1. Lessons from local resilience planning in European cities: The case of the Smart Mature Resilience project

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Abstract

Urban resilience development at local level requires skills and methodologies that are often not at hand in city administrations. In order to enhance cities' capacity to resist, absorb and recover from the effects of climate change, the Horizon2020 project 'Smart Mature Resilience' (SMR) is developing standardized approaches and tools to support the development of climate adaptation and resilience strategies. The project has engaged 3 partner cities (Kristiansand, Norway; Glasgow, United Kingdom and Donostia-San Sebastian, Spain) in an iterative, pilot implementation process that presented the tools and trained stakeholders in using them, by discussing how these contribute to the overall resilience building process and how they feed into an integrated management system for resilience planning that can be transferred to the local context of other cities, regions and countries. Developing a co-creation approach has enabled to gather detailed information and understanding on what cities are expecting from this integrated management system for resilience, the so-called European Resilience Management Guideline. All the information gathered has helped cities to highlight existing challenges and associated problems regarding resilience at local level. The following chapter aims initially to present the project and the resilience-building tools it develops and to summarize and comment upon the most important lessons learnt from the pilot implementation process in the three cities.

The project in a nutshell - The European resilience management guidline

European cities face an increasing frequency and intensity of hazards and disasters, which are exacerbated by either climate change hazards and challenges or social dynamics implications, such as demographic change and an ageing population. As Europe's cities continue to grow, there is an urgent need for far-reaching and holistic approaches to enhance cities' resilience towards potentially critical effects of hazards.

Smart Mature Resilience (SMR) is a multi-disciplinary research project working for more resilient cities in Europe. Researchers and cities come together to enhance cities' capacity to resist, absorb and recover from the hazardous effects of climate change, by developing, implementing and validating a European Resilience Management Guideline, which includes a holistic approach on city resilience development, supports strategic planning and management and defines the ideal path a city needs to follow to further advance local resilience, by promoting across-sector and beyond silos collaboration between stakeholders. The project has developed a definition of city resilience, which is "the ability of a city or region to resist, absorb, adapt to and recover from acute shocks and chronic stresses to keep critical services functioning, and to monitor and learn from on-going processes through city and cross-regional collaboration, to increase adaptive abilities and strengthen preparedness by anticipating and appropriately responding to future challenges" (Bång, Rankin 2016).

Researchers and cities co-developed, updated and tested five tools that were then introduced into an integrated management system for resilience planning that can be transferred to the local context of other cities, regions and countries. Considering a co-creation approach in the methodology has enabled to gather and understand what cities are expecting from this integrated management system for resilience, the so-called Resilience Management Guideline. The European Resilience Management Guideline was co-created and co-developed by all project partners, while it was projected, tested and validated in the three partner cities. In this process, four additional cities were acting as peer-reviewers and provided collective feedback and input for the finalization of the tools and the Guideline. These cities were: Rome, Italy; Vejle, Denmark, Riga,

Latvia and Bristol, United Kingdom, while in each city, different organizations joined as partners, from the city's Energy Agency in Riga to the Center for Community Integration in Vejle.

Local planning for resilience needs to take into account commonly accepted concepts for climate change adaptation and sustainability, critical infrastructures development and social dynamics. However, a city is not just about managing sustainability or adaptation issues; the very objective of local politics is to strive for satisfying human needs and improving the citizens' quality of life. When dealing with local planning for resilience, the management of tasks and activities individually or sectorally is most often time-consuming, fragmented, and inefficient, while it may lead to increased workload and weak results. On the contrary, the re-organization and integration of existing practices and activities, plans and strategies under one steering wheel, commonly accepted by everyone working in the city –practitioners in municipal departments, decision-makers and politicians - may be able to systemize the work, boost the efficiency of resilience-related activities at city level and provide a multitude of positive outcomes for municipal practitioners and citizens (Latinos et al. 2017).

The European Resilience Management Guideline is better described as a journey with one step following the other, where cities and regions have different starting points. Local planning for resilience needs to take into account commonly accepted concepts for climate change adaptation and sustainability. The European Resilience Management Guideline directs all available resources towards well-defined goals and secures transparency and the democratic principles of decision-making. The Guideline introduces an integrated approach on resilience planning and will then move on with a training that will allow participants to implement hands-on the tools for a real-life scenario (Latinos et al. 2018).

Tools that enhance operational resilience

The five tools developed within the SMR project are: 1) a Resilience Maturity Model, 2) a Risk Systemicity Questionnaire, 3) a Resilience Information and Communication Portal, 4) a City Resilience Dynamics Model and 5) a Resilience Building Policies tool.

This sub-chapter aims to provide with a short overview of the tools and introduce their main functionalities and contribution to the resilience building process.

1.The Resilience Maturity Model (RMM) helps to identify the ideal path for the evolution of the resilience building process from an initial stage to a more advanced stage, going through a number of intermediate stages. The RMM enables, on a strategic level, the development of an assessment of a city's current resilience status identifying areas of improvement. Based on this initial assessment, a city will use the RMM to guide the definition of the strategy to increase their resilience level, based on the policies included in it. The main goal of the RMM is to provide an optimum path to increase the resilience level of cities. The RMM also aids reflection since it provides a holistic overview of the resilience building process and helps end-users to understand resilience as a multidimensional objective. While using the RMM, cities assess their current resilience status (Hernantes et al. 2017).

2.The Risk Systemicity Questionnaire (RSQ) has been developed to address the risk assessment aspect of increasing the resilience level of cities. The RSQ has been designed as an interactive set of questions, which city stakeholders typically complete in a group. The main purpose of the tool is to encourage focused, interdisciplinary conversations about those risks that are of greatest concern to the city. It focuses on ten risk areas that became significant as the data was analysed, where each risk area contains 10-12 significant risk scenarios. The RSQ considers risk scenarios as causal and vicious cycles. For each risk scenario users are asked to provide an answer with respect to the likelihood of occurrence of that scenario in their own city. Upon completion of the RSQ, the user is presented with a prioritization which may then be used as a focus for developing mitigation strategies (Howick et al. 2017).

3.The Resilience Information and Communication Portal (RP) serves as a toolbox that can complement and enhance the platforms and software that cities already have in place. It allows cities to display data internally or publicly that is already available to the city as it applies to resilience, vulnerability and crisis situations. The portal allows for different levels of

users, like city managers, critical infrastructure providers, citizens or other stakeholders to be able to contribute information as applies to a given city context. The portal offers added value not available otherwise to cities (as they self-reported), as the cities have multiple (and in Glasgow's case, dozens) of platforms in place in their municipalities for internal communication, but the wealth of information available to them is not integrated, streamlined or fully utilized (Sakurai et al. 2017).

4.The City Resilience Dynamics Tool (CRD) aims at helping city disaster managers to diagnose explore and learn about the resilience building process. They can use the tool to make decisions and be able to take the correct actions in the resilience building process. The simulation model encapsulates the most important aspects of the RMM and helps to encompass the RMM in a training environment for the cities to learn about the path towards improving resilience. The model allows the user to try different policy options, identifying the implications of each of them in the resilience improvement process (Labaka et al. 2017).

5.The Resilience Building Policies (RBP) tool is an extension of the online version of the RMM. It combines custom ways to view policies contained in the RMM with detailed information and examples from case studies detailing policy implementation in partner cities, references of sources to case studies from other cities around the world, and links to risk mitigation actions that support the policies (and are included in the RSQ). The tool provides a comprehensive reference centre for high-level strategic managers in cities as well as municipal workers tasked with implementing the policies that have been planned; comprises illustrative real case studies of policy implementation in cities; includes references to other sources that provide details of case studies of policy implementation in cities; provides a practical point of reference for cities considering the implementation of related policies; provides illustrative detail for the policies in the RMM and the CRD and can be navigated conveniently via a dedicated webpage that also includes a wiki format and invites cities to upload their own case studies and be part of a resilience culture at European level (Howick et al. 2017).

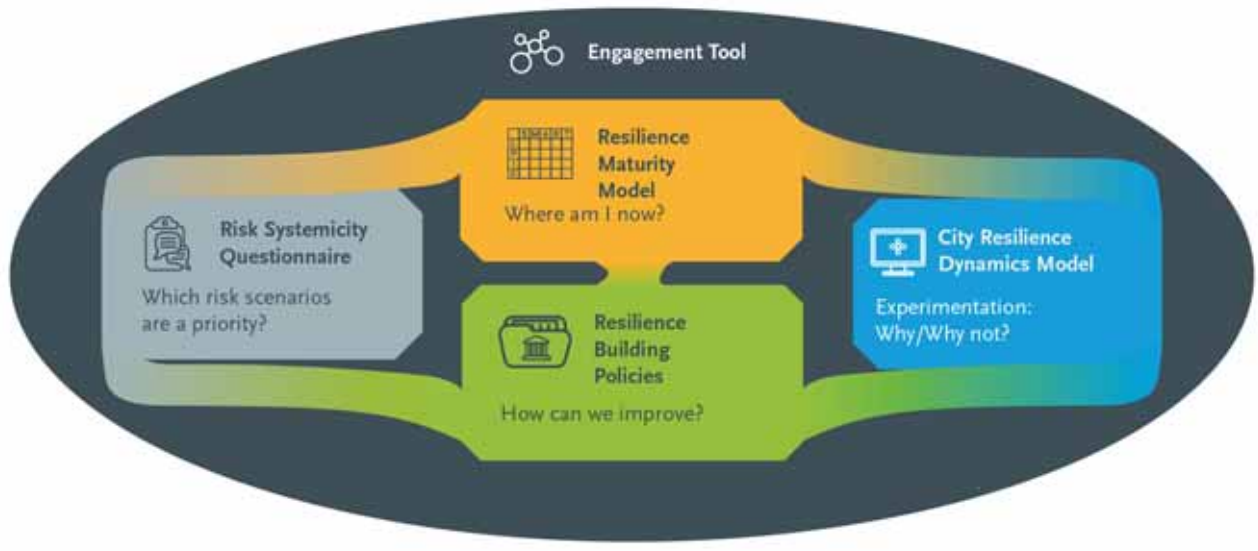

Figure 1: The SMR resilience building tools (Source: SMR PROJECT 2017)

The pilot implementation process

Cities learning from cities characterize innovation and knowledge exchange in the urban millennium. Building cross-cultural awareness and recognizing differences in local circumstances are standard practices for international practitioners; however, training lacks where different cultures encounter new information, technology and tools, and in how best to build appropriate networks of technology transfer for adaptation and resilience planning. From the beginning of 2016 to the end of 2017, the cities engaged in a facilitated, iterative pilot implementation process that aimed to test, validate and peer-review the resilience building tools that were developed by the research partners. The main elements of the iterative implementation in each city were: 1) an initiating 'kick-off workshop' in each that aimed to gather the most relevant stakeholders in the implementing cities for the selected security sector; 2) a series of webinars, together with the peer-reviewing cities that had the opportunity to ask questions and provide their insights and feedback on the ongoing tool development (external stakeholders were always invited to attend the webinars); 4) bilateral meetings with identified stakeholders, organized by the city partners to further explore synergies and collaboration potential between institutions, municipal departments and utilities and project consortium; 5) a review workshop during which the implementing cities provided feedback on the implementation process to the tool developers, while the peer-reviewing cities shared their additional feedback and summarized their recommendations for the finalization of the tool through a combination of facilitated discussion, based

on guiding questions, and conduct of interactive exercises in breakout groups; and 6) stakeholder focus groups in each implementing city, once the tools were already functional in beta version; these stakeholder focus groups mainly aimed to present the tool to the most relevant stakeholders and provide with an up-to-date and ready-to-use application that could support the city's resilience building efforts (Sakurai et al. 2017).

In preparation of each training, workshop or meeting, value was added by including considerations of environmental, economic, societal and individual interests within existing resilience networks upon planning and organization of the training session. The facilitators co-created, together with the city partners, case studies that were relevant and applicable at local city context to serve as a basis for the application of tools during the training (Latinos V., Grimes C. 2016).

The implementation activities took place with the support of the local research partners in the implementing cities, while a city consultancy network was acting as external coach and coordinator, facilitating knowledge and information exchange between partners and city officials and representatives. During this period, partners and city stakeholders had the chance to explore and validate the tool in the security sectors that were already identified and to provide input to the tool developers for the finalization of it; input that was used to constantly update the portal's functionalities and improve the tools' qualities. In preparation of each workshop, value was added by including considerations of environmental, economic, societal and individual interests within existing resilience networks upon planning and organization of the training session. The facilitators co-created, together with the city partners, case studies that were relevant and applicable at local city context to serve as a basis for the application of tools during the training (Latinos V., Grimes C. 2016).

Lessons learnt from the stakeholder focus groups

During the stakeholder focus groups that took place in the project partner cities (15 workshops in 3 cities for a period of 14 months) and with thematic focus on local planning for resilience, risk awareness, and baseline review and vulnerability assessment, practitioners improved recognition of key determinants

for local resilience planning and identify appropriate networks for innovation and knowledge exchange. Emphasis was placed on integrated network-building approaches that considered (1) cultural geographical and climatic appropriateness, (2) market and infrastructure feasibility of implementation in the recipient cities and regions (3) individual determinants like acceptance, perceived quality of life and demands. Mini-lectures introduced the resilience tools, and will aim to hint already on potential challenges and difficulties in transferring to other contexts.

Participants were able to apply the knowledge gained in scenarios explained by the instructors to plan out a mini strategy for resilience that could potentially transfer to real city processes. In most time they were encouraged to discuss this strategy with their departments and superiors and were introduced into train-the-trainer modules to be able to further discuss and introduce the tools to their colleagues. In Glasgow, stakeholders were engaged in a scenario planning exercise around a severe flooding incident, in Kristiansand some cases focused on challenges revolving from social dynamics, like social alienation, youth loneliness and ageing population, while in San Sebastian the scenarios focused around pluvial and fluvial flooding and cascading effects like energy outages and landslides. Semi-structured discussions followed the exercises centred on each tool, by improving strategies for future resilience building (Latinos et al. 2017).

One of the most important element for the success of the stakeholders focus groups was the identification of what city stakeholders require to increase the city resilience level and the barriers that still need to be overcome has been helpful to define the specific requirements that each of the five tools included in the European Resilience Management Guideline should fulfil. Additionally, invited citizens were also involved in the workshops in order to better engage with the civil society and to make sure that the tools will be as much as possible tailor made to the implementing cities' needs. Not many citizens responded to this call, something that reinforced the adopted approach that the tools are mainly targeting crisis and infrastructure managers as well as municipal staff and stakeholders engaged in strategic planning and management; in some cases though, there were a couple of citizens that joined the trainings and provided feedback on the tools.

Also, the process facilitators in collaboration with the city partners identified the existing action and master plans existing in each city on sustainability, climate change and environmental management and tried through the workshops to find how the SMR tools and the integrated ERMG process can complement the existing frameworks and also to identify gaps and potential challenges that have not been considered when developing these action plans.

The collective feedback from all cities showed that informing thoroughly stakeholders and city representatives is important and necessary in order to secure their active participation and involvement. There is need for further focus on stakeholders that are mostly affected by or interested in an issue or challenge. Especially the stakeholder training workshops were used as a direct knowledge transfer platform that enabled the project partners to take stock of the co-creation activities. During the pilot implementation and especially during the stakeholder training workshops, it became evident that most cities are already working on resilience building activities, as resilience is becoming a buzzword and provides new forms of urban governance, planning and strategy development. Although cross-sector collaboration is not the single solution to tackle all challenges that cities are facing, we believe that it can have much impact on the resilience of municipalities and that the alignment of municipal strategies will be very beneficial in this regard.

Despite the success of the pilot implementation, it needs to be mentioned that limitations of scenario building became apparent in the stakeholder focus groups. While the creation of scenarios that are suitable and useful for testing of the tools beta versions is confirmed, scenarios that are realistic depictions of incidents in cities has been said to be extremely hard. Such scenarios are not necessary for inclusion project deliverables, but it must be made clear that they for example would not serve as the basis of simulation models, simulation games, incident planning or other resilience-related city tasks that need very much elaborated details. According to the cities, creation of such scenarios would be a task that would require a higher double-digit number of hours each, and would only be realistic when including a number of stakeholders with very sophisticated roles (Sakurai et al. 2017).

Conclusions and recommendations

The European Resilience Management Guideline defines an operational framework that provides guidance and aims at training and supporting municipalities and relevant stakeholders in enhancing city resilience. But, what are the benefits for cities that have in place and use an integrated management system to monitor their resilience building activities?

The European Resilience Management Guideline and the SMR resilience tools mainly contribute to the SDG11: Make cities and human settlements inclusive, safe, resilient and sustainable and the SDG13: Take urgent action to combat climate change and its impacts. Extreme poverty is often concentrated in urban spaces, where national and city governments struggle to accommodate the rising population in these areas. SDG11 aims at making cities safe and sustainable means ensuring access to safe and affordable housing, and upgrading slum settlements. It also involves investment in public transport, creating green public spaces, and improving urban planning and management in a way that is both participatory and inclusive. SDG13 aims at mitigating climate-related disasters in developing countries and by helping more vulnerable regions, such as land locked countries and island states, adapt to climate change and integrate disaster risk measures into national strategies (UNDP 2017).

The use of an integrated management approach to be applied at city level and to support the resilience building process provides the cities that receive training on how to use it and implement it in their local context with a variety of benefits, that only some of them are listed here: 1) increased awareness on climate change adaptation, resilience and sustainability; 2) improved quality of management at local level and across the various municipal departments; 3) enhanced transparency and advanced monitoring action; 4) increased trust in local governance; 4) increased number of engaged citizens through co-creation activities; 5) contribution to a sustainable and resilient economy and, last but not least, 6) provision of better perspectives for a bottom-up inclusive EU, something that cities nowadays tend to promote and seek, especially in the outset of austerity measures and increasingly limited resources (Latinos et al. 2018). The European Resilience Management Guideline comes in the form of a toolbox, and includes

guidance throughout the various operational steps; therefore it is easy for a city to adapt it in existing mechanisms and established practices and perform the activities included in each step when needed and when the circumstances demand it. By using an integrated management system for resilience development, the effort lost in running parallel management systems and several processes that require different understanding and performance, can be turned into sustainability.

In this paper we have presented insights from a large research project on urban resilience. We have introduced the European Resilience Management Guideline as an integrated management system developed within the project and reported insights from its implementation with partner cities. Based on this, and within the project, we have proposed an extension of a framework to better understand cross-sector collaboration in the context of urban resilience and to bring all available resources and human capital into an approach that European commitment to climate change action continues to be strong and steady (Sakurai et al. 2017). However, integrating social capital into environmental initiatives – a key component of building meaningful resilience and implementing projects and actions that matter for cities – needs still work to do and integrate in existing structures and political processes that facilitate mainstreaming for climate adaptation and resilience.

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Bibliography

Bång M., Rankin A. (2016b), “Multidisciplinary literature synthesis” Available at: http://smr-project.eu/deliverables/literature/ [2016, October]

CHAMP project (2012), Capacity Development Package for Local Response to Climate Change, Available at: http://www.localmanagement.eu/index.php/cdp:home/ [2017, October]

European Commission (2014), Crisis management topic 7: Crises and disaster resilience – operationalizing resilience concepts, Available at: https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/drs-07-2014.html [2014, October]

Grimes C. et al (2017b), “Report of Stakeholder Dialogue”, Available at: http://smr-project.eu/deliverables/ [2017, November]

Hernantes J., Labaka L., Gimenez R., Maraña P. (2017), “Revised Resilience Maturity Model Report”, Available at: http://smr-project.eu/deliverables/ [2017, March]

Howick S., Eden C., Pyrko I. (2017a), “The Risk Systemicity Questionnaire”, Available at: http://smr-project.eu/?id=140 [2017, April]

Howick S., Eden C., Pyrko I. (2017b), “The Resilience Building Policies Tool”, Available at: http://smr-project.eu/deliverables/ [2017, October]

Labaka L. et al. (2017), “City Resilience Dynamics Model Report”, Available at: http://smr-project.eu/deliverables/ [2017, October]

Latinos V., Peleikis J., (2016b), “Peer-review meeting 1”, Available at: http://smr-project.eu/deliverables/peer-review-meeting-1/ [2016, October]

Latinos V. et al (2017a), “Peer-review meeting 2”, Available at: http://smr-project.eu/deliverables/peer-review-meeting-2/ [2017, March]

Latinos V. (2016b), “Peer-review meeting 3”, Available at: http://smr-project.eu/deliverables/ peer-review-meeting-3/ [2017, October]

Latinos V. et al (2016), “Report of the review workshop 1”, Available at: http://smr-project.eu/deliverables/review-workshop/ [2016, October]

Latinos V. et al (2018), ‘’European Resilience Management Guideline’’, Available at http://smr-project.eu/ (forthcoming in 2018)

Sakurai, M., Majchrzak, T. A., and Latinos, V. (2017) - Towards a Framework for Cross-Sector Collaboration: Implementing a Resilience Information Portal. In: Proc. 3rd Information Systems for Crisis Response and Management in Mediterranean Countries (ISCRAM-med), Lecture Notes in Business Information Processing, Springer

United Nations Development Program (2017), Sustainable Development Goals, Available at: http://www.undp.org/