FOR MORE RESILIENT CITIES IN EUROPE

EUROPEAN RESILIENCE MANAGEMENT GUIDELINE

SMART
MATURE
RESILIENCE

SMR Smart Mature Resilience

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1. WHAT IS THE EUROPEAN RESILIENCE MANAGEMENT GUIDELINE?

Smart Mature Resilience (SMR) project is a multi-disciplinary research project working for more resilient cities in Europe. Supporting and building key resilient cities across Europe the project created a strong European Resilience Backbone for all of Europe's cities to support one another in overcoming the challenges arising from risks ahead. In the SMR project researchers and cities came together to enhance cities' capacity to resist, absorb, adapt to and recover from the hazardous effects of climate change, by developing, implementing and validating a city focused European Resilience Management Guideline (ERMG).

The European Resilience Management Guideline defines an operational framework for cities that provides guidance on local resilience planning and supports their efforts in building resilience.

The European Resilience Management Guideline aims to direct available resources towards defined goals, while securing transparency and the democratic principles of decision-making for city resilience development and planning.

2. HOW WAS THE EUROPEAN RESILIENCE MANAGEMENT GUIDELINE CO-CREATED?

The European Resilience Management Guideline and its five supporting resilience-building tools were produced through a process of co-creation with municipal representatives of European and Middle Eastern cities between 2015 and 2018. Those cities were: Donostia/San Sebastian (Spain), Glasgow (UK) and Kristiansand (Norway); Bristol (UK), Riga (Latvia), Rome (Italy) and Vejle (Denmark); Athens (Greece), Greater Amman (Jordan), Greater Manchester (UK), Malaga (Spain), Malmö (Sweden), Reykjavik (Iceland), Stirling (UK) and Thessaloniki (Greece).

The co-creation approach enabled the group to compile necessary requirements and understand and prioritize cities' needs and expectations from an integrated resilience management process.

3. WHO IS THE EUROPEAN RESILIENCE MANAGEMENT GUIDELINE FOR?

The European Resilience Management Guideline is intended to be used by:

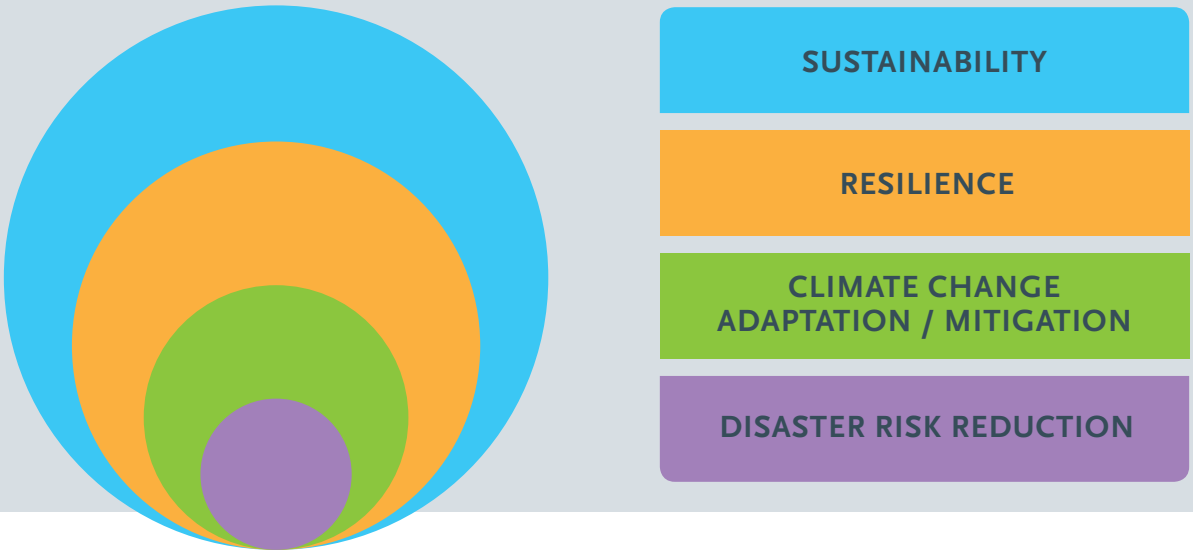
- policy and decision-makers at city level, including city councillors
- technical staff working on climate adaptation and urban resilience implementation
- other city stakeholders working on resilience, including critical infrastructure managers and utility companies, service providers, emergency services, the media, civil society associations, non-governmental organizations, academic and research institutions as well as private consultancies

4. WHAT IS A RESILIENT CITY?

- A city that is prepared to identify, resist, absorb, adapt to and recover from any shock or chronic stress while maintaining its essential functions;
- A city that involves stakeholders and especially citizens in disaster risk reduction through co-creation processes;
- A city that manages to transform in front of uncertainties, that reduces vulnerability and exposure to natural and man-made disasters and manages to thrive;
- A city that increases its capacity to respond to climate change challenges, disasters, shocks, and other unforeseen chronic stresses, through enhanced emergency preparedness.

The following figure shows the relationship of resilience to climate change adaptation, mitigation and disaster risk reduction, and demonstrates that resilience-building supports the implementation of sustainable development in cities, towns and municipalities. To do this, cities need to safeguard and protect their critical infrastructures and assets and address chronic stresses that arise from social dynamics, such as ageing populations.

Figure 1: Relationship of resilience to sustainability, climate change adaptation/mitigation and disaster risk reduction



Morchain and Robrecht, 2012

5. WHAT ARE THE BENEFITS OF USING THE EUROPEAN RESILIENCE MANAGEMENT GUIDELINE?

Municipal administrations are political organizations and employers: they need to plan activities systematically and one of their priorities is to provide public services to their citizens, as well as to engage those citizens. This calls for a detailed planning approach that acknowledges political cycles, involves stakeholders and maintains the momentum of resilience-building activities. Using the European Resilience Management Guideline provides multiple benefits:

- Awareness-raising on city resilience and sustainability;
- Improved decision support at local level in cities;
- Increased transparency and more consistent monitoring;
- Enhanced trust in local and regional governance;
- Activation and mobilization of stakeholders through co-creation activities;
- Better perspectives for a bottom-up inclusive resource governance at local level;
- Mainstreaming goals of resilience strategies into local action and implementation plans;
- Prioritization of interventions evaluating potential impacts

6. THE EUROPEAN RESILIENCE MANAGEMENT GUIDELINE IN DETAIL

The European Resilience Management Guideline consists of five steps that should be repeated regularly according to cities' needs, for example annually. Evaluation of achievements and results at the end of an annual cycle could indicate the need for repeated implementation, and a full revision is recommended once per political cycle or after an election period.

The five steps implemented in a full iteration are the following:

1. Baseline review;
2. Risk awareness;
3. Resilience strategy;
4. Implementation and monitoring;
5. Evaluation and reporting

Cross-cutting activities

Two cross-cutting activities are required and need to be kept into mind throughout the steps of the iteration, as a fundamental part of the process. These are as follows:

- A structured and practical organizational setup, including teams, sub-teams and working groups with well-defined objectives and clear tasks and responsibilities.
- Continuous communication with and empowerment of stakeholders, including the general public, through collaboration with citizen associations and engaged citizens.

A structured organizational setup and continuous communication are crucial and need to be defined from the beginning of the cycle. It is also important to make provisions within this structure that accommodate meaningful contributions, even if potential contributors have not yet been concretely identified, and to create structures that allow newcomers to the process and stakeholders to influence decisions taken. Identifying and reaching out to as many actors and stakeholders as possible, who are directly or indirectly involved in activities related to resilience, will make the effort a common interest and improve the likelihood of success.

Strategic Resilience Tools

In each of the five steps of the ERMG, one or more of the following five tools support city resilience development:

- A Resilience Maturity Model (RMM);
- A Risk Systemicity Questionnaire (RSQ);
- A Resilience Information Portal (RP);
- A City Resilience Dynamics Model (CRD);
- A Resilience Building Policies Tool (RBP).

Figure 2 shows the interrelations of the five strategic resilience tools.

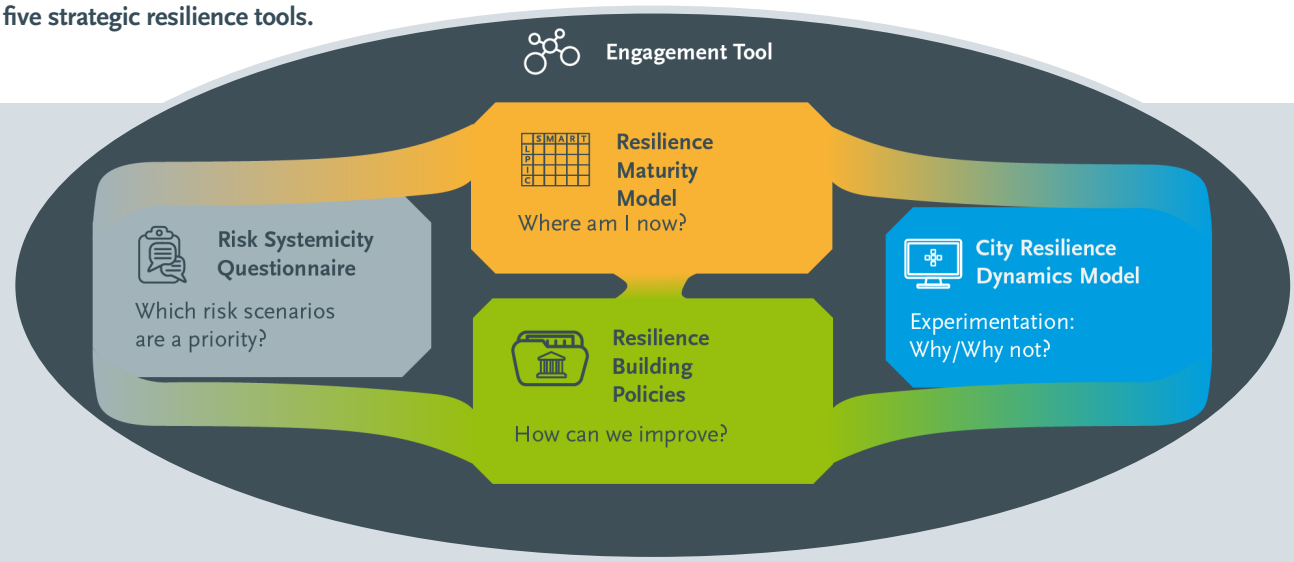
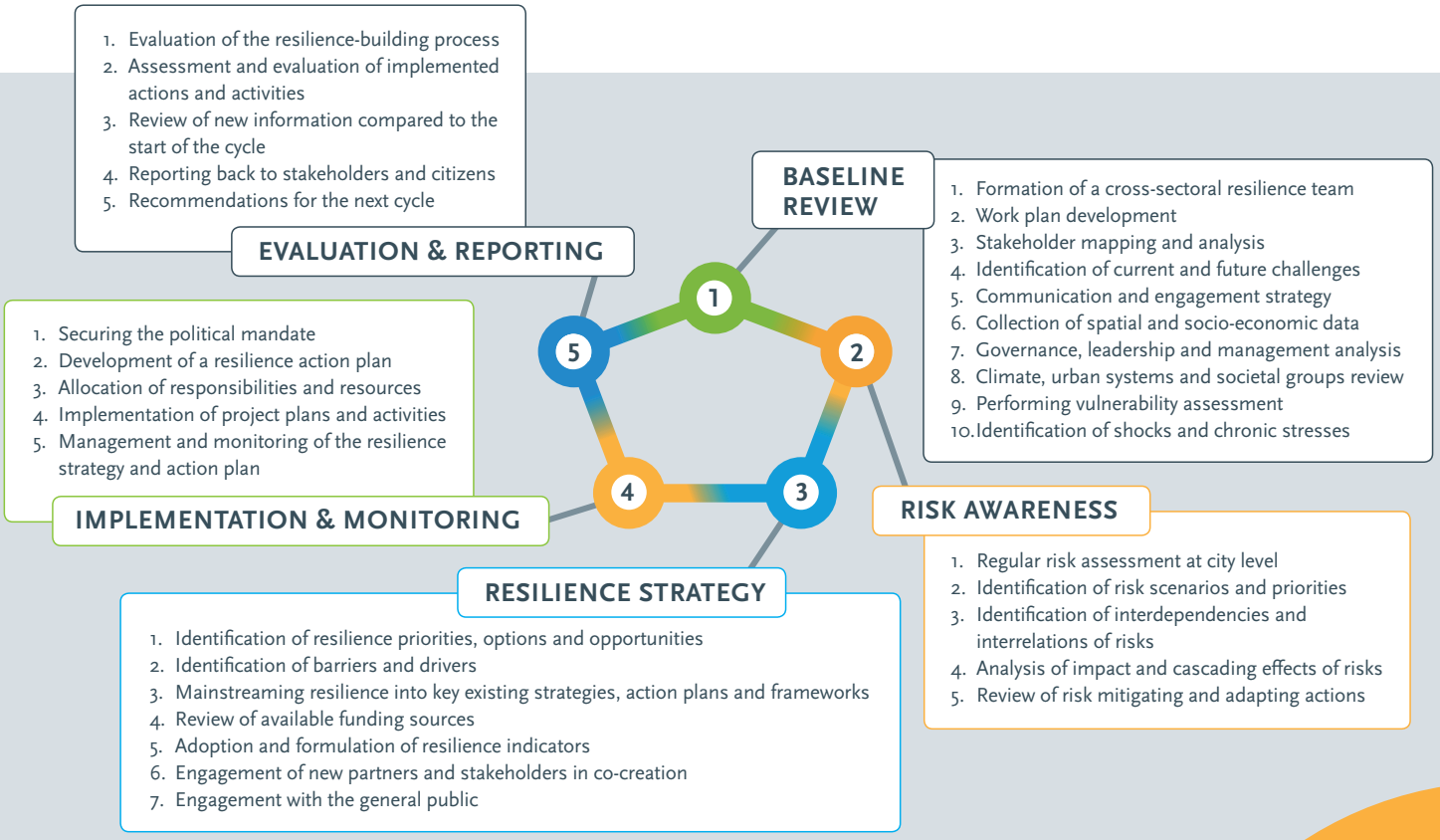


Figure 3: The European Resilience Management Guideline



STEP 1 - BASELINE REVIEW

For the first step of the European Resilience Management Guideline, the city's local government assesses the city's current resilience development status of a city. The assessment framework later serves as the basis for setting priorities and targets the co-creating the resilience strategy and the resilience action plan, as well as for monitoring progress. Challenges and pressures relevant to resilience are also analysed, as well as those pressures' impacts on various sectors of the society, economy and environment, and the policies and measures the city has already in place.

For the implementation of the step Baseline review, the following activities should be considered:

1. Formation of a cross-sectorial resilience team
2. Work plan development
3. Stakeholder mapping and analysis
4. Identification of current and future challenges
5. Communication and engagement strategy
6. Collection of spatial and socio-economic data
7. Governance, leadership and management analysis
8. Climate, urban systems and societal groups review
9. Identification of shocks and chronic stresses
10. Performing vulnerability assessment

The Resilience Maturity Model

In this step, the Resilience Maturity Model (RMM) is used to identify the present resilience maturity stage of the city, while it provides a common understanding of the resilience-building process. When using the RMM, cities are asked to evaluate their current status of resilience. The model then helps to identify the correct activities to implement in order for the city to move to the next maturity stage.

The RMM thereby helps cities to assess their resilience status and 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. It 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 should use the RMM to guide the definition of the resilience strategy to increase their resilience level. The main goal of the MM 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.

For more information regarding the Resilience Maturity Model, please check: www.smr-project.eu/tools/maturity-model-guide

STEP 2 – RISK AWARENESS

The second step of the European Resilience Management Guideline refers to conducting a risk assessment. Understanding the risk landscape is crucial for effective resilience planning and therefore this step refers to performing a regular risk analysis to appreciate the uncertainties that are of greatest priority to a city. Stakeholders need to be especially involved in this step to ensure that a wide perspective is taken with respect to the types of risks a city faces. Consideration and discussion of the complex consequences arising from interactions between risks leads to a broader understanding of risk. Before performing this step, the resilience team reviews relevant risk registers to get informed about shocks and chronic stresses identified in previous situations or by other teams (e.g. national risk register, emergency planning community risk register or corporate risk register).

The purpose of the risk assessment is to: 1) ensure resilience-building activities are relevant to the city context; 2) ensure appropriate and proportionate investment of resources; 3) enable the exposure and vulnerability of the city to different risks to be understood; and 4) enable common consequences to be identified so that capabilities can be developed that will address the impacts of many risks. Next to the regular risk assessment, this step is bringing in a tool to help understand the interconnections between risks. This ensures that the dynamic nature of risks is considered, while the city moves beyond a traditional approach to understanding individual risks and is exploring how they are interrelated.

For the implementation of the step Risk awareness, the following activities should be considered:

1. Regular risk assessment at city level
2. Identification of risk scenarios and priorities
3. Identification of interdependencies and interrelations of risks
4. Analysis of impact and cascading effects of risks
5. Review of risk mitigating and adapting actions

The Risk Systemicity Questionnaire

In this step, the Risk Systemicity Questionnaire (RSQ) is used to identify and prioritize risk scenarios, where interdependencies between risks are shown to lead to networks of risks, including vicious cycles, and to review and prioritize mitigation and adaptation actions.

The RSQ is a Microsoft Excel based tool that presents a range of risk scenarios that may occur in a city and asks users to consider the relative likelihood of these risk scenarios occurring in their city. Users are expected to use the RSQ as a group to promote discussion and awareness about the interconnections between risks across multiple stakeholders. The risks that are presented are spread across ten topics and are considered as networks of interrelated risks. These networks of risks are presented as risk scenarios, some of which result in vicious cycles. Users progress through the tool by completing questions, whereby they are asked to consider whether defined risk scenarios are likely or unlikely to occur in their cities. Based on the responses to the questions, participants are provided with a prioritisation of the risk scenarios for their city. In addition, users can access policy recommendations that may be used to address those risk scenarios that are most relevant to the city. The purpose of the questionnaire is to be used by groups of users with diverse areas of expertise so that it can prompt valuable discussions where different stakeholders' experiences can be brought together to determine a city's priorities to enable them to anticipate and appropriately respond to future challenges.

For more information about the RSQ, please check:
www.smr-project.eu/tools/risk-systemicity-questionnaire

STEP 3 – RESILIENCE STRATEGY

In the third step, the resilience team develops a resilience strategy which will include a detailed resilience action plan. The strategy and plan both aim towards preventing and mitigating risks as well as strengthening the economic, social and climate resilience. The resilience team utilises the step supporting tools to customize aspects of the resilience strategy to the city's unique challenges. The resilience strategy is an ambitious vision and includes proposals by stakeholders as well as achievable and practical aims.

For the implementation of the step Resilience strategy, the following activities should be considered:

1. Identification of resilience priorities, options and opportunities
2. Identification of barriers and drivers
3. Mainstreaming resilience into key existing strategies, action plans and frameworks
4. Review of available funding sources
5. Adoption and formulation of resilience indicators
6. Engagement of new partners and stakeholders in co-creation
7. Engagement with the general public

Supporting tools

For the implementation of this step, the Resilience Information Portal (RP) and the Resilience Building Policies tool (RBP) should be applied.

The Resilience Information Portal (RP) is used to create the necessary momentum for the expected release and the adoption of the resilience strategy among the citizens, but also to reinforce the importance of the resilience-building process and get the necessary political commitment. The RP serves as a toolbox that can complement and enhance the platforms and software that cities already have in place. It allows cities to internally or publicly display data that is already available to the city as it applies to resilience, vulnerability and crisis situations. The portal allows different levels of users to contribute information to a given city context. It also offers added value not available otherwise to cities, as the cities have multiple platforms in place in their municipalities for internal communication, but the wealth of information available to them is not integrated, streamlined or fully utilized. The portal should be used to raise awareness about the resilience-building process. It will also reinforce the creation of strategic partnerships and disseminate the resilience strategy (already during its development).

For more information about the RP, please check:
www.smr-project.eu/tools/resilience-information-portal/resilience-information-portal

The Resilience Building Policies tool (RBP) provides a database of good practices from other European cities, along with information about what worked well and what did not work well in the implementation of similar policies in other cities. The users should therefore use these lessons learnt for the benefit of the city, avoid mistakes and guide the implementation of the resilience strategy in a more effective manner. The RBP is an extension 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, as well as references of sources to case studies from other cities around the world. The tool provides a comprehensive reference centre for high-level strategic managers in cities as well as municipal staff tasked with implementing the policies that have been planned. It comprises illustrative real case studies of policy implementation in cities while it includes references to other sources that provide details of case studies of policy implementation at local level. Additionally it provides a practical point of reference for cities considering the implementation of related policies and provides illustrative detail for the policies that are included in the RMM and the CRD. The RBP can be navigated conveniently via a dedicated website that also includes a wiki format and invites cities to upload their own case studies and be part of a European resilience culture.

For more information about the RBP, please check:
www.smr-project.eu/tools/resilience-building-policies

STEP 4 – IMPLEMENTATION AND MONITORING

In the fourth step, the implementation of the resilience strategy and the included resilience action plan, as well as a continuous monitoring of all implemented actions and activities takes place. The main objective of this step is to improve the way the city functions in terms of resilience building and long-term sustainability. The implementation is a demanding task in terms of organization and coordination of all parallel actions that are included in the resilience strategy and aim at responding to the identified risks at city level. Turning measures outlined in the resilience action plan into projects requires proper project planning including a work plan, roles and responsibilities for individual actions.

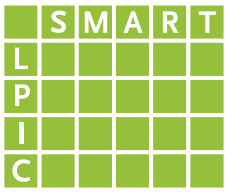
Implementation requires development and prioritization of actions, organizational setup and above all communication actions and stakeholder involvement. The step includes elaboration of concrete project plans, development and reinforcement of strategic partnerships and the practical implementation of plans and projects. In parallel, and for the purpose of being able to measure and report the results, the implementation of the resilience strategy and its resilience action plan will be monitored in an appropriate way and fed back to the politicians and the relevant stakeholders, especially the ones that have been involved actively in the co-creation process that was used to develop and deliver the resilience strategy.

To put in practice step Implementation and monitoring, the following activities should be considered:

1. Securing the political mandate
2. Development of a resilience action plan
3. Allocation of responsibilities and resources
4. Implementation of project plans and activities
5. Management and monitoring of the resilience strategy and action plan

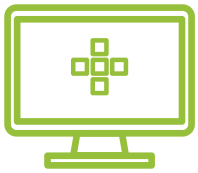
Supporting tools

In this step, the Resilience Maturity Model (RMM) and the City Resilience Dynamics Tool (CRD) should be applied.



Municipal staff working within the resilience office, should regularly consult the Resilience Maturity Model (RMM) to monitor and evaluate the implementation of activities towards increasing resilience maturity.

For more information about the RMM, please check: www.smr-project.eu/tools/maturity-model-guide



The City Resilience Dynamics Tool (CRD) can be used to test and validate the relationships between the different policies that could, potentially, be included in the resilience strategy of a city and their impact in building local resilience. The CRD supports city disaster managers to diagnose, explore and learn about the resilience-building process. The CRD also helps cities to understand the precedence relationship of the policies included in the RMM and it provides a learning environment to better understand how the RMM works, and how the RMM should be implemented. Users begin by calibrating the model, determining the values of the most important parameters of the model. The CRD then runs simulations of the effects of implementing certain policies over a realistic timeframe (yearly to a total of 40 years). When users implement the policies in the appropriate, wise and effective order, they achieve effective results and their resilience level increases towards 100% in each of the resilience dimensions, by helping city disaster managers to explore and learn about the resilience-building process. The CRD 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 tool allows the user to try different policy options, identifying the implications of each of them in the resilience improvement process. The tool can also be used as an instrument for debate, to solve conflicts and disagreements regarding the potential influence and impacts of the implementation of policies at city level.

For more information about the CRD, please check: http://crd.smr-project.eu

STEP 5 – EVALUATION AND REPORTING

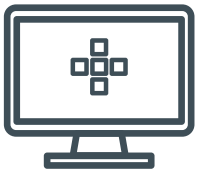
The fifth and final step of the ERMG is the evaluation of results and an effective process for reporting back to politicians and stakeholders, but also the general public. The last step provides the basis for starting a new iteration/cycle of strategic management and resilience-building activities. It analyses what has happened during the year in order to understand why things succeeded or failed to succeed. It provides the local government, decision-makers and practitioners active in topical themes, with a basis for taking further decisions on the targets, actions and activities for the subsequent year in the resilience-building process. It also provides relevant stakeholders, including the general public, with a report on what the city has done during the cycle and how they have succeeded or failed in fulfilling their targets.

For the implementation of the step Evaluation and reporting, the following activities should be considered:

1. Evaluation of the resilience-building process
2. Assessment and evaluation of implemented actions and activities
3. Review of new information compared to the start of the cycle
4. Reporting back to stakeholders and citizens
5. Recommendations for the next iteration of the operational framework

Supporting tools

The resilience team drafts and uploads onto the Resilience Building Policies tool (RBP) detailed case studies as part of reporting back to stakeholders. Therefore, the RBP is used to share the results of the evaluation with politicians, stakeholders and citizens as well as other cities. The RBP can also be used as a means to report back to stakeholders, by drafting good practices/ case studies and publishing them online through the Resilience Information Portal (RP).



The City Resilience Dynamics Tool (CRD) is used to evaluate the effectiveness and performance of the implemented policies and to provide a simulation of the results to compare with those results observed in reality. Finally, the RP is used to share the results of the evaluation with politicians, stakeholders and citizens as well as other cities.

7. STARTING A NEW ITERATION

By reaching the end of the process, and before starting a new iteration, the Resilience Maturity Model (RMM) is used, once more, to assess the most recent resilience maturity stage to which the city has advanced itself. Following the evaluation of the resilience status of the city, the cyclical process starts again, depending on the outcome of the evaluation. If the team considers that the city has moved to the next maturity stage, the iteration should be performed for that stage. If the city has not moved to the subsequent stage, but only has improved performance in one or more sub-dimensions of the RMM, the iteration would still be performed in the same stage.

For more information about the European Resilience Management Guideline and a detailed description of the activities included in each step, please check the CEN Workshop Agreement, CWA 17300 City Resilience Development – Operational Guidance, which is based on the European Resilience Management Guideline itself here: **www.smr-project.eu/standards**
or download the full ERMG document here:
www.smr-project.eu/deliverables

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