

Prototyping a Local Resilience Policy Design Canvas

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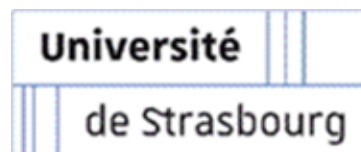
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April 2026

evoREG Research Note #59

<https://www.doi.org/10.24406/publica-8425>

evoREG Research Notes Series' editor: Emmanuel Muller (Fraunhofer ISI)



Executive Summary

Designing policies especially with regard to the preparation for, coping with and adapting to crises and extreme events, i.e. concerning resilience, is a complex undertaking since it's marked by high uncertainties, trade-offs and complexities concerning the envisaged objectives, their systemic impacts as well as long-term casual effects (cf. Fraser and Kirbyshire, 2017, p. 5).

The objective of this working paper is to develop a tool for enhancing the local policy design in the light of crises and extreme events. Since there is no yet an actionable policy canvas existing for resilience policy, the Local Resilience Policy Design Canvas (LRPDC) aims at closing this gap. Policy makers are guided to (co-)design policies that produce, deliver and sustain the public good of resilience. The prototyped LRPDC represents an analytical and strategic tool to support the design, evaluation, and improvement of local resilience policy by facilitating iterative dialogue and co-design between and among local policy makers, local and external actors.

Based on an unstructured literature review, the LRPDC has been developed by adjusting the already existing policy design canvas for Finnish creative ecosystems (see Siivonen et al., 2025, pp. 6, 23) to the stakes of resilience.

The LRPDC offers an agile and practical tool to guide local policy makers through the process of (re-) designing local policies dedicated to strengthening the resilience of the local territories regarding crises and extreme events.

Introduction: Why do we need a Local Resilience Policy Design Canvas?

Designing policies especially concerning the preparation for, coping with and adapting to crises and extreme events, i.e. regarding resilience, is a complex undertaking since it's marked by high uncertainties, trade-offs and complexities concerning the envisaged objectives, their systemic impacts as well as long-term casual effects (cf. Fraser and Kirbyshire, 2017, p. 5). This manual entails a structured and actionable approach to support this process, by developing a conceptual framework for local policy makers. In the case of local resilience, policy makers have the challenging responsibility to (co-)design policies that produce, deliver and sustain the public good of resilience. The **Local Resilience Policy Design Canvas (LRPDC)** represents an analytical and strategic tool to support the design, evaluation, and improvement of local resilience policy by facilitating iterative dialogue and co-design between and among local policy makers, local and external actors. Fundamental to the development of the LRPDC was the Business Model Canvas (BMC) developed by Osterwalder and Pigneur (2010) which has recently been adapted to different business requirements, such as sustainability (cf. Stempfle et al., 2025, p. 2). The original BMC consists of nine blocks: value proposition, customer segments, customer relationships, channels, key partners, key activities, key resources, cost structure and revenue streams (cf. Stempfle et al., 2025, p. 7).

A business model, on the one hand, refers to an analytical unit of operational structures and processes that transform existing resources and capacities into organisational value. Thereby, it identifies and reveals organisational assets, activities and interdependencies. The success of a business model relies on its potential to involve the necessary stakeholders of the ecosystem in which the organisation operates. Here, an explicit analogy can be drawn with local policies, as these also refer to agreed goals and shared values, which are to be achieved and strengthened by means of existing resources and capabilities through structures, processes and actions. A canvas, on the other hand, constitutes a document structured by labelled fields that correspond to the main questions the targeted users need to discuss and answer. Within these labelled components, the users can add information, statistical data or other forms of knowledge that corresponds to the field in the question (cf. Stempfle et al., 2025, pp. 3, 7).

The LRPDC has been prototyped first on the basis of the policy design canvas for Finnish creative ecosystems that aims at understanding the needs, identifying the key aspects and designing policies for creative ecosystems (cf. Siivonen et al., 2025, pp. 6, 23). After conducting an unstructured literature review on resilience, especially regarding local territories and communities, and governance, the components and its content have been adjusted accordingly. In this respect, the LRPDC offers an agile and practical tool to guide local policy makers through the process of co-designing local policies dedicated to strengthening the resilience of the local territories regarding crises and extreme events. The objective is to provide a structure on how to leverage the resilience potential of local territories and communities. The LRPDC is an easy-to-use instrument for co-designing and evaluating resilience policies between and among policy makers, local and external actors. It acts as a visual representation of the local ecosystem,

shaped by developments, inputs, barriers, stakeholders and activities, in which resilience unfolds (or not). Taking into consideration the needs and motivations of different stakeholders by co-designing resilience policies can lead, in addition, to an increased empowerment and satisfaction of these actors as well as to an increased trust in government actions. The involvement not only of policy makers but also of the relevant stakeholders within the co-design workshops ensures a strict alignment of the resulting policies to actual social needs. Especially regarding crises and extreme events, opening up an inclusive policy design process has the potential to empower the participating actors in shaping their own future.

Illustration 1: Prototype of the Local Resilience Policy Design Canvas

LOCAL RESILIENCE POLICY DESIGN CANVAS



source: own illustration.

The LRPDC consists of seven main blocks, whereby three blocks (resources, constraints, actions) are themselves divided into two respectively three sub-blocks. Each of these blocks contains the name of the respective resilience component, a short description and a guiding question to structure the application and co-design process.

Starting from the left side of the canvas, policy makers and the further participants of the application process first need to discuss and identify on how to prepare for emerging, potentially harmful developments to the municipality. This discussion is framed by the resources available (material and immaterial) and able to be mobilised. In a second step, the participants of the co-design process discuss the needs of the concerned stakeholders and how local policies can address these needs regarding future crises and extreme events. Material and immaterial constraints faced by the municipality are the framing components for this step. This discussion is highly linked to the identification of relevant local and external actors that have to be integrated in resilience policies. In a fourth and final step, concrete actions on a short-term, medium-term and long-term time horizon will be mapped out on the basis of the previous discussion. This step ensures an actionable outcome of the co-design process.

However, the entire implementation process is not linear but iterative, meaning that the individual steps may be repeated, skipped or continuously adapted as necessary. Participants in the co-design process must be identified in advance by the lead local policy makers and encouraged to take part in the process. The participants in the co-design process establish in return a network which can itself be used for resilience management.

Block 1: Emerging Threats

Municipal development is marked by various potential future risks and threats. Traditional risk management tools can be used to plan effective preparedness and mitigation measures by calculating the probability of occurrence and the extent of damage. However, this only applies to events that are actually known and can be planned for. Beyond these events, however, local policy makers are also required to plan for the occurrence of and response to unforeseeable and unpredictable events as part of effective crisis preparedness. To do so, they can draw on various instruments, such as simulations, scenario development, training measures and joint exercises with other actors, in order to incorporate these into operational and strategic crisis management (cf. Graf et al., 2024, pp. 2041 and 2044). The aim of these instruments is to produce anticipatory knowledge and skills that enlarge the organisational knowledge base and repertoire. Co-operations with internal and external actors can enhance and strengthen such processes of knowledge production and skills development (cf. Puggel, 2012, p. 99). When confronted with crises or extreme events, municipalities can use these knowledge and skills during the decision-making process and concrete crisis coping operations (cf. Tillack and Hornbostel, 2023, p. 89).

In this context, local policy makers must address the question: *How can local policies contribute to preparing for future crises?*

Block 2: Local Actors

Municipalities and local communities are shaped in particular by their active actors, both in the past and in the future. These local actors include individual citizens and the citizenry as a whole, in unorganised forms. But also, their organised constructs. This includes for instance associations and further formalised forms of civic organisation, as well as informal forms such as neighbourhood networks or informal groups. Local businesses also play a decisive role in the development of the municipal level, as they provide formal (and sometimes informal) employment, supply local markets with goods, and use and provide local infrastructure. In addition, public organisations such as the local government and administration but also state or federal entities (e.g. the state police) shape daily operations and future developments of a municipality. All these actors are important building blocks of local resilience due to their creative power and the resources they provide and use (cf. Ansell et al., 2021, p. 953). Formal and informal collaborations between and among these actors strengthen the processes of knowledge production and skills development (see chapter 2.1.), improve the identification and addressing of needs of different societal groups and enhance the mobilisation of needed resources, material and immaterial (cf. Gnamm, 2024, p. 30 and cf. Ansell et al., 2021, p. 955). Identifying and integrating the relevant local actors in resilience policies is therefore of paramount importance.

For this reason, local policy makers must ask themselves the question: *Which local actors need to be integrated into local resilience policies?*

Block 3: External Actors

In addition to local actors, external actors also play a decisive role in terms of local resilience. The term ‘external actors’ initially refers to all formal and informal actors outside the municipality's sphere of influence, such as higher administrative and political levels, actor networks, private companies and research institutions (cf. Ansell et al., 2021, p. 951). A continuous formal and informal exchange of knowledge and information between the municipality and these external actors supports the procurement of the necessary resources to prepare for, cope with and adapt to crises and extreme events. These necessary resources include material resources such as financial resources, equipment and real estate, as well as immaterial resources such as knowledge, information and skills. This is especially relevant for critical developments which do not exclusively concern the respective municipality but are of wider scope, such as pandemics, war events, large-scale blackouts, etc. In this case, information and knowledge exchange with external actors is of high importance to keep track of the crisis development and adjust the

response measures accordingly. In addition, municipal crisis management is highly dependent on decisions, regulations and specifications of political actors higher in the governmental hierarchy. Regular and well-functioning communication channels between the different hierarchical levels supports municipalities in implementing crisis management measures (cf. Gnamm, 2024, p. 30 and Ansell et al., 2021, p. 955).

Local policy makers must therefore address the question: *Which external actors need to be integrated into local resilience policies?*

Block 4: Needs Addressed

One of the overarching objectives of effective local resilience policy is to address the needs of different social groups. To meet these needs in an inclusive and holistic manner is one of the main challenges. For this reason, local resilience policy needs to first identify and clarify who are the different social groups active on the local territories and what are their specific needs.

In a next step, local policy makers must decide which of these social groups can meet their needs by themselves and which require support from local policies. Such prioritisation becomes particularly evident in the context of preparing for and coping with crises and extreme events, and raises ethical questions in particular (cf. Seker et al., 2024, p. 1342). Local policy makers have a particular duty to protect vulnerable groups, older people, children and disabled people. Strategic and operational planning to meet the needs of different social groups therefore play a key role in effective and ethically acceptable local resilience policy. In addition to ethical concerns, addressing and meeting social needs plays a crucial role in increasing the satisfaction and motivation of local citizens and can therefore increase governmental trust. Understanding their needs and perspectives helps local policy makers in designing context-specific policy solutions as well as in effectively allocating resources and priorities (strategic and operational) of the municipal crisis management (cf. John and Supramaniam, 2024, p. 104).

To achieve this, regular and open communication between the local government, its citizens and social groups builds a foundation for engagement and needs mapping (cf. John and Supramaniam, 2024, p. 96). Clear and transparent communication by the local government ensures that citizens and social groups understand why actions of crisis management have been taken and how they can contribute to the municipal crisis management efforts (cf. John and Supramaniam, 2024, p. 104). Local policy makers should therefore establish an experiential environment where the local government engage in active dialogue with citizens and social groups about their motivations and needs (cf. John and Supramaniam, 2024, p. 96). Such targeting of social needs in crisis management requires specific organisational factors within the local government and administration (cf. John, Supramaniam, 2024, p. 107).

In order to address the needs of different social groups in a coherent manner, local policy makers must answer the question: *How can local policies address the needs of its stakeholders in the light of crises?*

Block 5: Material Resources

Local resilience policy can only be effective if it is supported by available material resources. This applies to both the strategic and operational levels of resilience policy (see Behnke and Eckhard, 2022, p. 10). First and foremost, this includes the financial resources currently and in future available to a municipality, which form the basis for the procurement and maintenance of the necessary mobile and immobile equipment as well as for financing personnel capacities (cf. Tillack and Hornbostel, 2023, p. 90). The available financial resources also play a prominent role in the acquisition and development of immaterial resources (see section 2.6.). The available financial resources thus represent a meta-resource of all material and immaterial resources. Mobile and immobile items include, among other things, resilience-promoting infrastructure such as siren systems or water retention basins, crisis management equipment such as cybersecurity software or satellite phones, and means of transport such as emergency vehicles or inflatable boats. In case of a partial systemic collapse of, malfunctioning or failing of some of these material resources, local governments need to provide a minimum degree of redundancy in order to effectively cope with adverse events. However, since these resources are not abundant and freely available in most municipalities, especially in times of crisis, local policy makers need to balance the costs of redundancy against their resilience-enhancing effects (cf. Duchek, 2020, p. 236).

In this context, the concept of ‘hybrid resources’ is becoming increasingly important. This includes resources that are used outside their usual scope of use in times of crisis, such as sports halls for accommodating evacuees, construction site vehicles for erecting mobile dams, or even employees of the local building yard for monitoring compliance with crisis containment regulations. Cooperation with the relevant local and external actors established in the pre-crisis period facilitates the mobilisation of these hybrid resources. Hence, the ability to mobilise material resources in times of crisis strengthens the adaptation and improvisation capacity of a local government (see Tillack and Hornbostel, 2022, p. 90 and Gnam, 2024, p. 26).

In the course of shaping local resilience policy, local policy makers must ask themselves the question: *Which material resources can be mobilised for crisis management?*

Block 6: Immaterial Resources

In addition to the material resources, immaterial resources such as knowledge, information and skills, but also as social capital in the form of trust, motivation and robust social relationships, play a decisive role in local resilience. If relations between the local government, local actors and external actors are characterised by trust, this can lead to mutual exchange between the actors, which is an important resource for adapting to crisis conditions (cf. Lockwood et al., 2015, p. 3 and Tillack and Hornbostel, 2023, p. 90).

Trust, in this respect, plays a complex and context-dependent role in shaping resilience. Its effects may either enhance or undermine resilience depending on different context factors (cf. Nicholas et al., 2026, p. 1). On the one hand, trust can generate positive behavioural effects by lowering coordination costs, enhancing the credibility of warnings, expanding access to shared resources during crises, fostering collective mobilization processes and strengthening efficacy beliefs, thereby encouraging protective action (cf. Nicholas et al., 2026, p. 17). It can strengthen citizens' compliance with government regulations and thus has a direct impact on the performance of government actors (cf. Lenz, 2022, p. 133f.). On the other hand, citizens with higher intention-trust in government are more likely to downplay risks, reduce individuals' perceived vulnerability and engage in wishful thinking (cf. Nicholas et al., 2026, p. 13). In highly collectivist risk management contexts, strong ability-trust in authorities may rationally shift individual effort away from private preparedness toward reliance on institutional and community capacities (cf. Nicholas et al., 2026, p. 17). Beyond governmental actors, trust in infrastructure and institutional systems also influences risk perception. Multiple studies associate ability-trust in infrastructure with diminished perceived risk, which may result in overconfidence (cf. Nicholas et al., 2026, p. 14). An effective local resilience policy must therefore be designed in such a way that, on the one hand, it strengthens the population's trust in the intentions and abilities of the local government and administration, but on the other hand, it emphasises the self-protection responsibilities of each individual in order to avoid overconfidence in government's action.

Immaterial resources are acquired and developed through, among other things, personnel and organisational development measures focusing on resilience-building skills, the implementation of relevant (research) projects and the participation of municipal representatives in relevant exchange and networking exercises (see Lengnick-Hall et al., 2011, p. 248). Immaterial resources not only strengthen public crisis management, but also, in particular, the population's ability to help themselves in the face of crises and extreme events (cf. Boin, 2019, p. 96). In this area, too, the mobilisation of hybrid resources, such as the foreign language skills of municipal employees or information about the development of crisis scenarios abroad through contacts with local companies, can be decisive factors in strengthening local resilience.

Local policy makers must consider the following question in this area: ***Which immaterial resources can be mobilised for crisis management?***

Block 7: Material Constraints

As a counterpart to material resources, material constraints pose a significant challenge to the effective implementation of local resilience policies. This refers not only to the lack or absence of material resources relevant to resilience, but also explicitly to certain material conditions constraining resilience. These include, among other things, the geographical conditions of an area that favour natural disasters or hinder crisis management. Examples include low-lying areas or high altitudes in mountains during heavy rain or snow events, areas with tectonic stresses or gas deposits during earthquakes, coastal areas during tsunami waves, geographical proximity to active volcanoes, and so on (see Salvo et al., 2025, p. 49). It is not only natural geographical factors that can materially limit effective resilience policy, but also socio-geographical factors such as direct proximity to a national border. In addition to the challenges already facing border areas outside times of crisis, further challenges arise in times of crisis, hindering effective crisis management due to the different laws, policies, cultures and, in some cases, languages on the other side of the border (see Blondin and Boin, 2020, p. 199 and Drewello et al., 2022, p. 133). Another point is that the existence of certain infrastructure can also represent a material obstacle to local resilience. This includes infrastructure that poses a risk factor due to dangerous operations, such as Seveso establishments, and also infrastructure that hinders local crisis management simply by its existence, such as bridges that cannot be crossed by heavy emergency vehicles or inadequately developed access roads (cf. Fenxia and Wie, 2024, p. 2).

To mitigate these material constraints, local policy makers should address the question: ***Which material aspects impede effective crisis management?***

Block 8: Immaterial Constraints

In addition to material constraints, immaterial aspects can also have a detrimental effect on local resilience. These can manifest themselves in particular in a lack of vertical and horizontal cooperation between actors relevant to resilience. This refers in particular to a lack of qualitative and quantitative cooperation between local policy makers and higher levels of administration and politics. If this cooperation is disrupted, this in turn has a negative impact on the implementation and review of crisis management measures, for example when it comes to requirements from higher administrative levels. In addition, this can also inhibit the vertical flow of information between the different levels of government, resulting in local policy makers being inadequately equipped with the necessary information and knowledge (cf. Bristow and Healy, 2014, p. 100). In addition to this lack of vertical cooperation, declining trust in and perceived illegitimacy of government action within society can also have negative effects on local resilience policy, as it can reduce compliance with government crisis management regulations and weaken the civilian support for local policies (cf. Lenz, 2022, pp. 133-134).

Moreover, crises have the potential to reveal short-comings in local administration performances due to, for example, work overload, low level of digitalisation, or inadequate management/ leadership instruments (cf. Lenz, 2022, p. 131).

To proactively address these constraints, local policy makers should ask themselves: ***Which immaterial aspects impede effective crisis management?***

Block 9: Required Actions

In addition to aspects of strategic management, designing local resilience policy must also include the articulation of concrete measures that must be implemented by local policy makers and administrators with regard to future crises and extreme events. Otherwise, strategically designed goals and objectives cannot be achieved. In order to establish these measures in a targeted manner, it is useful to distinguish between short-term, medium-term and long-term measures. Long-term measures, on the one hand, represent actions that target especially on the overarching vision of the local government and can be framed by global frameworks such as the planetary boundaries (cf. van Vuuren et al., 2025, pp. 910 and 914). Short-term measures, on the other hand, include actions that can be implemented within a relatively short time span aiming at solving/coping with currently pressing issues, e.g. establishing flood maps, resource registers, etc. Bridging the gap between these two types of measures, medium-term measures are aiming at providing conditions with which long-term visions can be achieved by current means. This means cultivating a crisis-sensitive culture based on participation and mutual cooperation among and between the relevant stakeholders (see Berner et al., 2025, p. 7). These measures can be implemented with the involvement of and in cooperation with the relevant local and external actors and should be geared towards the identified needs of social groups in the local area. The framework for this is set by the available material and immaterial resources as well as the existing material and immaterial constraints.

In order to establish resilience-promoting measures within the framework of a local resilience policy, local policy makers answer the question: ***Which short-, medium- and long-term actions can policy makers take to enhance local resilience?***

Acknowledgments

The author wants to express his sincere gratitude to D. Sc. Pekka Stenholm from Turku University for providing the initial inspiration for this paper during the R-SQUAD visit at Turku School of Economics (TSE) in November 2025. The author also wants to thank all members of R-SQUAD for their valuable contributions to the development of the LRPDC, namely Prof. Dr. Ksenija Djuricic, Prof. Dr. Jean-Alain Héraud, Prof. Dr. Emmanuel Muller, Dr. Marion Neukam, Prof. Didier Raffin, Luc Bischoff, Lise Martins-Nourry and Alexandra Matjasch. Last but not least, the author wants to thank Dr. Nina Kulawik for her valuable inputs in editing this paper.

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