. Barcelona, Madrid, and Santander are among these. At the opposite end, around five per cent of the cities

that belong to the network are not participating actively. There is another large group of cities situated in between. The traction level is very high in Santander, engaged in a network of 220 partners across Europe, working on the development of 15 innovation projects with a budget of over 61 million euros financed by the European Union in 2015. Ten new projects in the city of Santander are pending approval by the European Union.

In the RECI network the ongoing work is led by five working groups. One or two cities are the leaders of each thematic working group. Smart city policies are thus mainly sectorial policies. Member cities choose which groups they are interested in participating in. Work pursued in the working group is guided by the city mayors and by the local technical staff involved.

First, there is a group working on *governance, economics, and business*. The leader is the city of Valencia. This group has led projects on e-administration, mobile applications, standardisation, and open data. The latest developments in this working group include the presentation for the discussion of the 'Participate' programme of the European Foundation for Information Society on citizen participation in public processes. Presentations of good practices in cities, such as the Avila interoperability tool, Open Data Malaga, the biometric signature at Alcobendas, and the platform for the integrated management of Valencia are also included. They have also focused on sharing documents on public procurement and the regulations on public sector information reuse (Inndea, 2015).

The second working group focuses on *urban mobility*. Burgos and Valladolid have been city leaders on urban mobility and their focus has been on electric cars, sustainable mobility plans, and alternative vehicles. This group has discussed the effects of the new state-wide regulation governing facilities for recharging electric vehicles, coming into force on July 1, 2015. As a result of the discussion, it has proposed changing the legal figure of "system manager loads", which according to existing regulations is the only authorised supplier of energy used to recharge e-vehicles, and has informed the Ministry of Industry, Energy and Tourism of this position. The group believes that this figure hampers the implementation of electric mobility projects in Spanish cities. The group has also proposed drafting a document on bicycles in the cities of the RECI.

The third working group focuses on *environment, infrastructure, and liveability*. The cities of Vitoria and Rivas have been leaders in these areas at the RECI. This group has focused on water, irrigation, pollution, light pollution, and waste management. This group is sharing experiences of

the city regulations on water saving in Sabadell, the CAT-MED project on sustainable urban models in Valencia, and the alert system for pollen in Pamplona. A subgroup in charged of parkland and water cycle is working on a draft ordinance on irrigation management and water conservation. A new subgroup to work on the application of information and communications technology to measure urban levels of noise and light pollution has been proposed (Inndea, 2015).

The fourth working group focuses on *energy*, with the city of Murcia leading the work. Energetic efficiency and intelligent buildings are the focus of this group working on energy. Its recent work includes sharing experiences of interest, such as the contract for the improvement of public lighting in Vitoria, the contract for tenders of energy service in Alcobendas, and sharing information on the World Congress on Sustainable Building held in Barcelona. The group is working on synergies between cities to submit joint proposals by RECI cities for the EU Horizon 2020 Programme.

The fifth group focuses on *social innovation* and is led by the city of Coruòa. This group is working on citizen participation, social services, accessibility, and tourism. The group is concerned with the development of city presence, participation, and active listening on the internet and on social networks. They are also working on issues of transparency and open data, where city experiences have been presented, together with the Corporate Governance Code prepared by the FEMP. Regarding smart destinations, progress has been made on a guide to promote smart tourism with public and private collaboration (Inndea 2015).

4.3. Measuring Policy Learning and Efficiency-Based Policies

In order to assess the impact of policy learning and policy efficiency of the RECI network, this section focuses on the institutional context as well as formal and informal coordination mechanisms.

Besides the content management platform, there are physical and virtual meetings. There is an annual meeting of the General Board, as well as extensive virtual meetings of the five working groups. Virtual meetings are carried out via videoconference on a platform donated by Rivas City Hall.

The RECI offers local politicians and local technical staff the possibility of shaping engagement and co-creation processes in multiple phases of the workflow. Administrative and legal doubts are resolved by the *Secre-*

taría General, at Santander City Hall. There are also monthly coordination meetings among the leaders of the different working groups, to resolve issues regarding both internal rules and the topics each group is working on.

As a result of cooperation, vertical service interoperability has been proposed as a prerequisite for cities in the RECI network in new technological platform tenders. Even though interoperability might be one of the most positive effects of the RECI, by mid-2015 over 10 cities had tendered a technological platform. Different choices have been pursued: from cloud to university platforms. One limitation is that there are no formalised rules to increase the liability for decisions made. Thus the president of the RECI, talking about the choice of technological platforms notes that: "Everyone does their own thing, which is logical, because the sector is diverse and companies offer different products, but we should be able to create basic game rules allowing us to retrieve the data obtained on a common platform." (Iagua, 2014).

Despite the fact *that there are no formalised rules to increase the liability for decisions made*, previous experiences are useful, functioning as shared specifications for the RECI cities network. The specifications are included on the curated content management platform.

If interoperability occurs, data would be available in several cities sharing similar platforms. There are also applications and application programming interfaces (APIs) shared among the RECI cities to replicate and adapt software applications locally – such as those linked to tourism. Two examples are the Palma de Mallorca developments of tourist grounds and the Madrid development of public transport management.

4.4. Measuring the Success of the RECI Network – Empirical Evidence

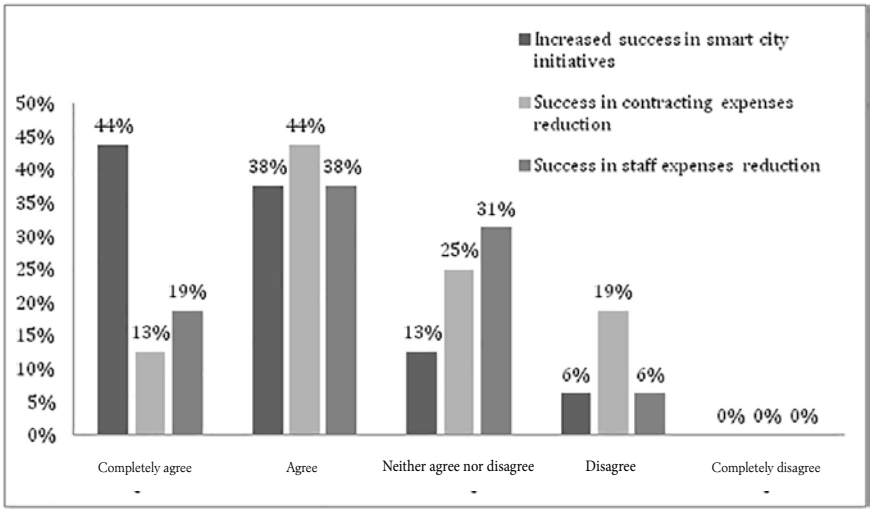
In this section, in order to measure the impact of the activities promoted by the RECI on local management, data from Martinez, Palomo, Gil & Navío (2016) is used. The data was obtained by way of a consultation carried out among the RECI members. The consultation combined questions from two dimensions: 1) the first dimension, which refers to involvement in the RECI (i.e. signatory year, number of working groups cities participate in, and group leadership, if any) and 2) the second dimension, which includes questions regarding the impact of the RECI in local administrations. The latter issue was addressed using a combination

of a five-level Likert scale (Likert, 1932), from "1 – Completely disagree" to "5 – Completely agree". This was intended to determine the levels of satisfaction with the impact of the RECI on their smart city activities. Open-ended questions were also used to find out specific data on impact areas and good practices.

Results of consultations. With participation at 64%, most of the replies obtained were those of the founder members of the RECI in 2012. No replies were obtained from signatories who joined in 2015.

The impact analysis focused on the influence of RECI activities on the success of the smart city initiatives promoted by the city government, as well as the impact on expense reduction, both linked to public-private partnerships and local government staff development.

Figure 2: Perception of impact of RECI activities on local smart city activities



Source: data from Martinez et al., 2016.

Overall, 82% of the network respondents either agree or completely agree with the statements about the success of the RECI in policy learning and efficiency-based policies. Regarding savings on contracting and in-house staff development, over 50% of the participants either agree or completely agree with the statement that savings were pursued, with the rest neither agreeing nor disagreeing. 19% of the respondents do not agree with the statement that savings resulted from participation in the RECI or from the implementation of efficiency-based policies.

Only 50% of the respondents were able to monetise the impact of the savings on their budgets. This shows a lack of mechanisms and indicators to quantify the impact of the RECI. Cities able to quantify their savings focused on areas related to contracting and activities related to staff expenses.

Figure 3 below shows the results of the answers related to the perceived areas of improvement in contracting smart city services and staff development.

Figure 3: Perceived areas of improvement in contracting smart city services and staff development

Areas of improvement in contracting smart city services	*Areas of improvement in staff development*
1. Waste management 2. Parking and mobility management 3. Smart city platform 4. Energy management 5. Public-private partnerships in sensor-related projects 6. Open data, e-government, transparency and citizen participation 7. Define the expected quality of service by contractors	1. RECI events 2. Training 3. Discounts and free passes to conferences, workshops, fairs. 4. Travel 5. Common interest topics 6. Best practices and policy learning from mistakes made by others.

Source: data from Martinez et al., 2016.

The consultation also surveyed participants on the adoption of good practices among the RECI members. The best practices adopted have focused on policy learning regarding public management (such as electronic administration and transparency), tourism policies (the Valencia city web application), project planning and execution (such as Malaga's measurement indicators), and energy efficiency policies (such as the energy efficiency plan of Sabadell).

The usefulness of the best practices adopted was also surveyed by means of a 5-point scale (1 to 5), showing high degrees of satisfaction with policy learning, with the average response of 4.4.

The scope of coordination mechanisms for positive effects. The paper has so far analysed the coordination mechanisms within the RECI, the conditions

of governance of the network, and the perception of the impact of RECI activities among the members. There may be further effects of the organisational framework, and further empirical work is needed in order to test for these. One positive effect in organisational terms is the fact that public policies might be reviewed and adapted to deal with unforeseen issues. When a city foresees limitations in the public policy pursued, this knowledge is shared within the network. Knowledge sharing is a positive mechanism for policymakers who have to take decisions more quickly than in the past, in a rapidly evolving socio-political context.

A second positive effect in organisational terms might be forward thinking in policy-making practices (Accordino, 2013). The RECI was born with the idea of seizing future opportunities, such as advances in science and technology regarding efficient automation. It might be argued that the existence of the RECI contributes to orienting policy choices towards future possibilities instead of focusing simply on short-term issues.

An additional positive effect in organisational terms might have to do with the fact that access to contacts and information may leverage differences among bigger and smaller cities in terms of size.

The RECI network has embedded some anticipatory thinking in the mechanism that allows for the sharing of best and failed practices among city governments. According to the network mediator and facilitator (the staff technical office, FUNDETEC), the RECI has been a positive ground to push for changes in private-public collaboration. In this regard, RECI technical proposals have been approved at the political level.

The existence of the RECI contributes to aligning smart city strategies with other government levels, particularly with the national level in Spain. Thus an important part of the work of the staff technical office (FUNDETEC) has entailed coordination with state agencies such as the SETSI (*Secretaría de Estado de Telecomunicaciones y Sociedad de la Información*), INAP (*Instituto Nacional de Administración Pública*), IDEA (*Instituto para la Diversificación y Ahorro de la Energía*), Red.es, and ICEX (*Instituto de Comercio Exterior*), among others.

The RECI, through its technical office, has been a driving force for the creation of *Foro Sectorial de Ciudades Inteligentes*, and the normalisation committee at AENOR, both statewide.

Under the umbrella of ICEX, visits of foreign city mayors to ongoing, so-called intelligent city projects in Spanish cities have been arranged. The technical secretariat (FUNDETEC) has been responsible for rec-

ommending city pilots and projects. These pilots have a demonstrative impact for local Spanish companies involved in the smart projects.

A different dimension of cooperation has to do with the capacity of the RECI to attract the interest of cities in other countries. From this perspective, the RECI has had expressions of interest from countries such as Portugal and France, as well as cities in the United States and in Latin America. In Portugal, a similar network has been created: RENER. Since 2013 there has been an agreement on mutual collaboration between RECI and RENER.

The analysis of the RECI case has focused on organisational issues regarding smart city policies and perceptions of success. The coordination of the network partners and the ability of the network manager to run the network have been used as predictors of positive effects in network governance. This is tempered by the fact that there are no formalised rules to increase the liability for decisions made, which is a predictor of negative effects in network governance. In the following section, conclusions on network governance and limitations are further discussed.

5. Conclusions

The literature on networks assumes that coordination mechanisms contribute to the success of a governance network under certain conditions, as explained by Cristofoli et al (2012). In this paper we try to answer to what extent this assumption is valid in the case of the RECI network (*Spanish Network of Smart Cities*), formed by a group of Spanish cities in 2012. The paper has analysed the extent to which the RECI network has led to successful policy learning and efficiency-based policies in Spain. The selection of the Spanish case is based on an interest in understanding changes in public policy management at the local level in contemporary Spain, and it is also motivated by the fact that city governance networks arise in other geographical settings; thus there is a challenge to understand the features, impact, success, and limitations of these networks. The paper is based on a theoretical framework that is grounded in the literature on networks: three streams of literature relevant to network governance have been discussed. Later on, these streams of literature helped to briefly structure the case study. The conclusions are presented below.

The RECI is first of all a formal network, with formal ways of operating, a network leader – the mayor of Santander – and a network facilitator in form of the technical secretariat, FUNDETEC. The network enters into

play with other networks at the state level and the EU level, where the leadership of the mayor of Santander also seems to play an important role. Building upon the literature on the conditions for success in shared-governance networks, the case of the RECI confirms the insight into the importance of the soft power of mayors to influence public and private bodies. The soft power is enhanced by the fact that the RECI is a formal network. In the case of the RECI, an increasing involvement of mayors in complex governing networks, including public and private bodies, has been found. In these networks, mayors actually devise strategies to influence and try to shape policy decisions taken by other players.

This study of the RECI shows that mixed groups are becoming components of the governance structure regulating the smart city ecosystem. Service ecosystems have been found within the framework of governance. These ecosystems are focused on five working groups addressing local concerns: 1) governance, economics, and business; 2) urban mobility 3) environment, infrastructure, and liveability; 4) energy, and 5) social innovation. These ecosystems have their own leaders and mechanisms to cooperate and coordinate their work. Working groups allow sponsors to present their ideas, services, and products in exchange for the funds that are used for the operation of the network.

The RECI shares features of shared-governance networks and lead organisation governance, since an office – the technical secretariat (FUNDETEC) – functions as a leader as well. The success of the network up to 2015, measured by the perceptions of RECI members, might be explained by the existence of formalised coordination mechanisms. However, there are important limitations to the success of the network in organisational terms, based on the lack of formalised rules, which decreases the liability for decisions made. Even though organised network meetings coexist with contractual agreements and with the nurturing of informal relationships, the agreements are not binding. This is a negative predictor of effects in the network, and we found a good example in the inability to promote platform interoperability in RECI member cities. Contracts with partner organisations are relevant for understanding the performance of the network and mixed groups ecosystems. For instance, the president of the RECI was also the president of the Spanish Federation of Cities and Provinces (FEMP) until 2015, and has been president of the Council of European Municipalities and Regions (CEMR) since 2015. Assessing the conditions for success in shared governance, we have found a mix of two forms of network governance: shared/participant governance is predominant among the RECI members, while there are some traits of lead

organisation governance in the role played by the FUNDETEC technical secretariat.

Focusing on the abilities of the network manager as predictors of network performance, network managers have been found to play a relevant part, distinct from network structure and mechanisms. FUNDETEC has nurtured the network and steered it, together with the president. FUNDETEC has also functioned as the network mediator and communicator, capable of fostering an environment for good partner interaction. The case study has shown the role of FUNDETEC in institution building, establishing working rules for partner participation, and promoting information exchange between network partners. FUNDETEC as the network facilitator/mediator also builds commitment to the mission and the goals of the network, both among network members and external stakeholders.

In steering the network, the network leader has performed two main tasks: action planning and activating. Action planning is reflected in clear missions and the development of focused strategies. Activating has entailed selecting the appropriate players and resources for the network, both at the state and European Union level.

Based on the proposed theoretical framework, the mechanisms for the coordination of the network partners and the ability of the network manager to run the network are positive predictors of network governance. These positive predictors allow for room to make policy more future-proof, with certain limitations. The RECI network brings together a number of tools in a comprehensive and scalable way to ensure the incremental adoption of future policy developments. However, the fact that agreements are not binding has been found to be a negative predictor of network governance, and it has negative effects on organisational issues.

This analysis of the RECI network has shed light on new trends in public management and organisation in networked cities in Spain, both on policy learning and on efficiency-based policies. The paper has made a contribution to the literature on mayor governance in complex networks and on network performance, highlighting the new possibilities of network managers. At the same time, the paper shows the limitations stemming from the existence of non-binding agreements, as well as the need to further refine variables and conduct interviews to examine and evaluate policy learning and efficiency-based policies, following the suggestions of Clifton et al. (2015, 2014).

References

Accordino, F. (2013). The Futurium: A foresight platform for evidence-based and participatory policymaking. *Philosophy and Technology*, *26*(3), 321–332. doi: 10.1007/s13347-013-0108-9

Agranoff, R., & McGuire, M. (2001). After the network is formed: Process, power and performance. In M. Mandell (Ed.), *Getting results through collaboration networks and network structures for public policy and management* (pp. 11–29). Westport, CT: Quorum Books.

Agranoff, R., & McGuire, M. (2003). *Collaborative public management: New strategies for local governments*. Washington, DC: Georgetown University Press.

Clifton, J., Diaz-Fuentes, D., & Fernandez-Gutierrez, M. (2016). *Public infrastructure services in the European Union: Challenges for territorial cohesion*. Santander, Spain: Mimeo.

Clifton, J., Diaz-Fuentes, D., & Fernandez-Gutierrez, M. (2014). The impact of socio-economic background on satisfaction: Evidence for policy makers. *Journal of Regulatory Economics, 46*(2), 183-206.

Connolly, J., Svendsen, E., Fisher, D., & Campbell, L. (2014). Networked governance and the management of ecosystem services: The case of urban environmental stewardship in New York City. *Ecosystem Services, 10*, 187–194. doi: 10.1016/j.ecoser.2014.08.005

Copus, C. (2015). Ideology or realism in local governance. *Croatian and Comparative Public Administration, 15*(2), 335–356.

Cristofoli, D., Markova, J., & Meneguzzo, M. (2014). Governance, management and performance in public networks: How to be successful in shared-governance networks. *Journal of Management & Governance*, *18*(1), 77–93, doi: 10.1007/s10997-012-9237-2

Cristofoli D., Macciõ L., & Markovic J. (2012, April). *Una, nessuna, centomila recipes for a good network performance*. Paper presented at the XVI IRSPM Conference, Rome, Italy.

Íòigo de la Serna aboga por crear unas reglas de juego básico para compartir información sobre smart cities [Íòigo de la Serna calls for creating shared rules to share information on smart cities]. (2014, September 3). *Iagua*. Retrieved from: http://www.iagua.es/noticias/espana/ayuntamiento-santander/14/09/03/inigo-serna-aboga-crear-unas-reglas-juego-basico

Inndea (2015, February 25). Smart City: La Red Espaòola de Ciudades Inteligentes, entre las que se encuentra Valencia, se amplía [The Spanish Network of Smart Cities, among which is Valencia, expands]. *Inndea Valencia*. Retrieved from: http://inndeavalencia.com/smart-city-la-red-espanola-de-ciudades-inteligentes-entre-las-que-se-encuentra-valencia-se-amplia

Kickert, W. J. M., Klijn, E. H., & Koppenjan, J. F. M. (Eds.) (1997). *Managing complex networks*. London, United Kingdom: Sage Publications.

Kort, M., & Klijn, E. H. (2011). Public-private partnerships in urban regeneration projects: Organisational form or managerial capacity? *Public Administration Review, 71*(4), 618–626.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology, 22*(140), 1–55.

Mandell, M. P. (Ed.). (2001). *Getting results through collaboration networks and network structures for public policy and management*. Westport, CT: Quorum Books.

Martínez, M. L., Palomo, Á., Gil, O., & Navío, J. (2016). *Impact Analysis of Smart City Networks in Cities' Local Government*. Madrid, Spain: Colegio Oficial de Ingenieros de Telecomunicación.

McGuire, M. (2002). Managing networks: Propositions on what managers do and why they do it. *Public Administration Review, 62*(5), 599–609.

Meier, K. J., & O'Toole, L. J. (2001). Managerial strategies and behaviour in networks: A model with evidence from U.S. public education. *Journal of Public Administration Research and Theory, 11*(3), 271–293.

Mitchell, S. N., & Shortell, S. M. (2000). The governance and management of effective community health partnerships: A typology for research, policy and practice. *The Milbank Quarterly, 78*(2), 241–289.

O'Toole, L. J., & Meier, K. J. (2004). Public management in intergovernmental networks: Matching structural networks and managerial networking. *Journal of Public Administration Research and Theory, 14*(4), 469–494.

Provan, K. G., & Kenis, P. (2008). Modes of network governance: Structure, management and effectiveness. *Journal of Public Administration Research and Theory, 18*(2), 229–252.

Shortell, S. M., Zukoski, A. P., Alexander, J. A., Bazzoli, G. J., Conrad, D. A., Hasnain-Wynia, R., … Margolin F.S. (2002). Evaluating partnerships for community health improvement: Tracking the footprints. *Journal of Health Politics, Policy and Law, 27*(1), 49–91.

Web sources

RECI – http://www.redciudadesinteligentes.es