



Foresight for policy & decision-makers

Markus Leitner, Julia Bentz, Tiago Capela Lourenco, Rob Swart, Karin Allenbach & Guillaume Thibaut Rohat

Work Package 4 – institutional strengthening

Task 4.3 – Promote Foresight

January 2018

www.placard-network.eu

Contents

1. Introduction	3
1.1 Context of foresight	3
1.2 Report aim & structure	4
2. Definition & methods	5
2.1 What is foresight?	5
2.2 Foresight application potential in CCA–DRR	6
3. Review of foresight methods & their current application to CCA-DRR	8
3.1 Selected foresight methods, short descriptions, references and further reading	8
3.2 Strengths and weaknesses of each selected foresight method	11
Summary of findings	15
4. Potential role of foresight methods in CCA-DRR supporting policy- & decision-makers	16
4.1 Foresight exercise as a common approach for CCA & DRR integration	16
4.2 Relevance of foresight methods, development & application for CCA & DRR	18
Summary of findings	22
4.3 Characteristics of “good” foresight methods in CCA & DRR	23
5. Reflections, conclusions & future opportunities	26
5.1 Reflections	26
5.2 Conclusions	27
5.3 Future opportunities on using foresight to enhance CCA & DRR integration	28
5.4 Next steps for PLACARD	29
6. References	31
7. Annex I: PLACARD foresight experience – workshop	33
8. Annex II: PLACARD foresight experience – ECCA 2017	36

Foresight promotion report for policy- and decision-makers (MS14/M4.2). Work Package 4 – institutional strengthening, Task 4.3 – Promote Foresight. January 2018. Markus Leitner, Julia Bentz, Tiago Capela Lourenco, Rob Swart, Karin Allenbach & Guillaume Thibaut Rohat. (Environment Agency Austria, FC.ID, ALTERRA, UNIGE). Reviewed by Richard Klein, SEI.

This report should be referenced as:

Leitner, M., Bentz, J., Lourenço, T.C., Swart, R., Allenbach, K. & Rohat, G.T. 2018. Foresight report for policy- and decision-makers. PLACARD project, FC.ID, Lisbon.



1. Introduction

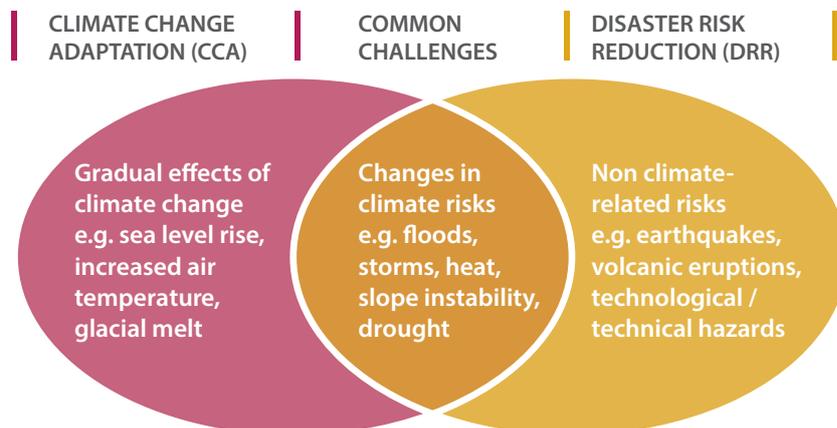
Increasing resilience is the common goal of both Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) communities. Thus, closer collaboration between them can lead to several benefits.

PLACARD aims at establishing a coordination and knowledge exchange platform to support multi-stakeholder dialogue and consultation between CCA and DRR research, policy and practice communities, across scales. In order to achieve this goal, PLACARD provides a common 'space' where CCA and DRR communities meet, share experiences and create opportunities for collaboration.

The following PLACARD report was prepared within Task 4.3 (Promote Foresight), with the aim to promoting the cooperative use of foresight methods by CCA and DRR communities. Foresight is a systematic, participatory, future-intelligence-gathering and medium-to-long-term vision-building process aimed at enabling present-day decisions and mobilising joint actions ([European Foresight Platform](#) (EFP)). In the project proposal, PLACARD identified joint foresight methodologies and the process of developing foresight as opportunities to help in identifying and creating synergies as well as increasing coherence in and between CCA and DRR activities. This report elaborates different foresight methodologies and how they may be effectively applied to better integrate CCA and DRR in research, policy and practice.

1.1 Context of foresight

Figure 1 Schematic representation showing how CCA and DRR overlap.



Foresight can provide benefits as well as a useful toolbox (foresight methods) to integrate and increase coherence between DRR and CCA communities and activities. Figure 1 highlights some common challenges/overlapping areas for CCA and DRR.

PLACARD activities with both communities (see annexes I and II) have demonstrated that joint development and application of foresight methods is expected to foster joint activities and support the mainstreaming of CCA into DRR, and vice-versa. In this foresight report we look at the present and future potential of foresight-related science and practice to enhance CCA and DRR and identify some key implications for decision-making.

With the support of foresight methods, the common elements between CCA and DRR can be explored in the context of the COP21 Paris Agreement on climate change and the Sendai Framework for Disaster Risk Reduction, both major steps towards increasing resilience to climate-related extreme events. Long-term risk, vulnerability and response analyses in support of these two agreements and the Intergovernmental Panel on Climate Change (IPCC) assessment reports tend to be dominated by the development and formal analysis of Representative Concentration Pathways (RCPs) and Shared Socioeconomic Pathways (SSPs). Such analyses are an important mechanism to advance analytical knowledge about future risks and vulnerabilities, yet they constrain creative analysis of risks and opportunities in support of action. PLACARD sees a complementary role for more and broader (qualitative and quantitative) foresight methods to be implemented by diverse experts and stakeholders to explore future vulnerabilities, risks, and opportunities.

1.2 Report aim & structure

PLACARD aims at exploring an enhanced potential role of foresight with this report to support and facilitate more effective ties, cooperation and collaboration between DRR and CCA.

This foresight report aims to explore the potential role of foresight in integrating DRR and CCA through an analysis of 20 of the most common foresight methods, regarding their definition, strengths and weaknesses, form of application (e.g. through interviews, participatory workshops or modelling) and utilisation in CCA and DRR.

The PLACARD foresight promotion report also aims at supporting European CCA and DRR research programming by distilling key research needs and gaps and potential connections with ongoing or planned research on foresight.

Following the introduction in chapter one, chapter two explains foresight in more detail and describes potential application in DRR and CCA. Chapter three then showcases the different foresight methods, describes them, provides references and shows the strengths and weaknesses of each method. Chapter four then looks at the contribution of foresight methods in CCA and DRR supporting policy- and decision-making. Chapter five then showcases the potential role of foresight methods in DRR and CCA in support of policy- and decision-makers. In chapter 5, the role of foresight methods for policy and decision-makers in DRR and CCA are highlighted. Chapter 6 then focusses on future opportunities for foresight to connect and improve integration of CCA and DRR. The reflections, conclusions and recommendations are in chapter 7.



2. Definition & methods

The report explores the application of foresight and foresight processes as a “multi-method” toolkit that can be of relevance for both, CCA and DRR, as well as their integration in science, policy and practice communities. This report aims to contribute to the setting of a joint agenda, foster sharing of knowledge on foresight, and promote the application of foresight methods in CCA and DRR.

2.1 What is foresight?

Foresight development relies on a set of forward-looking approaches that aim to help decision-makers explore and anticipate in a participatory way what might happen, and prepare for a range of possible futures, influence and shape them.

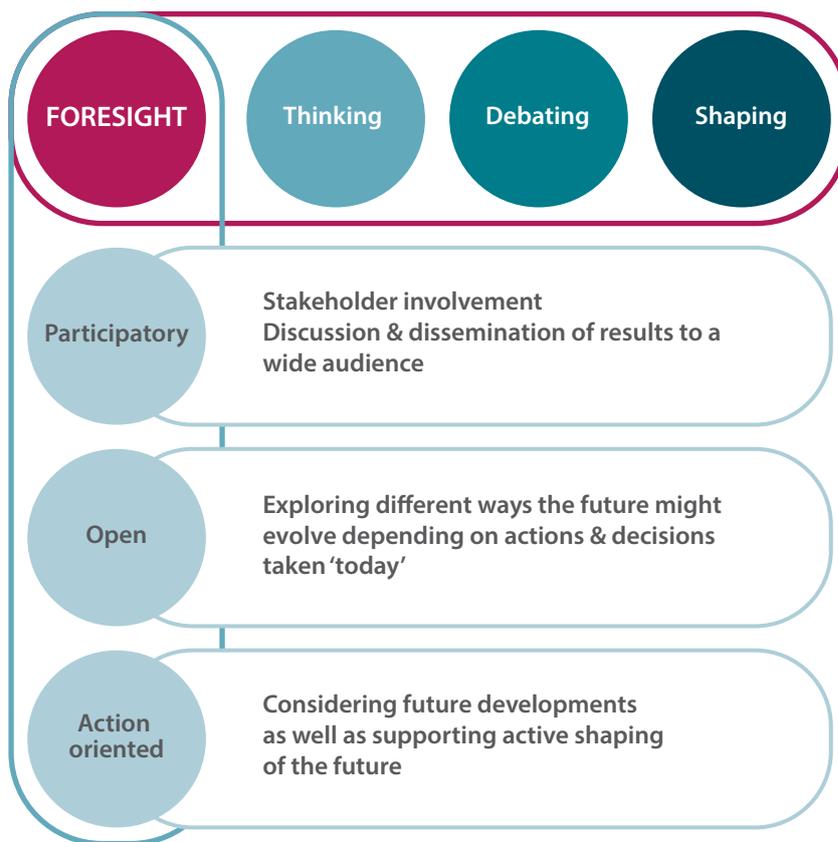
Foresight typically involves systematic, participatory, future-intelligence-gathering and medium to long-term vision-building processes to uncover a range of possible alternative future visions ([FLIS Interest Group](#)). Thus, foresight is about different methods and tools considering different possible future developments and their integration into decision-making today, thus thinking, debating and shaping the future ([JRC, 2001](#)).

It is very important to distinguish between foresight and forecast (prediction, or prognosis, of the future). Foresight is a process rather than a technique. It is not aimed at predicting the future, but thinking, debating and shaping the future in a participatory, open and action oriented way, by defining, and living up to, common long-term visions, and desired future conditions (see Figure 2).

Foresight methods have been and are being used in both CCA and DRR, but are often not called foresight methods. Methods more often used are in the form of quantitative modelling and scenario analysis to understand the frequency and intensity of hazards such as climate-related extremes. These foresight methods are usually limited to the aspects of risks that can be quantified and do not explore response options. Using a broader set of foresight methods, CCA and DRR efforts can be better integrated, and help strengthen the link between international mechanisms such as the UNFCCC Paris Agreement, the Sendai Framework and the Sustainable Development Goals (SDGs), by exploring their implications for European, national and local action.



Figure 2: The multiple roles of foresight.
Redrawn from [JRC For-LEARN](#) .



2.2 Foresight application potential in CCA-DRR

Foresight methods can be used in the interface of CCA/DRR focusing on changes in weather patterns and associated extreme weather events as one of the principal effects of climate change. This is of considerable consequence for Europe as it impacts on the vulnerability of communities across the continent and exposes them to environmental risks ([Hov et al., 2013](#)).

The recent EEA report on Climate change, impacts and vulnerability in Europe 2016 states that "Humans have significantly changed the climate and increased the magnitude of many extreme weather events" and that "climate-related extremes such as heat waves, heavy precipitation and droughts are increasing in frequency and intensity in many regions." (EEA Report, No1/2017). These statements are based on quantitative modelling of climate and weather processes. However, the limitations of quantitative models are, that they do not provide comprehensive guidance on how risks for human and natural system are changing and how these risks can be reduced.

The application of foresight methods may help to explore how to reduce vulnerability to climate-related extremes in different stages of the policy process, e.g. through a combination of quantitative (e.g. scenarios, modelling) and qualitative (participatory) methods of gathering relevant information and providing solutions. One example: Emergency Management authorities of Norway, Denmark, Sweden, Iceland and Finland are collaborating through the Nordic Forum for Risk Analysis and Strategic Foresight to improve collective understanding and learning on common disaster risks.



Here a regional risk assessment of a volcanic eruption originating in Iceland was carried out, which highlights the use of foresight in disaster preparedness. ([EC, SWD \(2017\) 176 final](#))

In order to improve and advance disaster risk management there is a need to greater focus on foresight techniques and their integration in risk governance (Aubrecht *et al.*, 2011). This may lead to more active and transparent communication and public participation in risk management, which can then contribute to the reduction of future risks and impacts in the light of a changing climate.

Foresight can have different functions which support policy making, such as ([Da Costa et al., 2008](#)):

1. **Informing policy:** generating insights regarding the dynamics of change, future challenges and options;
2. **Facilitating policy implementation:** enhancing the capacity for change within a given policy field by building common awareness of current and future challenges as well as new networks and visions among stakeholders;
3. **Embedding participation** in policymaking and thereby improving transparency and legitimacy;
4. **Supporting policy definition:** jointly translating outcomes from the collective process into specific options for policy definition and implementation;
5. **Reconfiguring** the policy system in a way to address long-term challenges;
6. **Symbolic function:** indicating to the public that policy is based on rational information.

A recent analysis of national assessments of the main risks of natural and man-made disasters across the EU 28 Member States and the six non-EU countries participating in the Union Civil Protection Mechanism (UCPM) highlights for example the need to strengthen methods and approaches, including in the management of complex disasters, accounting for the long-term impacts of climate change and natural resource pressures. ([EC, SWD \(2017\) 176 final](#)), indicating a need to apply foresight in this field and the interface between CCA and DRR.

In order to support improved long-term decision making, taking into account CCA and DRR in an integrated way, information regarding the adequate application of foresight methods along the policy cycle is required (see chapter Role of foresight methods in CCA and DRR policy). To our knowledge, there is a lack of decision-support based on the usage of foresight methods for a concerted CCA-DRR policy approach covering different steps in this cycle.



3. Review of foresight methods & their current application to CCA-DRR

Foresight methods and the way to develop the foresight can be a complex and highly interactive process. There is no “one-size fits-all” approach to organise a foresight exercise. Although each individual method has its own specific characteristics, there are common elements that can be a basis, which is a deep understanding of the context in which it is embedded and a clear set of objectives. Thus the context as well as the objective of the foresight need to be clear and the methods and processes selected according to the context and objectives. Only this will lead to a sound selection of the methods to be used in a foresight process.

3.1 Selected foresight methods, short descriptions, references & further reading

In this PLACARD foresight promotion report, we are looking at a selection of foresight methods, which are commonly used in various different disciplines, even if they are often not labelled as “foresight methods”. The selection (see Table 1) is based on the criteria that a given method is foresight and/or has foresight elements. The table also provides useful references in order to gain more background on the different foresight methods.

Foresight method	Short description	References & further reading
Adaptation Pathways	Adaptation pathways are a sequencing a set of possible actions based on alternative external, uncertain developments over time. A central element is tipping points, which are the conditions under which an action no longer meets the clearly specified objectives. The Adaptation Pathways approach presents a sequence of possible actions after a tipping point.	<p>Haasnoot <i>et al.</i>, 2013; Dynamic adaptive policy pathways: A method for crafting robust decisions for a deeply uncertain world. <i>Global Environmental Change</i>, 23: 485–498.</p> <p>Wise <i>et al.</i> 2014: Reconceptualising adaptation to climate change as part of pathways of change and response. <i>Global Environmental Change</i>, 28: 325–336.</p>

Foresight method	Short description	References & further reading
Back-casting	Back-casting aims at describing a desirable future, and then looking backwards from that future to the present to develop a pathway of actions needed to realise this future. It is a method to develop normative scenarios and explore their feasibility and implications.	Philip J. Vergragt, Jaco Quist. 2011: Back-casting for sustainability: Introduction to the special issue ; For-Learn: Foresight methodologies .
Causal Layered Analysis	Causal layered analysis works by identifying many different levels, and attempting to make synchronised changes at all levels to create a coherent new future. It identifies four levels: the litany; social causes; structure and the discourse that legitimise and support the structure; and metaphor and myth.	Sohail Inayatullah: Causal Layered Analysis – poststructuralism as method . Sohail Inayatullah, 2005. Causal Layered Analysis – Deepening the future .
Cross-impact analysis	Cross-impact analysis is a family of techniques designed to evaluate changes in the probability of the occurrence of a given set of events consequent on the actual occurrence of one of them.	Theodore J. Gordon, 1994: The cross-impact method . For-Learn: Foresight methodologies .
Decision modelling/ decision support tools	A decision model is a framework that assists a decision maker in estimating the outcomes of different alternatives and quantifying the trade-offs inherent in choosing one alternative over another.	The futures group international: Decision modelling .
Delphi method	The Delphi method is communication technique, which relies on a panel of experts. The experts answer questionnaires in two or more rounds and after each round revise their earlier answers. It is expected that during this process the range of the answers will decrease.	UK Government: Futures Toolkit. Beta Version . OECD: Schooling for Tomorrow – Knowledge Bank .
Drivers / Trend/ Megatrend Extrapolation	Trend extrapolation first identifies a trend that is apparent over time, and then projects it forward based on data concerning the rates of change and the extent of change achieved.	For-Learn: Foresight methodologies .
Gaming	Games are devised to mirror real life planning scenarios or to teach specific skills.	For-Learn: Foresight methodologies .
Horizon Scanning	Horizon scanning is a technique for detecting early signs of potentially important developments through a systematic examination of potential threats and opportunities.	OECD: Schooling for Tomorrow – Knowledge Bank .



Foresight method	Short description	References & further reading
Morphological analysis/ Relevance Trees	Morphological Analysis & Relevance Trees are normative methods, which start with future needs or objectives, and then seek to identify the circumstances, actions, technologies, etc. required to meet them. They are used to analyse complex situations with the purpose to organise information in a relevant and useful way in order to stimulate new ways of thinking.	For-Learn: Foresight methodologies .
Narratives	Narratives are stories or “storied ways of knowing” about how the future may evolve.	Jana-Axinja Paschen and Ray Ison, 2014: Narrative research in climate change adaptation – Exploring a complementary paradigm for research and governance . <i>Research Policy</i> , 43 , 1083-1092.
Road mapping	A roadmap is a collaborative foresight process that produces a broad set of plans and strategies to reach a future goal. Roadmaps are normative tools that involve step-by-step progress and learning.	For-Learn: Foresight methodologies .
Scenarios / scenario planning	Scenarios are storylines or images that describe a potential future developed to inform decision making under uncertainty. Scenarios can combine narratives with quantitative information.	Edward Parson, Virginia Burkett, Karen Fisher-Vanden, David Keith, Linda Mearns, 2007: Global change scenarios: Their development and use . US Department of Energy Use. Michael J Blyth, 2005: Learning from the future through scenario planning . Four Scenes Pty Ltd. OECD: Schooling for Tomorrow – Knowledge Bank .
Statistical / simulation modelling	Simulation modelling and analysis is the process of creating and experimenting with a computerised mathematical model.	For-Learn Foresight methodologies .
Structural analysis	Structural approach/ analysis relies on the combination of biophysical and economic models.	Jacques Arcade, Michel Godet, Francis Meunier, Fabrice Roubelat, 2016: Structural approaches to modeling the impact of climate change and adaptation technologies on crop yields and food security . <i>Global Food Security</i> , 10 : 63–70.
SWOT analysis	Analytical method, which is used to identify and categorise significant internal factors (i.e. strengths and weaknesses) and external factors (i.e. opportunities and threats) an organisation faces.	For-Learn: Foresight methodologies .



Foresight method	Short description	References & further reading
Systems perspective / systems approach / systems thinking	Systems approach looks at “the big picture” and considers the functions of a system’s parts based on their relations and within the system’s context, resulting in a conceptual model of the system. Systems’ modelling is the process of turning conceptual models into computer models that can be used to understand or predict how a system will respond to changes.	Allenna Leonhard & Stafford Beer, 1994: The systems perspective: Methods and models for the future.
Three horizons practice	The 3H-framework includes three lines, each representing a system or pattern in the way things are done in a particular area of interest: an established first horizon pattern (“business as usual”), giving way to an emerging third horizon, via transitional activity in the second horizon.	Bill Sharpe, Anthony Hodgson, Graham Leicesterm Andrew Lyon, Ioan Fazey, 2016: Three horizons: a pathways practice for transformation. <i>Ecology and Society</i> , 21(2):47.
Vision / Visioning	Visioning is the creation of a preferred future that imaginatively captures values and ideals.	Jørgensen, M. S., & Grosu, D., 2007: Visions and visioning in foresight activities.
Wildcards	Wildcards are low probability, high impact events, which are outside the ‘probable’ realm, leading to abrupt changes. They can be used to complement or challenge “conventional wisdom” scenarios.	Walsh <i>et al.</i> 2015: Are wildcard events on infrastructure systems opportunities for transformational change? <i>Futures</i> , 67: 1–10.

3.2 Strengths and weaknesses of each selected foresight method

Table 2 gives an overview about strengths and weaknesses of foresight methods, as a first orientation on which foresight method to apply.

Table 2: Strengths (green) and weaknesses (orange) of each selected foresight method	
Foresight method	Strengths (green) & weaknesses (orange)
Adaptation Pathways	<ul style="list-style-type: none"> • Generates insight into lock-ins and possible options that are still open; Opportunities for mainstreaming adaptation may be considered to adjust timing of implementation of measures. • Powerful tool for supporting decision makers explore and sequence a set of possible specific actions under high uncertainty; • Shows the timing of implementation of measures and the points at which decision should be made on the selection of potential options;
	<ul style="list-style-type: none"> • Can be complex and time consuming to develop and communicate



Foresight method	Strengths (green) & weaknesses (orange)
Back-casting	<ul style="list-style-type: none"> • Ability to freely discuss problems with stakeholders who have conflicting interests; • It can be characterised as a social learning process; • Long-term perspective makes it possible to let go of the present way of meeting certain specific social needs. <ul style="list-style-type: none"> • Long project time needed. This leads to the possibility that the representatives change, leading to delays; • Relatively high budget needed. • Technological character can sometimes be too dominant, “scaring” representatives
Causal layered analysis	<ul style="list-style-type: none"> • Allows for a range of transformative actions; • Can be used by wide range of individuals as it incorporates non-textual and poetic/artistic expression in the futures process; • Expands the range and richness of scenarios; • Layers participant’s positions (conflicting and harmonious ones); • Leads to policy actions informed by alternative layers of analysis • Moves the debate/discussion beyond the superficial and obvious to the deeper and marginal; • When used in a workshop setting, it leads to the inclusion of different ways of knowing of participants <ul style="list-style-type: none"> • Can be difficult and time consuming to implement and communicate
Cross-impact analysis	<ul style="list-style-type: none"> • Forces attention to chains of causality <ul style="list-style-type: none"> • The collection of data can be fatiguing and tedious; • A ten-by-ten matrix requires that 90 conditional probability judgments be made, a 40-by-40 matrix requires that 1,560 judgments.
Decision modelling / decision support tools	<ul style="list-style-type: none"> • Decision models can gather vast quantities of data and avoid common biases that undermine human judgment; • Wide application, existence of models for policy and practice; • Models are useful in predicting things we cannot control. <ul style="list-style-type: none"> • Insufficient in predicting human behaviour.
Delphi	<ul style="list-style-type: none"> • Anonymity of responses from panel experts; • Reliable and creative exploration of problems or the production of suitable information for decision-making. <ul style="list-style-type: none"> • Great attention must be given to the choice of participants; • Multi-round studies require a great deal of time. • Questionnaires must be meticulously prepared and tested to avoid ambiguity;
Drivers / Trend / Megatrend Extrapolation	<ul style="list-style-type: none"> • A simple method of forecasting; • Not much data required; • Quick and cheap. <ul style="list-style-type: none"> • Assumes past trend will continue into the future – unlikely in many competitive environments; • Unreliable if there are significant fluctuations in historical data; • Ignores qualitative factors (e.g. changes in tastes & fashions).

Foresight method	Strengths (green) & weaknesses (orange)
Gaming	<ul style="list-style-type: none"> • Enjoyable way to get people working together; • Good way to help people understand the planning process and other people's viewpoints; • Particularly useful at an early stage of any community planning activity or as a way of preparing people for a specific future challenge.
Horizon scanning	<ul style="list-style-type: none"> • Provides useful evidence base to explore future issues and create management approaches to respond to them.
Morphological analysis	<ul style="list-style-type: none"> • Powerful intellectual stimulus to illustrate a problem or issue in comprehensive detail and with important relationships in both current and potential situations; • Stimulus for the invention of new alternatives that fill these gaps. • Systematic analysis of the current/ future structure of an area/ domain as well as key gaps;
Narratives	<ul style="list-style-type: none"> • Framing power and critical theoretical and methodological potential can help to reshape adaptation practice; • Stimulating creativity and interaction between stakeholders with different skills and experience.
Foresight method	Strengths (green) & weaknesses (orange)
Road mapping	<ul style="list-style-type: none"> • Creates a sense of agency; • Reduces uncertainty in more manageable ways through shared research and development
Scenarios / scenario planning	<ul style="list-style-type: none"> • Can help stakeholders break through communication barriers and see how current and alternative development paths might affect the future; • Useful when future is highly uncertain; • Ability to illuminate issues and break impasses makes them extremely effective in opening new horizons, strengthening leadership, and enabling strategic decisions.



Foresight method	Strengths (green) & weaknesses (orange)
Statistical / simulation modelling	<ul style="list-style-type: none"> • Experimentation in limited time; • Reduced analytical requirements; • Easily demonstrated models.
	<ul style="list-style-type: none"> • Cannot give accurate results when the input data are inaccurate; • Cannot provide easy answers to complex answers; • The variables and data chosen for the model are still subjective, although the calculations suggest objectivity; • It is often non-transparent and difficult to explain, what the model does and how it is calculated.
Structural analysis	<ul style="list-style-type: none"> • Captures key knowledge across multiple areas of expertise; • Flexibility in linking different models (climate, non-climate) together with socioeconomic analysis.
	<ul style="list-style-type: none"> • Time consuming method; • Subjective nature of the selected list of variables;
SWOT analysis	<ul style="list-style-type: none"> • Can be used as a dynamic part of the management and business development process.
	<ul style="list-style-type: none"> • SWOT analysis is not necessarily a Foresight approach but can be a good starting point for the discussions in Foresight.
Systems perspective/ systems approach/ systems thinking	<ul style="list-style-type: none"> • Strong when looking at the “big picture”; • Once a decision has been reached, the implementation usually proceeds more smoothly and encounters less resistance.
	<ul style="list-style-type: none"> • It involves finding a common understanding, what may be a messy and emotional series of discussions; • To be fully effective, enough data must be gathered over enough time to match the variety of the situation; • If an organisation or community does not have much experience with participatory methods, a slower process may ensue.
Three horizons practice	<ul style="list-style-type: none"> • Allows incorporation of different dimensions of existing theories; • Simple framework to help work with complexity, easily communicated; • Highly accessible to diverse participants (incl. children); • Development of future consciousness.
	<ul style="list-style-type: none"> • Requires good facilitation skills;
Vision / Visioning	<ul style="list-style-type: none"> • Encourages discussion, deliberation, and the exchange of thoughts; • Helps identify different views on the issues and actions available drawing on stakeholders’ views, experiences and resources; • Facilitates the framing and re-framing of perceptions and conceptions of problems, resulting ultimately in greater social learning.
	<ul style="list-style-type: none"> • Skilled facilitators needed; • Trust and recognition are important in order to ensure participants are willing to share information.

Foresight method	Strengths (green) & weaknesses (orange)
Wildcards	<ul style="list-style-type: none"> • Enables the consideration of alternative futures; • Ability to 'stretch' and 'expand' current thinking. • Discussions on wildcard events allow decision-makers to critically reflect upon potential outcomes of a range of models or scenarios. • Difficulty to consider plausibility of wild card events/development; • Assessing actions in response to wild cards.

Summary of findings

The table above describes the main strengths (green) and weaknesses (orange) of each method. There is a variety of methods that can be used in foresight. Each of them can produce different, complementary results and insights. While the underling ideas for choosing a certain method (or more than one) are described in Table 1, the strengths and weaknesses are described in the above Table 2. The precise choice of the “right” combination of methods will always be a matter of judgment based on the particular context, nature of the issue and aim of the exercise.

It is important to emphasise that there may be several foresight methods suitable for each context. After a pre-selection of potential methods for a given context, further reading suggestions can be found in Table 1. It may be also valuable to exchange views with foresight practitioners and experts in stakeholder engagement to discuss the selection of the best suitable method for a given context. In a follow-up exercise, Table 3 provides additional guidance to identify useful foresight methods for a specific set of DRR & CCA questions and applications.



4. Potential role of foresight methods in CCA-DRR supporting policy- & decision-makers

4.1 Foresight exercise as a common approach for CCA & DRR integration

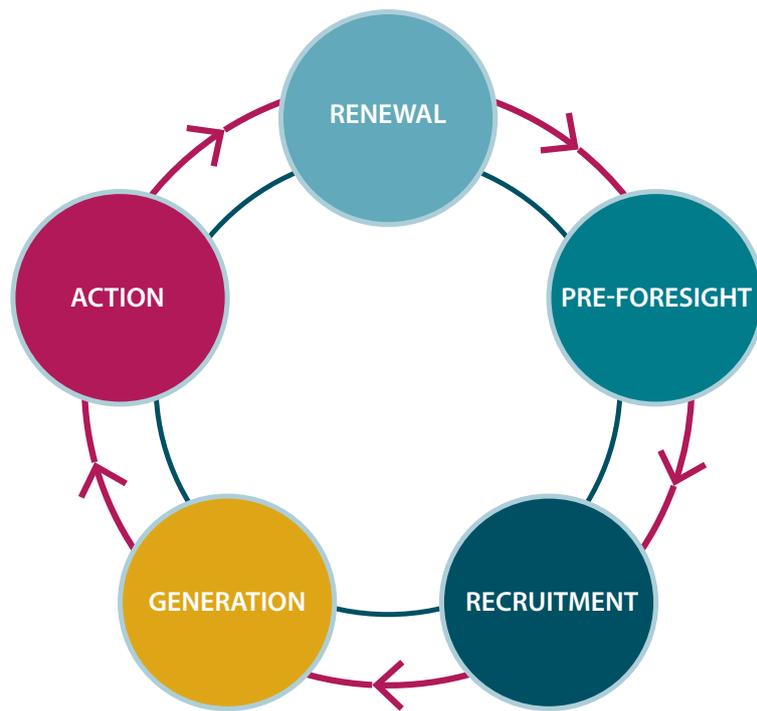
Different foresight methods discussed above can be applied in many different contexts for different objectives. Operating between 2009 and 2012, the [European Foresight Platform](#) has identified more than 250 examples of foresight being used, many of which in Europe. In the context of the PLACARD project, we are mainly interested in application of foresight as an approach to facilitate the connection and integration between and of the CCA and DRR communities with the final aim to arrive at more effective and efficient solutions to reduce vulnerabilities to weather-related extreme events. The emphasis is on governance, policy development and research programming in Europe in the areas of CCA and DRR.

A common approach to do a foresight exercise (depending on the foresight method used) is to go through the five phases – **pre-foresight**, **recruitment**, **generation**, **action** and **renewal** (Figure 3, Miles (2002) and Popper (2008)). Throughout these five phases, different methods can be applied, depending on the desired outcome, the targeted group and the degree of uncertainty of the available information.

- **Pre-foresight or scoping:** objectives and the time-horizon are defined, usually more than 10 years. The scope can be geographical, sectoral or multi-level, as in the case of CCA and DRR.
- **Recruitment:** an analysis of all players and interested or connected stakeholders based on criteria such as relevance, relation intensity and potential conflicts. The challenge for CCA and DRR is that actors vary from local to global and from a range of disciplines such as policy, research, public administration and practice.



Figure 3: Systemic look at foresight process by Ian Miles (2002) who outlined five complementary phases – Redrawn from Dr Rafael Popper, Slide 4.



- **Generation:** a broad portfolio of traditional and creative methods can be applied to combine knowledge, analyse and synthesise new information and visions for the future. In the 2017 PLACARD foresight training megatrends as drivers of future change were used. This relates to the approach applied at the first PLACARD Foresight workshop in October 2016 – see the [PLACARD background paper](#) (Deliverable D3.1 – First set of background materials) and Annex I – PLACARD Foresight Experience – 1st Workshop.
- **Action:** identify possible futures for each driver – in this case, considering the megatrend approach.
- **Renewal:** focuses on evaluating (learning, evaluation and dissemination)

Looking at the foresight process above, common elements from foresight to support CCA and DRR can be distilled:

- CCA and DRR both emphasise the importance of participatory approaches in engaging different actors at different levels and sectors – the broad menu of qualitative and quantitative foresight methods offers opportunities to help with these activities.
- DRR focuses attention mainly on changes in weather extremes, while CCA addresses longer-term concerns in enhancing resilience – a multi-method foresight approach using tools such as analysis of megatrends, wildcards and disruptors will add to the scenario approach common in climate change analysis.
- Foresight tools can help to encourage strategic thinking and prioritisation. The goal of a foresight exercise for CCA and / or DRR should be clearly defined.
- A foresight toolbox has multiple purposes, so the choice of methods should be open-minded and focused on the specific target, objective and time-horizon of a particular problem. The range of methods includes foresight-specific options as well as cross-disciplinary – several can be combined.

4.2 Relevance of foresight methods, development & application for CCA & DRR

Foresight methods are often used to support technology assessment and research programming or support political agenda setting. For example, in Europe, foresight methods have been frequently used to inform policy debates, often in the form of scenarios. The recent White Paper on the Future of Europe is a good example of this (EC, 2017). Drafted by the European Commission, this paper offers five scenarios for how the European Union could evolve, depending on the choices to be made, and can be seen as the start of a political debate. In 2015, a Foresight exercise developed two scenarios for Europe and derived three principles for future research programming from its analysis: Openness (Open Innovation, Open Science, Open to the World), Experimentation and Flexibility; and European-level cooperation (EC, 2015). In a similar vein, the BOHEMIA project has developed scenarios as the basis for a discussion about the future EU research programming, scenarios “that navigate between megatrends – forces that drive the future of the world and our planet – and the policy goals and values of the European Union” (Ricci *et al.*, 2017). The BOHEMIA report kick starts the political debate by offering a number of additional principles¹ for European research and innovation that emerge from the scenarios.

In this new area of transnational research in Europe, many [Joint Programming Initiatives](#) (JPIs) are using foresight to support their strategic programming activities, albeit most frequently by using existing sources. Only JPI Oceans (Healthy & Productive Seas and Oceans) and JPI HDHL (A Healthy Diet for a Healthy Life) apply foresight for creating a shared vision, while JPI Urban Europe is the only JPI which focuses explicitly on issues beyond 2020, and plans to repeat this regularly (Haegeman *et al.*, 2017). In the area of agriculture research, the Standing Committee on Agricultural Research (SCAR) regularly engages in foresight exercises in collaboration with Directorate-General for Research and Innovation (DG R&I) to identify emerging priority topics which informed the development of the research agenda of the transnational Joint Programming Initiative (JPI) FACCE (Food Security, Agriculture & Climate Change).

In the area of climate change, the long-term nature of the projected changes and impacts and transformative character of solutions gives foresight a prominent role in policy development, most frequently through quantitative model-based scenario analysis (e.g. in IPCC ([Intergovernmental Panel on Climate Change](#)) and EU scenario work). In the area of disaster risk reduction foresight is less commonly used to inform policy development, the emphasis still being on analysis of the frequency and intensity of extremes in the past. Also the recent Commission Staff working document: Overview of Natural and Man-made Disaster Risks the European Union may face (SWD (2017) 176 final) concludes: “current timescales of risk assessments reflect a focus on immediate response needs. The long-term impacts of climate change, increasingly felt in Europe (e.g.: severe forest fire seasons, 100-year floods every decade, etc.), as well as long term pressures on natural resources (e.g. poor management practices and population growth) are often not sufficiently taken into consideration in disaster management. Recognising the impact of climate change could be



¹ Build resilience by developing options before, rather than after, a crisis strikes; Experiment in real world settings; Learn from the best; Get the governance right - inclusiveness and fairness as policy principles; Look to the cities as laboratories; Connect and collaborate, across sectors; Be open.

more substantially reflected in the assessment of disaster risks and in our approach to the collection of disaster loss and damage data. Defining trends and longer-term preventive measures to reduce future burden on response requires the integration of climate change impacts, in particular for natural disasters.” An exception is the UK, where in 2012 UK Government Office for Science organised a one-year participatory Policy Futures Foresight Project to provide advice to decision makers on how science can inform the difficult choices and priorities for investing in disaster risk reduction, so that the diverse impacts of future disasters can be effectively reduced, both around the time of the events and in the longer term ([UK Government Office for Science](#), 2012) .

Illustrating the relevance for a given method for CCA/DRR for policy and research, Table 3 provides an overview on applications to CCA and/or DRR based on existing examples and literature.

Table 3: Development and application approaches for each selected foresight method, as well as examples of known applications to CCA and/or DRR		
Foresight method	What does application of the method involve?	Known applications to CCA and/or DRR (examples)
Adaptation Pathways	The Adaptation Pathways map, manually drawn based on model results or expert judgment, presents an overview of relevant pathways	CCA: Wise <i>et al.</i> 2015: Re-conceptualising adaptation to climate change as part of pathways of change and response; SWAP – Scenario Workshop with Adaptation Pathways: Creating a common vision for coastal adaptation pathways in Portugal;
Back-casting	Participatory work in complex situations with many stakeholders, where although there may be a desired common future vision, it is unclear how to reach it.	CCA: Carlsson-Kanyama <i>et al.</i> 2013: Barriers in municipal climate change adaptation: Results from case studies using back-casting; DRR: Asian Development Bank, 2013: Investing in resilience: ensuring a disaster-resistant future.
Causal Layered Analysis	A useful approach in workshops with individuals either of different cultures or different approaches to solving problems. It is best used prior to scenario building.	CCA: Gidley, J. Fien, J. Smith, J. Thomsen, D. and Smith, T. 2009: Participatory futures methods: towards adaptability and resilience in climate-vulnerable communities. <i>Environmental Policy and Governance</i> , 19 (6): 427–440; DRR: Milojević, I., & Inayatullah, S. (2015). Narrative foresight. <i>Futures</i> , 73 : 151–162.
Cross-impact analysis	Literature review and/or expert interviews); expert judgments/ questionnaires/ group meetings/ interviews; cross-impact matrix.	CCA: Velmeyer & Sahin, 2014: Modelling climate change adaptation using cross-impact analysis;

Foresight method	What does application of the method involve?	Known applications to CCA and/or DRR (examples)
Decision modelling/ decision support tools	<p>Modelling</p> <p>Quantitative description of the cause-effect relationship between sets of causative factors and the set of evaluative measures that the decision maker uses in order to judge the desirability of each alternative.</p>	<p>CCA: Observatório Clima Madeira;</p> <p>DRR: Michel-Kerjan <i>et al.</i> 2012: Catastrophe Risk Models for Evaluating Disaster Risk Reduction Investments in Developing Countries; Ley-Borrás & Fox: Using Probabilistic Models to Appraise and Decide on Sovereign Disaster Risk Financing and Insurance</p>
Delphi method	<p>Expert interviews</p> <p>Apply at the beginning of the project to gain views on the issue at hand and define early questions.</p>	<p>DRR: Commission Staff Working Paper: Risk Assessment and Mapping Guidelines for Disaster Management (SEC (2010) 1626 final).</p> <p>CCA: Ecocities: Carter, J. G. and Sherriff, G. (2011) Spatial planning for climate change adaptation: identifying cross cutting barriers and solutions, Centre for Urban and Regional Ecology, University of Manchester.</p>
Drivers/ Trend/ Megatrend Extrapolation	<p>Ranging from participatory application analysing the perceived impact of megatrends to sophisticated models.</p>	<p>CCA: European Environmental Agency, 2014: Assessment of global megatrends – an update – Global megatrend 9: Increasingly severe consequences of climate change;</p> <p>DRR: Joint UNEP/OCHA Environment Unit 2012: Keeping up with megatrends: the implications of climate change and urbanisation for environmental emergency preparedness and response;</p>
Gaming	<p>Usage of available, or development of new computer, board or other serious games.</p>	<p>DRR: UNISDR: Let's learn to prevent disasters: educational kit and risk land game; International Federation of Red Cross and Red Crescent Societies South East Asia Regional Office, 2010: Children in disasters- Games and guidelines to engage youth in risk reduction;</p> <p>CCA: Federal Ministry of Economic Cooperation and Development, 2011: The Systems Thinking Playbook for Climate Change;</p> <p>CCA-DRR: Red Cross Red Crescent Climate Center (expert : Margot Steenbergen)</p>
Horizon Scanning	<p>Desk research with a wide variety of source of information, e.g. STEEPLE framework.</p>	<p>DRR: Disaster Risk Assessment and Risk Financing A G20 / OECD Methodological Framework; Business continuity Institute: Horizon Scan Report 2017;</p> <p>CCA: SAMI Consulting: Strategic Evidence of Future Change Horizon Scanning evidence and analysis report.</p>
Morphological analysis/ Relevance Trees	<p>Manually drawn map based on model results or expert judgment, presents an overview of relevant objectives and actions required to meet them.</p>	<p>CCA: Ritchey 2011: Modeling Alternative Futures with General Morphological Analysis;</p> <p>DRR: Fernandez, Britton, and Ritchey: Application of a Prototype Morphological Model for Earthquake Disaster Risk Management;</p>
Narratives	<p>Semi-structured or open interviews or group work of stakeholders</p>	<p>DRR: Milojević, I., & Inayatullah, S. (2015). Narrative foresight. <i>Futures</i>, 73: 151–162;</p> <p>CCA: 6 Narratives of Climate Change at the Paris Summit; Huffington Post.</p>

Foresight method	What does application of the method involve?	Known applications to CCA and/or DRR (examples)
Road mapping	Collecting, synthesising and validating knowledge, and representing the trends (imagination – extended look at the future for a chosen field) within graphical displays associated with support documents.	<p>CCA: US Department of Defence 2014: Climate Change Adaptation Roadmap; Eastern Alliance for Greenhouse Action: Climate Change Adaptation Roadmap For Melbourne’s East;</p> <p>DRR: World Meteorological Organization 2016: A Disaster Risk Reduction Roadmap for the World Meteorological Organization; European Forum for Disaster Risk Reduction: Roadmap for the Implementation of the Sendai Framework; FAO-WFP Joint Roadmap on Disaster Risk Reduction/Management (DRR/M) in West Africa and the Sahel.</p>
Scenarios/ scenario planning	Modelling.	<p>CCA: Socioeconomic scenarios, emissions scenarios, atmosphere and climate scenarios, impact scenarios. Examples: The IPCC Special Report on Emissions Scenarios (SRES): A1B, A1T, A1FI, A2, B1, B2; Representative Concentration Pathways (RCPs); Shared Socioeconomic Pathways (SSPs).</p>
Statistical/ simulation modelling	Modelling.	<p>DRR: Global Assessment Report on Disaster Risk Reduction (UNISDR)</p>
Structural analysis	Modelling.	<p>CCA: Islam <i>et al.</i> 2016: Structural approaches to modeling the impact of climate change and adaptation technologies on crop yields and food security.</p>
SWOT analysis	Expert or stakeholder judgments.	<p>CCA: Wang & Hills: Climate change adaptation in China: national policy and regional practice;</p> <p>DRR: Caribbean Disaster Emergency Management Agency, 2011: A Guidance Tool: A Manual for Mainstreaming Climate Change Adaptation into the CDM Country Work Programme:</p>
Systems perspective/ systems approach/ systems thinking	Participatory process. This method considers first the elements in isolation and then in combination one by one.	<p>CCA: Australian National Climate Change Adaptation Research Facility: Decision-making for Climate Change Adaptation – A Systems-Thinking Approach;</p> <p>DRR: UNISDR Global Assessment Report on Disaster Risk Reduction 2015 – Preparing For Complex Interdependent Risks: A System of Systems Approach to Building Disaster Resilience.</p>
Three horizons practice	Multiday stakeholders workshops or short exercises.	<p>CCA: Climate change community action – Glasgow community and International Futures Forum (Sharpe <i>et al</i> 2016).</p>
Vision/ Visioning	Facilitated participatory workshops.	<p>DRR: Unicef Children’s Charter – an action plan for disaster risk reduction for children by children;</p> <p>CCA: SWAP – Scenario Workshop with Adaptation Pathways: Creating a common vision for coastal adaptation pathways in Portugal; Community Visioning in CBA (Community Based Adaptation); Participatory Scenario Development and Future Visioning in Adaptation Planning: Lessons from experience Part I.</p>
Wildcards	Participatory stakeholder workshops.	<p>CCA: Walsh <i>et al.</i> 2015: Infrastructure adaptation & resilience towards climate related disasters;</p> <p>DRR: Walsh <i>et al.</i> 2015: Infrastructure adaptation & resilience towards climate related disasters</p>

Summary of findings

The examples provided in the above Table 3, represent just a selection of applications, without aiming to be complete. The provided information aims to facilitate the choice of a suitable foresight method indicating how each method can be developed and applied. Qualitative methods (e.g. expert interviews, participatory methods) are distinguished from quantitative methods (e.g. modelling). This more practical information adds to the more conceptual information provided in Table 1 and Table 2 and can provide a clearer idea about the elements of the application of the foresight methods and their timing.

Past experiences show that foresight methods have already been used at different levels, from international programmes to community level strategy development, with an emphasis sometimes on practice in a participatory mode and in other cases taking a more academic, expert-driven approach. The examples demonstrate that a very wide variety of methods is actually being used in many different settings with different objectives, and considering different time scales. However, the emphasis is usually on either a DRR or a CCA context, not on using foresight as a mechanism to facilitate integration, something that this report proposes. It is likely that the choice of method in a particular case is as much motivated by the experience, expertise and skills of the people involved as by the specific demands of the challenge to be addressed. It is apparent that people in both communities are used to work with foresight methods, albeit different ones and with different objectives, and thus would be open to using foresight as a mechanism to look at both DRR and CCA. For DRR this would imply the consideration of a longer time horizon and more attention to preventive responses, for CCA it would stimulate the consideration of the relevance of long-term changes for short-term changes and weather events which are more relevant for policy and practice. Connecting different people from the two communities by organising joined foresight activities to integrate CCA and DRR can also help to broaden the menu of methods, which can lead to interesting new or complementary insights.

Textbox 1: PLACARD foresight interactive activities

In a successful PLACARD Foresight workshop in October 2016 in Vienna using the megatrend methodology, we deepened our understanding of foresight as a tool to help integrating CCA and DRR (for detailed information see [policy brief](#) and Annex I – PLACARD Foresight Experience – 1st Workshop). Additionally, a session on “Can foresight help integrating Climate Change Adaptation and Disaster Risk Reduction?” was held at the 3rd European Climate Change Adaptation Conference (ECCA) in Glasgow 2017. The session focused on the complementary role for other, e.g. qualitative, foresight methods implemented by diverse experts and stakeholders to explore future risks, vulnerabilities and opportunities (see Annex II – PLACARD Foresight Experience – Session at 3rd European Climate Change Adaptation (ECCA) Conference, Glasgow, 6.-9. June 2017). Such foresight could improve the coordination and collaboration between CCA and DRR in terms of science, policy and practice.



4.3 Characteristics of “good” foresight methods in CCA and DRR

The above suggests that indeed foresight methods can offer a useful way to enhance integration between CCA and DRR in science and policy. It is also clear that the choice of particular methods very much depends on the kind of specific questions to be addressed, and on the expertise and skills of people involved. Therefore it is difficult to articulate “good practice” methods that would be relevant for all situations.

One could distinguish between three modes of foresight influencing policies (Havas *et al.*, 2010): informing policy (e.g. by sharing visions on the future developed by experts), advising policy (e.g. merging results from expert-driven foresight with perceptions and goals of policy makers) and facilitating policy (e.g. developing common visions in a learning environment). According to Harper and Pace (2004), foresight is traditionally defined as a tool or set of tools used to determine to what alternative future outcomes developments would lead, but more recently it is suggested to go beyond this and involve a process whereby the tools are just one element, interacting with human inputs (creativity, intellect, expertise and sector-specific knowledge) to jointly build visions. In a G20 Global inequality and Social Cohesion context, Sus and Himmrich (2017) emphasise that integrating perspectives of civil society groups and other stakeholders in participatory foresight exercises can lead to greater transparency and a disruption of the undesirable ‘tunnel vision’ in policy making processes – similar advantages are likely to apply to the connection of CCA and DRR communities in joint participatory foresight work.

Policy-oriented foresight can influence the strategic policy process and thus serve as a tool for strategic policy-making, but next to opportunities there are also various challenges. Foresight can have different functions for policy-making (see functions in section Application potential in CCA–DRR, Da Costa *et al.*, 2008).

Related to these functions (informing policy; facilitating policy implementation; embedding participation in policy-making; supporting policy definition; reconfiguring the policy system and symbolic function), foresight can support policy processes in different phases from agenda setting to deciding on action: early detection of information, generating foresight knowledge, and developing strategic policy options.(Fobé and Brans, 2011).

Based on experiences in Flanders, Fobé and Brans (2011), identified eight elements affecting the capacity of foresight to influence strategic policy-making: (i) involvement of policy-makers, (ii) timing, (iii) facilitation of diffusion, (iv) stakeholder support, (v) time horizon, (vi) quality, (vii) openness of policy-makers and (viii) absence of advice competition.



Cox *et al.* 2015) identify 17 success factors² which affect the impact of foresight research on policy in the context of the European Agency for Safety and Health at Work (EU-OSHA) strategic programme 2014-2020 which has highlighted the need for forward looking research, in order to generate effective strategies and develop research tools for OSH (occupational safety and health).

Taking into account the above, a number of common characteristics can be formulated, which are generally the same as for the use of foresight in other areas, as well as relevant for other types of applied research for integration of CCA and DRR. They are based on a session at the 3rd European Climate Change Adaptation Conference held in Glasgow in June 2017 (see Annex II):

- **Balanced and equitable engagement of stakeholders** from relevant communities, involving policy, practice, citizens, companies, and scientists in a transdisciplinary and participatory approach with adequate attention to key issues such as trust building and ownership.
- **Common “intermediate” time and spatial scales**, pushing DRR practitioners to think more about the future and larger time scales, and CCA practitioners to present their insights for shorter time and spatial scales than they are used to (or feel comfortable with because of increasing uncertainties of climate projections).
- **Harmonised set of definitions for key terms, drivers, exposed values**, or at least mutual understanding of how the different communities interpret and use particular terms – language used should be understandable for everyone involved.
- **Selection of method(s) and tool(s) tailored to the objectives of the exercise**, avoiding one-size-fits-all approaches applied to all topics.
- **Common outputs** geared towards the interests of all communities involved.

-
- 2 • Clarify what the foresight study is seeking to achieve which cannot be achieved by other policy means;
- Engage appropriate stakeholders through the foresight study and beyond in its implementation;
 - Establish a clear link between foresight and policy agenda;
 - Identify clients/beneficiaries and users of foresight study;
 - Use of expert foresight contractors to sell and explain the benefits of the methods, and assume advisory role to policy makers on foresight use;
 - Embed client representation on the foresight research team;
 - Ensure policy engagement by achieving relevant focus;
 - Ensure political and policy ownership;
 - Education of clients and participants;
 - Project management: frequent communication to keep project on track;
 - Measuring impacts to increase perceived value;
 - Incorporating range of appropriate disciplines in the foresight study;
 - Managing expectations;
 - Communication and engagement: produce high-quality outputs that can engage with different stakeholder groups/audiences;
 - Ensure balance between breadth of topic coverage and depth analysis;
 - Deploy foresight methods appropriately – the value added of foresight approaches;
 - Adaptation and flexibility as client’s goals change and the involvement of different actors can alter over the course of a project.



- **Focus on positive concept and outcomes:** even if risk assessment can be part of the foresight exercise, moving towards joint positive solutions (e.g. framed from a resilience or wellbeing perspective) motivates people.
- **Combination of quantitative and qualitative methods** can enhance richness of discussions and facilitate creative engagement of participants.
- **Equal attention to climate / environmental and socio-economic factors at relevant scales,** to account for the importance of social, cultural, institutional and economic factors for vulnerability at the local level.
- **A good facilitator** to guide the work and manage the process, because foresight is about people and their interactions, not only about technical or scientific aspects.

Most of the methods described above involve groups of people working together and need a skilled facilitator to be effective. Foresight in general is not technical work that can be done only by specialist researchers working individually on technical issues and coming together to exchange information on technical parameter A or B. It is done by a group of individuals that come together to creatively explore the future, challenge their own assumptions about it, build trust and partnerships, create a common language and ultimately take action. This is as relevant for foresight in CCA and DRR as for any other area. Active stakeholder engagement is a key characteristic of many foresight methods. It creates empowerment, and generates, prioritises and validates information for policy- and decision- makers to navigate in a challenging and uncertain future.

Furthermore, to ensure the aforementioned common characteristics of joint CCA-DRR Foresight activities, actions have to be taken before, during, and after the Foresight exercise. Drawing upon experience from PLACARD foresight activities (for details see Annex I – PLACARD Foresight Experience – 1st Workshop), a few practical ideas are:

- vii. identifying specific opportunities for using foresight to connect CCA and DRR through specific research projects and/or specific needs (e.g. vulnerability/risk assessment to a specific climatic hazard in a given location), which will provide common time and spatial scales;
- viii. defining concrete and achievable outputs, e.g. a set of scenarios with narratives and quantification, which will ensure that common outputs are geared towards the interests of both communities;
- ix. conducting common research with tools and methods arising from both communities, so that sets of definitions and key concepts will be harmonised and a common understanding will take place; and
- x. making sure that results and deliverables reach not only both communities but also regional and local authority in charges of both CCA and DRR issues.



5. Reflections, conclusions & future opportunities

5.1 Reflections

This report shows that foresight methodologies are already being applied in multiple fields of CCA and DRR research, policy and practice, albeit not always called “foresight”. Interest in and awareness of “foresight” appears to be growing and more methods are starting to be applied.

Additionally, participants in PLACARD activities (see annex I and II) have confirmed that the use of foresight methods can go beyond the current support to CCA and DRR research, policy and practice, and promote better connections and integration across the two communities. For example, foresight methods going beyond quantitative scenarios and modelling may have the potential to increase the effectiveness and relevance of future-thinking work in a joint CCA-DRR policy context.

Several factors described in this report support this rationale, by pointing out that foresight may:

- Enhance the effectiveness of participatory processes, cooperation and dialogue;
- Produce salient knowledge and capacity building that is relevant for future decision making and policy support;
- Facilitate the understanding of issues and concepts such as complexity, uncertainty, non-linearity, wildcards and surprises;
- Generate levers that build flexibility into policy measures and across policy areas;
- Address different time scales simultaneously (e.g. connect long-term CCA/prevention with short-term DRR/preparedness);
- Be used in the context of trust building and the development of shared values;
- Allow for the use of a holistic perspective in connecting different policy areas.



However, and in order to successfully apply foresight methods several challenges have to be taken into consideration, thus deserving further consideration:

- Each situation is different and requires specific knowledge input: there is no single “best practice” or “scientifically proven” approach to foresight;
- Foresight is a learning process for all participating actors, making it demanding and difficult even if the stakes are well known;
- People are key: any foresight activity should address ownership by the participants and move beyond scientific/technical considerations as often “perception is considered as reality” for many involved in making decisions;
- Foresight activities should consider both products and processes;
- Foresight does not necessarily lead to quick, direct and easy results so expectations should be moderated;
- Foresight exercises should not adhere to a strict controlled process but rather retain flexibility;
- Recommendations resulting from foresight exercises are not expected to be automatically implemented and should not necessarily be seen as directly leading to priority setting.

5.2 Conclusions

Based on the work carried out in this report and on the outcomes of the PLACARD foresight-promotion activities some preliminary conclusions can be drawn:

- Foresight methods may provide valuable support and a better understanding of the needs and barriers regarding the integration of the “future” dimension in current decision-making, thus leading more long-term thinking in CCA-DRR policy and practice;
- There is an identified need to bring the two communities (DRR and CCA) together in concrete activities with clearly defined goals, in order to test, apply and check if foresight methods are able to provide the required (salient) outputs for both policy and practice;
- Foresight activities should promote a clear understanding of the differences and similarities in perspectives and expectations across communities, including the different views CCA and DRR practitioners may have on similar situations and issues;
- Specific opportunities for connecting CCA and DRR through foresight should be sought, for example through research programming and projects;
- Future research should aim to improve capacity building regarding the integration of DRR and CCA, e.g. by exploring issues around how CCA actors can benefit from a clearer understanding of the importance of DRR focusing on extreme climate events, while DRR communities may benefit from incorporation adaptive and long-term perspectives, when focusing on disaster prevention.



5.3 Future opportunities on using foresight to enhance CCA & DRR integration

The results from this work have also led to the identification of several opportunities where the use of foresight may help to integrate CCA and DRR across Europe in policy. Three specific policy areas were identified:

- Following up to the evaluation and possible revision of the EU Adaptation Strategy;
- Development and implementation of the EU Civil Protection Mechanism;
- Shaping EU research and Innovation policy including development of the 9th Framework Programme.

In the context of integration of CCA and DRR, the procedural aspect of foresight is potentially where the greatest benefit for integrated solutions can be found. This includes the engagement of policy makers and a range of different stakeholders, the adjustment of the foresight exercises to the timelines of the CCA and DRR policy processes, and the recognition of challenges of communication and facilitation, as well as competitive insights.

Additionally, in order to have the greatest and most long lasting impact on policy development and fostering of connections between CCA and DRR, foresight should take into account issues such as quality of the exercise and reconciliation of different time horizons.

Two examples of participatory foresight for policy development relevant for CCA and DRR are the 2012 UK exercise to inform DRR policy development (UK Government Office for Science, 2012) and the different foresight activities in support of EU research programming (EC, 2015).

Based on these two examples and on the results of the work presented in this report, three specific opportunities for further development of policies and research priorities connecting CCA and DRR were identified. These are:

- **Evaluation and possible revision of the EU Adaptation Strategy.** The current evaluation is mainly considering to what extent the objectives of the strategy are being met in Europe and its Member States. It is not clear how futures analyses will inform the evaluation and thereafter a possible revision of the Strategy, e.g. if this would go beyond considering the results of scenario analysis with physical and economic models from the JRC PESETA project. For example, it is plausible that the weak integration of CCA and DRR in the current strategy will be one of the findings of the current evaluation. A foresight exercise including but not limited to the modelling analyses could inform the evaluation (if organised before spring 2018) or support follow up policy development after concluding the current evaluation. Also Adaptation Strategies to Climate Change and Action Plans on the national or sub-national level can be enriched with foresight elements, ensuring a better integration of CCA and DRR. Since Monitoring and Evaluation Systems are being developed or implemented ([EEA Technical Report No 20/2015](#), [OECD, Paper No. 2017\(3\)](#)), elements of foresight can have added value in the revision of these Strategies and Action Plans.

- **Development and implementation of the EU Civil Protection Mechanism (UCPM).**³ Further developing and implementing the EU Civil Protection Mechanism in the context of the Sendai Framework and Paris Agreement can benefit from more systematic and regular foresight exercises that would enhance the emphasis on preventive measures⁴ and consideration of long term impacts of climate change. One entry point can be the revision of the National Risk Assessment (NRA) which is prepared by all participating parties across Europe (all 28 EU Member States and in addition Iceland, Montenegro, Norway, Serbia, the former Yugoslav Republic of Macedonia and Turkey). The next submission of these NRAs will be 2018⁵, based on the UCPM Decision No 1313/2013/EU of the European Parliament and of the Council on a [Union Civil Protection Mechanism](#). Additionally the “Action Plan on the Sendai Framework for Disaster Risk Reduction 2015-2030: A disaster risk-informed approach for all EU policies (EC, SWD ([2016, 205 final/2](#))) foresees in key area 1 – Building risk knowledge in all EU policies the “Use foresight, scenarios and risk assessments for better preparedness to existing, emerging risks and new types of risks”.
- Shaping EU research and Innovation policy including development of the 9th Framework Programme. Recently, discussions have started about the follow-up of H2020; while [foresight is likely to play an important role in the process](#), a specific exercise could explore the connections between CCA and DRR as a transversal theme across different societal challenges, including but not limited to climate action and secure societies. Such an exercise can build on the work of earlier projects such as BOHEMIA (Beyond the Horizon – Foresight in Support of the Preparation of the EU’s Future Policy in Research and Innovation).

5.4 Next steps for PLACARD

Our initial work on foresight summarised in this report confirmed our hypothesis that it can be a useful tool to support decision-making in Climate Change Adaptation and Disaster Risk Reduction, and that its implementation in Europe can be extended and improved.

In order to contribute to such a goal, the knowledge on foresight and its potential applications in DRR and CCA in this first PLACARD foresight report will be further developed over the remainder of the projects implementation.

3 Decision No 1313/2013/EU of the European Parliament and of the Council of 17 December 2013 on a Union Civil Protection Mechanism, OJ L 347, 20.12.2013, p. 924.

4 According to EC (2017) “Increasing awareness, including through research and foresight, of a changing risk landscape sheds light on new and emerging risks that could be more of a focus in NRAs”. In relation to Priority Area I of the Sendai Framework (Understanding Risk), a majority of respondents to a survey in the context of the mid-term review of the Civil Protection Mechanism thought that “there is a need for significant increase or increase of support to the use of foresight, scenarios and risk assessments for better preparedness to existing, emerging risks and new types of risks” (ICF, 2017).

5 Based on Article 6 of the UCPM decision, Participating States submitted summaries of NRAs by 22 December 2015, and will do so every three years thereafter.

A next step will be the organisation of a webinar about the use of specific foresight methods and processes in CCA and DRR, planned for the spring of 2018. During this webinar, starting with a number of key policy and practice questions related to the integration of CCA and DRR, it will be explored which of the many methods discussed would be the most appropriate to use for which question, and how this can be done in practice over the remaining years of the project. During this webinar, policy and practice cases that can be addressed in more detail in the following workshop would be identified.

The 2nd step would be a 2nd Foresight Workshop on methods, tools and good practices in CCA/DRR in the fall of 2018. This workshop would elaborate the application of a selected number of methods for a number of specific policy and practice questions. The former (policy) could be, or include, the three major EU processes that are mentioned above. The latter (practice) could be cases from the local or national work of project partners involved.

Finally, a foresight session is expected to be included at the 4th ECCA conference in Lisbon in 2019, co-organised by PLACARD, during which the results from PLACARD work will be presented, next to related work from other projects.



6. References

Aubrecht C., Freire S., Fröhlich J., Rath B., Steinnocher K. (2011): Integrating the Concepts of Foresight and Prediction for improved Disaster Risk Management. Proceedings of the 8th International ISCRAM Conference – Lisbon, Portugal, May 2011.

Costa, O. da, P. Warnke, C. Cagnin and F. Scapolo (2008): The Impact of Foresight on Policy-Making: Insights from the FORLEARN Mutual Learning Process. Technology Analysis and Strategic Management, Volume 20, Issue 3.

Cox, A., S. Swift and M. Rhisiart (2015): Success factors for achieving policy impact in foresight studies. European Risk Observatory, European Agency for Safety and Health at Work.

EC (2013): Decision No 1313/2013/EU of the European Parliament and of the Council on a Union Civil Protection Mechanism of 17 December 2013.

EC (2015): The Knowledge Future: Intelligent policy choices for Europe 2050. Report by an expert group on Foresight on Key Long-term Transformations of European systems: Research, Innovation and Higher Education (KT2050).

EC (2016): Commission staff working document – Action Plan on the Sendai Framework for Disaster Risk Reduction 2015-2030 – A disaster risk-informed approach for all EU policies, EC, SWD (2016) 205 final/2, Brussels, 17.6.2016.

EC (2017): White Paper on the Future of Europe – Reflections and scenarios for the EU27 by 2025. COM(2017), Brussels.

EC (2017): COMMISSION STAFF WORKING DOCUMENT – Overview of Natural and Man-made Disaster Risks the European Union may face – SWD(2017) 176 final, Brussels, 23.5.2017.

EEA (2017): Climate change, impacts and vulnerabilities in Europe 2016.

EEA (2015): National monitoring, reporting and evaluation of climate change adaptation in Europe EEA, EEA Technical report No 20/2015.

Fobé, E. and M. Brans (2011): Public Management Institute Policy-oriented foresight as a tool for strategic policy-making. An assessment of opportunities and difficulties. Paper presented



at the 33rd EGPA Annual Conference in Bucharest, Romania, 7–10 September 2011.

Haegeman, K., M. Spiesberger, and T. Könnölä (2017): Evaluating foresight in transnational research programming. *Technological Forecasting and Social Change*, **115**, February 2017: 313–326.

Harper, J.C. and G. J. Pace (2004): Creative processes in policy making: a case for context in foresight. De Bono Creativity Conference.

Havas, A., D. Schartinger and M. Weber (2010): The impact of foresight on innovation policy-making: recent experiences and future perspectives. *Research Evaluation*, **19**(2): 91–104, Doi: 10.3152/095820210X510133

Hov, O., Cubasch, U., Fischer, E., Höppe, P., Iversen, T., Kvamstø, N.G., Kundzewicz, Z.W., Rezacova, D., Rios, D., Santos, F.D., Schädler, B., Veisz, O., Zerefos, C., Benestad, R., Murlis, J., Donat, M., Leckebusch, G.C. and Ulbrich, U. (2013): [Extreme Weather Events in Europe: preparing for climate change adaptation](#). Produced by the Norwegian Meteorological Institute in cooperation with the European academies Science Advisory Council.

ICF (2017): [Interim evaluation of the Union Civil Protection Mechanism, 2014–2016](#). Final Report. Brussels.

JRC (2001): [FOREN – Foresight for Regional Development Network, a practical guide to regional foresight](#). Edited by JRC-IPTS, December 2001.

JRC (2008): [The FOR-LEARN Online Foresight Guide](#), accessed 10 August 2017.

Martin, B. (1995): Foresight in Science & Technology. *Technology Analysis & Strategic Management*, **7**: 139–168.

OECD (2017): Climate Change Expert Group, Paper No.2017(3): Insights from national adaptation monitoring and evaluation systems, May 2017.

Popper, R. (2008): [How are foresight methods selected?](#) *Foresight*, **10**(6): 62–89. doi: 10.1108/14636680810918586

Ricci, A., Sessa, C., Weber, M., Schaper-Rinkel, P., Giesecke, S. and Hudson, R. (2017): New Horizons: future scenarios for research & innovation policies in Europe – a report from project BOHEMIA – Beyond the Horizon: Foresight in Support of the Preparation of the European Union’s Future Policies in Research and Innovation.

Sus, M. and J. Himmrich (2017): the impact of foresight on policymaking. Towards more transparency and participation. G20 Insight Working Paper, Germany.

UK Government Office for Science (2012): Reducing risks of future disasters – priorities for decision-makers. Final Project Report.



7. Annex I: PLACARD foresight experience – workshop

1st Workshop, Vienna, 24–25 October 2016

The first PLACARD Workshop aimed at applying foresight can strengthen both CCA and DRR in terms of science, policy and practice; link them with other international mechanisms such as the Sustainable Development Goals (SDGs); and explore the implications of the global agreements for European, national and local action.

With the Foresight workshop, PLACARD aimed to:

- xi. explore the potential role of foresight methods, tools and processes to inform the implementation of the UNFCCC adaptation and Sendai disaster risk reduction mechanisms;
- xii. identify relevant long-term trends (e.g. global mega-trends) and surprise events (wildcards) and other developments which would have implications for DRR and CCA; and
- xiii. explore the needs and priorities of connecting climate change, disaster risk response, sustainable development and other communities with respect to foresight.

Background information on [megatrends](#) and its implication on CCA and DRR was developed before the workshop and made available to all participants. **The key findings of the workshop were summarised in a [Policy Brief and key results](#)** are showcased below:

What are the barriers to using foresight in CCA and DRR?

- DRR is participatory and mainly based in the past and present: CCA is forward-looking, but uses methods dominated by quantitative scenario analysis and gradual change with limited relevance for local action.
- Summaries of foresight methods exist, but case-studies where foresight is applied to CCA or DRR are not widely available.
- The European foresight platform that could have been useful is no longer active.



How could foresight support CCA and DRR?

- CCA and DRR both emphasise the importance of participatory approaches in engaging different actors at different levels and sectors – the broad menu of qualitative and quantitative foresight methods offers opportunities to help with these activities.
- CCA increasingly focuses attention on changes in weather extremes, while DRR addresses longer-term concerns in enhancing resilience – a multi-method foresight approach using tools such as analysis of megatrends, wildcards and disruptors will add to the scenario approach common in climate change analysis.
- Foresight tools can help to encourage strategic thinking and prioritisation. The goal of a foresight exercise for CCA and / or DRR should be clearly defined.
- A foresight toolbox has multiple purposes, so the choice of methods should be open-minded and focused on the specific target, objective and time-horizon of a particular problem. The range of methods includes foresight-specific options as well as cross-disciplinary – several can be combined.

How can we make better use of foresight in CCA and DRR?

- Support a better understanding of the needs and barriers to the **integration of the “future” dimension in current decision-making** – more long-term thinking in policy and practice and identifying emerging issues.
- Understand the **differences and similarities** in perspectives and expectations between CCA, DRR and foresight.
- **Bring the two communities together** in concrete activities with a clearly defined goal and apply foresight methods.
- **Develop concrete and achievable outputs from foresight thinking**, defining framing and context. For example, clear trends, quantitative outputs, sets of scenarios and narratives, to smooth integration within CCA and DRR activities.
- **Understand people’s perceptions and if needed, try to change them** – for example, researchers, practitioners, decision-makers and NGOs. CCA and DRR practitioners can have different views on the same issues.
- **Identify specific opportunities** for connecting CCA and DRR, for example through research programming and projects.
- **Conduct research and improve capacity building** to integrate DRR and CCA. CCA actors could benefit from a clearer understanding of the importance of a DRR or extreme event focus, while DRR practitioners may benefit from grasping the relevance of a long-term climate change perspective for prevention.
- **Define research questions and time-horizons** early in the project planning or proposal stage to select and **apply the most suitable foresight methods** and deliver knowledge, for example, research needs, future visions and action plans.
- **Promote and communicate foresight examples** – good practice on different levels, contexts and settings. For example, forward-looking co-operation to implement measures with appropriate institutions, authorities and stakeholders.



- **Provide evidence** of the immediate benefits of foresight – and the risks of not using it!
- **Design appropriate foresight processes** that scope the problems at hand, explore scenarios, develop a vision, back-cast, evaluate learning and iteration, and then carry out a series of practical foresight exercises at different levels to see how they work. **Do it – don't just talk about it!**
- **Apply foresight methods to existing practices.** Foresight methods are already partly used in adaptation pathways, climate scenarios, impact and vulnerability assessments, and in development of climate change adaptation and disaster risk reduction strategies and action plans.
- **Avoid ivory-tower research,** which is unattractive at a regional or local authority level where decisions are made.



8. Annex II: PLACARD foresight experience – ECCA 2017

3rd European Climate Change Adaptation (ECCA) Conference, Glasgow, 06–09 June 2017

Session title: Can foresight help integrating Climate Change Adaptation and Disaster Risk Reduction?

Rationale

How can foresight help to reduce vulnerability to climate-related hazards? In 2015, the Paris Agreement at COP21 on climate change, notably climate change adaptation (CCA) and the Sendai Framework for Disaster Risk Reduction (DRR) formed major steps towards increasing resilience to climate-related extreme events. Long-term risk and response analyses in support of these agreements and the IPCC assessments tend to be dominated by the formal analysis of quantitative scenarios of greenhouse gas emissions and concentrations. While such analyses are an important mechanism to advance analytical knowledge about future risks, an earlier [workshop in Vienna](#) suggested that they may constrain creative analysis and there could be a complementary role for other, e.g. more qualitative foresight methods implemented by diverse experts and stakeholders to explore future risks and opportunities. Such foresight could strengthen both climate change adaptation and disaster risk reduction in terms of science, policy and practice, and also link with other international mechanisms such as the Sustainable Development Goals (SDGs) and explore the implications of the global agreements for European, national and local action.

Objectives

In this context, the H2020 Coordination and Support Action [PLACARD](#) organised a conference session to:

- Explore the potential role of foresight methods, tools and processes to inform the implementation of the UNFCCC adaptation and Sendai disaster risk reduction mechanisms;
- Identify relevant long-term trends (global mega-trends) and surprise events and developments which would have implications for DRR and CCA



- Explore the needs and priorities of connecting CCA, DRR, SDGs and other communities with respect to foresight.

Programme

The session was attended by about 40 participants from science, policy and practice. After an introductory presentation about foresight (Rob Swart, Wageningen Environmental Research), the session started with two plenary presentations about the role of foresight in DRR and CCA: the implications of megatrends and wildcards for climate change adaptation and disaster risk management (Guillaume Rohat, University of Geneva) and the potential role of foresight in supporting policy development in practice, notably for Environmental Impact Assessment (Markus Leitner, Environment Agency Austria). The session then moved to a world café setting (facilitated by Tiago Capela Lourenço, Lisbon University), which addressed two main questions:

- Can you provide other examples where foresight was used in the context of CCA and DRR (in particular regarding the application of common methods/tools)?
- What are the main characteristics of 'good' foresight exercises that can help integrate CCA and DRR (what, for whom, why)?

The session was ended by a plenary wrap-up session (chaired by Markus Leitner).

Results: foresight experiences

Before discussing foresight experiences in CCA and DRR, the vast majority of participants agreed that foresight methods such as the ones presented in the presentation are useful for both CCA and DRR research and practice. Several participants were unfamiliar with the term foresight, but did in fact have experience with some of the (foresight) methods included, such as scenario analysis, back-casting or development of visions. The assumption of the organisers that quantitative methods would be less common in DRR practice than in CCA proved to be incorrect, but the type of quantitative analysis differs: time horizons considered in CCA are longer than for DRR, which focuses more on the present risks and past (statistics of weather extremes) experiences.

Foresight exercises in which intermediate time horizons (some decades at most) or solutions that are useful from both perspectives (e.g. nature-based solutions) are applied offer the largest potential for CCA and DRR integration. Qualitative approaches were less well-known, but were seen as having potential to facilitate active participation of stakeholders with lower skills in interpreting quantitative information.

Participants provided examples where foresight methods are used in CCA and DRR (other than model-based scenario analysis). Among these were: foresight for [London's adaptation strategy](#), back-casting by the [Stockholm Environment Institute](#) for the SDG strategy, a combination of methods and time scales in the [Transformation and Resilience on Urban Coasts](#) (TRUC) project, participatory risk mapping for Danish coastal areas and flood risk management plans, environmental impact assessment in Austria, social innovation and nature-based solutions ([EKLIPSE](#)). The [ERA4CS](#) (ERA for Climate Services) was mentioned as an opportunity for creating a common vision for climate services for CCA and DRR.



In addition to the past and current examples above, the participants suggested several opportunities to apply foresight methods combining CCA and DRR, such as development of joint visions or scenarios on climate-resilient cities and municipalities with stakeholders, possibly accompanied by back-casting of possible pathways towards desirable end points.

Results: characteristics of “good” foresight methods in CCA and DRR context

Before starting a discussion on characteristics of “good” foresight methods, the participants were asked if a ‘good’ foresight exercise (in CCA/DRR) needs to combine multiple methods. There was strong disagreement amongst them about this question, with some emphasising the complementarity of different methods (different methods providing equally useful complementary insights) and others emphasising the feasibility and effectiveness (multiple methods requiring more time and resources and can provide complex or even conflicting results). The suggested characteristics of “good” foresight methods in CCA and DRR included:

- **Balanced and equitable participation of stakeholders** from relevant communities, involving policy, practice, citizens, companies, and scientists in a transdisciplinary and participatory approach with adequate attention to key issues such as trust building and ownership.
- **Common “intermediate” time and spatial scales**, pushing drr people to think more about the future and larger time scales, and cca people to present their insights for shorter time and spatial scales than they are used to (or feel comfortable with because of increasing uncertainties of climate projections).
- **Harmonised set of definitions for key terms**, drivers, exposed values, or at least mutual understanding of how the different communities interpret and use particular terms – language used should be understandable for everyone involved.
- **Selection of method(s) and tool(s) tailored to the objectives of the exercise**, avoiding one-size-fits-all approaches applied to all topics.
- **Common outputs** geared towards the interests of all communities involved.
- **Focus on positive concept and outcomes**: even if risk assessment can be part of the foresight exercise, moving towards joint positive solutions (e.g. framed from a resilience or wellbeing perspective) motivates people.
- **Combination of quantitative and qualitative methods** can enhance richness of discussions and facilitate creative engagement of participants.
- **Equal attention to climate/environmental and socio-economic factors** at relevant scales, to account for the importance of social, cultural, institutional and economic factors for vulnerability at the local level.



Wrap-up and follow-up

In the final plenary wrap-up session, the conclusions from the world café session were very briefly reviewed with an eye upon the potential follow-up. Foresight was confirmed to be a useful tool to support decision-making for climate change adaptation and disaster risk management, but the implementation in Europe can be improved, better organised and sustained, involving relevant institutions and networks. A webinar on foresight in CCA and DRR is planned in the fall of 2017, followed by a 2nd Foresight Workshop on methods, tools and good practices in CCA/DRR in 2018, and a foresight session will be included at the 4th ECCA conference in Lisbon in 2019.





Foresight for policy & decision-makers

Markus Leitner, Julia Bentz, Tiago Capela Lourenco, Rob Swart, Karin Allenbach & Guillaume Thibaut Rohat

PLACARD Work Package 4 – institutional strengthening,
Task 4.3 – Promote Foresight

January 2018

www.placard-network.eu



PLACARD interchange – PLAtform for Climate Adaptation and Risk reDuction – is a hub for dialogue, knowledge exchange and collaboration between the climate change adaptation (CCA) and disaster risk reduction (DRR) communities. Funded by the European Commission's Horizon 2020 research & innovation programme. Grant agreement No. 653255

@PLACARD_EU