



# D.1.1 – Evaluation Rubrics for the Resilience Maturity Curve Framework

## WP1 – Task 1.1

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## Summary

This report constitutes deliverable 1.1 and provides a detailed explanation of the overarching evaluation rubrics underlying the Resilience Maturity Curve (RMC) framework developed under the Pathways2Resilience project.

Drawing from an exhaustive review of the literature and informed by the latest research and knowledge on resilience capacities and transformative innovation, it articulates a comprehensive and robust evaluative instrument for regions to assess their readiness for transformative climate change adaptation (policy, planning, ready-to implement pathways).

RMC is a novel monitoring, evaluation and learning model centred around the combined evaluation of four resilience capacities: the capacity to anticipate, adapt, absorb, and transform. It recognizes that regions and communities exhibit varying levels of maturity across them. The overall resilience of a region is enhanced by acquiring these capacities that span across a range of interventions that address both immediate and long-term regional needs.

The RMC is operationalised through a self-assessment questionnaire structured around seven critical measurement areas of organizational capabilities (*adaptive planning, coordination response, stakeholder engagement, institutional, financial, climate information and data management, and monitoring, evaluation, and learning*), informed by the four distinct resilience capacities (*anticipatory, absorptive, adaptive and transformative*). These measurement areas serve as an organizational framework for various actions and processes essential for climate change adaptation planning at regional and local levels. Furthermore, the critical measurement areas are broken down into indicators and questions, designed to be completed by regions and communities. In responding to each question or statement, regions use a 5-point Likert scale with options ranging from ‘strongly agree’, ‘agree’, ‘neutral’, ‘disagree’, ‘strongly disagree’ to ‘do not know/NA’ (Table 2). This allows regions to express their preferences on the agreement scale, considering their local context and current situation.

## Keywords

Pathways2Resilience, Climate change adaptation, Resilience Capacities, Monitoring and Evaluation

## Abbreviations and acronyms

Term	Definition
A2R	The United Nations Climate Resilience Initiative: Anticipate, Absorb, Reshape
DRR	Disaster Risk Reduction
DRMKC	Disaster Risk Management Knowledge Centre
EEA	European Environment Agency
ESPO	European Observation Network for Territorial Development and Cohesion
EU	European Union
EUCRA	European Climate Risk Assessment
IIED	International Institute for Environment and Development
IPCC	Intergovernmental Panel on Climate Change

KTM	Key Types of Measures
LITK	Local, Indigenous and Traditional Knowledge
MEL	Monitoring Evaluation and Learning
P2R	Pathways2Resilience
RMC	Resilience Maturity Curve
RRJ	Regional Resilience Journey
SAP	Sectoral Adaptation Plan
TAMD	Tracking Adaptation and Monitoring Development
UNDRR	United Nations Office for Disaster Risk Reduction
WP	Work Package



## Introduction

Pathways2Resilience (P2R) is a research and innovation project funded under Horizon Europe's Mission Adaptation with the aim to support 100 European regions to co-develop climate resilient pathways and related innovation agendas. It intends to do this by employing a systems innovation and capability-driven approach, fostering the development of enduring institutional capacities at the regional and community level.

Within this context, Work Package 1 (WP1) - 'Impact Framework and Monitoring Evaluation and Learning' provides support services relating to the development of a 'Resilience Maturity Curve (RMC)' and a learning and impact approach, enabling the P2R consortium members to systematically monitor and evaluate progress throughout the project's implementation. The primary goal of the initial task within WP1 is the operationalisation of a Resilience Maturity Curve through a self-assessment tool. This tool is strategically designed to facilitate the sub-granting process of the project as it assesses the capacity or ability of a regional organization(s) to initiate innovation and change, particularly in the context of a public policy innovation process for establishing a planning process for transformative climate change adaptation. As part of this first step, the RMC self-assessment gauges the "capability" of a regional authority to participate in the project. Detailed information on this approach adopted in the sub-granting process is outlined [here](#).

Building on this initial conceptualisation of the RMC self-assessment, this document constitutes deliverable 1.1 and provides a more detailed explanation of the overarching evaluation rubrics underlying the RMC framework. Drawing from an exhaustive review of the literature and informed by the latest research and knowledge on resilience capacities, it articulates a comprehensive and robust evaluative instrument for regions to assess their readiness for transformative climate change adaptation. This tool is intended for use by the 100 participating regions within the project and holds broader applicability across European Union (EU) regions engaged in the Mission Adaptation.

## 1 What do we mean by Resilience Maturity Curve? Scope of the evaluation rubrics of the self-assessment tool

While the urgent need for adapting to climate change's impacts continues to grow, the challenges associated with climate change adaptation planning are also rising. Recent research examining the status of nationally reported actions on climate change adaptation in Europe reveals persistent governance-related barriers hindering the implementation of adaptation actions. This holds even in countries with well-developed governance frameworks. Challenges include coordination difficulties due to limitations in financial, technical, and human capacities (Leitner et al., 2023). Other shortcomings in Europe's climate change adaptation strategies underscore the fragmented and incremental nature of adaptation actions, along with systemic barriers involving a lack of citizen engagement, insufficient mobilization of finance, absence of political leadership, and a low sense of urgency (IPCC, 2022).

To address some of these challenges, we propose utilizing the Resilience Maturity Curve (RMC), a novel monitoring, evaluation, and learning tool to assess and measure regional climate resilience. RMC is based on the idea that the resilience of a region can be strengthened by

acquiring a mix of capacities that allow it to proactively adapt to a changing climate, anticipate and absorb impacts, and ultimately foster systemic transformation (Ziervogel et al., 2016; Harding & Nauwelaers, 2023). Fundamentally, a region needs a diverse set of capacities to do all these things at the same time (OECD, 2017; Brasseur & Gallardo, 2016; Watkiss, 2020). So rather than separate the challenge of strengthening climate resilience into looking at individual hazards (e.g. drought or flooding) or taking one sector (e.g. water or transport), this capabilities-driven approach is honed around a systemic perspective (of innovation and change), accounting for future uncertainties, in the face of existing, expected or unforeseen climate challenges.

The RMC can be empirically tested, is derived from state-of-the art research, and can be applied to all regions irrespective of their risk level. It offers a compelling evaluative framework to consider the success of the EU mission on adaptation to climate change as a whole. The capacity of each region can be plotted on a time-series graph to monitor improvements of capabilities over time (as shown in Figure 1). Each region can be monitored from the start of their association with the EU Mission on Adaptation to Climate Change<sup>2</sup> to see whether it is gaining or losing resilience capacities. This approach has been developed and enhanced in recent years, including by the UN Secretary General's Climate Resilience Initiative (A2R), by several international NGOs and through the academic literature (e.g. Bené et al., 2012; Brooks et al., 2013; Frankenberger et al., 2013; Bené et al., 2015; Bahadur et al., 2015; Vallejo, 2017; Vaughan & Frankenberger 2018; EEA, 2015 and 2022; IPCC, 2021 and 2022; UN Secretary General A2R Initiative 2015; United Nations Environment Programme 2022). The RMC in P2R goes one step further, by incorporating elements from emerging frameworks of transformative and systemic innovation policy for climate change adaptation (c.f. Harding & Nauwelaers, 2023, Alvia Palavicino, et. al. 2023; Kattel, 2023; Laranja & Pinto, 2023; Watkiss, 2020; OECD, 2021).

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<sup>2</sup> For more information about the EU Mission on Adaptation to Climate Change, see: [https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/adaptation-climate-change\\_en](https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/adaptation-climate-change_en)

A series of preparatory studies underpinning the concept of mission-oriented R&I policies were commissioned by the EU in the period 2018-2019, most notably those conducted by Mazzucato (2018) and the Joint Institute for Innovation Policies (2018). See: [https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/mission-oriented-policy-studies-and-reports\\_en](https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/mission-oriented-policy-studies-and-reports_en)

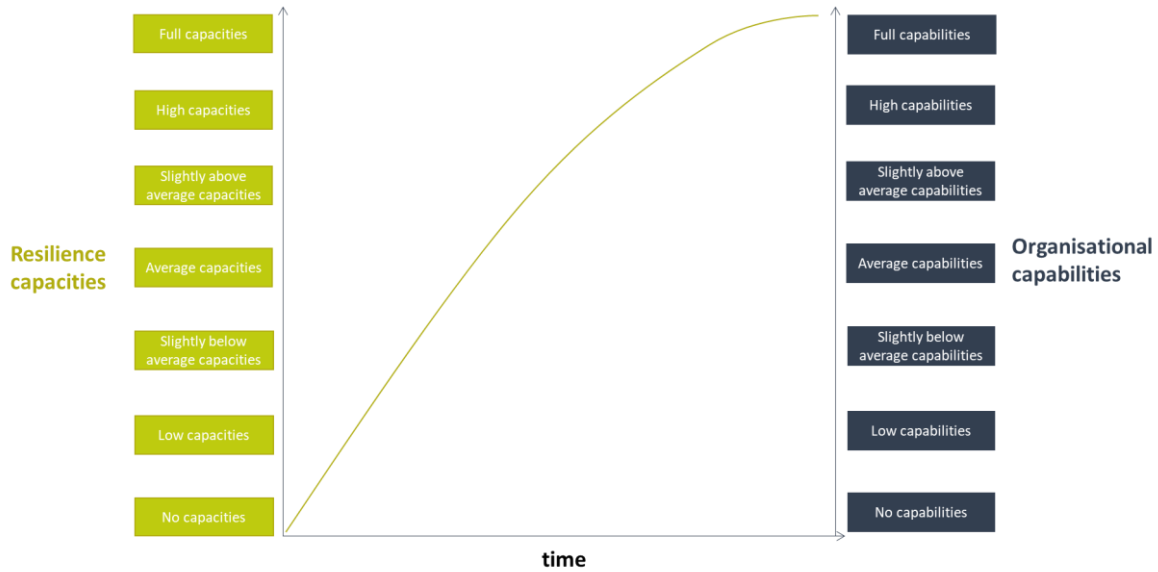


Figure 1 Graph picturing the resilience maturity curve, i.e. levels of resilience capacities over time Source: Authors

of capabilities. Although the literature of capabilities in the public sector is relatively small (c.f. Kattel, 2023), the same premise is applicable to public entities: *dynamic capabilities* are those managerial practices and organizational supporting tools that routines (practices, procedures and supporting tools) that enable a public organisation to improve its operational performance (Piening, 2013). dynamic capabilities in public sector organisations allows them to learn, As a result, the higher – which are presence of dynamic capabilities in public sector organisations allows their teams and individuals (Kattel to learn, to adapt, to change and to identify new solutions for existing challenges – which are nevertheless influenced by political and policy changes and practices (Kattel, 2023).

## 1.1 Resilience Capacities employed in the RMC

The RMC introduces a novel model centred around the combined evaluation of four resilience capacities: anticipatory, absorptive, adaptive, and transformative (see Table 1). It recognizes that regions and communities exhibit varying levels of maturity across them. The overall resilience of a region is enhanced by it acquiring these capacities spanning a range of interventions that address both immediate and long-term regional needs.

<b>Anticipatory capacity</b>	The ability of systems, institutions and humans to anticipate, prepare, and plan for future climate risks.
<b>Absorptive capacity</b>	The ability of systems, institutions and humans, to stabilise and resist the impact of climate change. This includes responding in ways that enable effective and feasible adaptation solutions.
<b>Adaptive capacity</b>	The ability of systems, institutions and humans, to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.
<b>Transformative capacity</b>	The ability to change the fundamental attributes of a system in response to climate and its effects.

Table 1: Resilience capacities in the context of climate change adaptation Source: Authors

Essentially, the RMC is designed as a monitoring and evaluation tool to help European regions to monitor these different resilience capacities through a practical approach. To do so, it maps the

four key capacities against seven critical measurement areas that regions and communities can follow to self-assess their ability to manage and respond to climate change. The link between the capacities, critical measurement areas, and the changes brought about by climate change is informed by three main frameworks: the Tracking Adaptation and Measuring Development Framework (TAMD) developed by IIED (Brooks et al., 2013), the 3As framework developed by ODI (Bahadur et al., 2015), and the resilience framework developed by JRC (Manca et al., 2017), and is explained in the next section.

## 1.2 Conceptual framework underlying the RMC

The RMC derives its conceptual underpinnings from the JRC framework, which as illustrated in figure 2, identifies two primary dimensions of disturbances, namely intensity and persistence. These dimensions encapsulate both sudden shocks and gradual processes, as explained by Manca et al. (2017). As per this framework, these dimensions jointly shape the response and consequently the resilient behavior of an agent, institution or system. The framework posits that when the duration of exposure is brief, and intensity is moderate, absorptive capacity predominates. This capacity, associated with stability and resistance, manifests when agents absorb the impact of shocks without altering their behavior. However, with prolonged exposure and heightened intensity, the absorptive capacity is exceeded, giving way to adaptive capacity. Ultimately, if the disturbance becomes unbearable, adaptation results in a substantive transformation. The framework contends that while all three resilience capacities -absorptive, adaptive, and transformative are valuable, their deployment depends on the intensity and persistence of the distress<sup>3</sup>.

Furthermore, the JRC framework breaks down these resilience capacities into diverse interventions, drawing inspiration from the “3P + T framework” of social protection. Thus, within this framework, capacities are conceptualized as a spectrum of interventions, potentially initiated even before the disturbance is anticipated or materialized.

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<sup>3</sup> To be noted that as shown in the graph, in the framework developed by Manca et al, anticipatory capacity is instead called prevention and preparatory measures, however, these overlap with the anticipatory capacities introduced by the 3As framework in 2015.

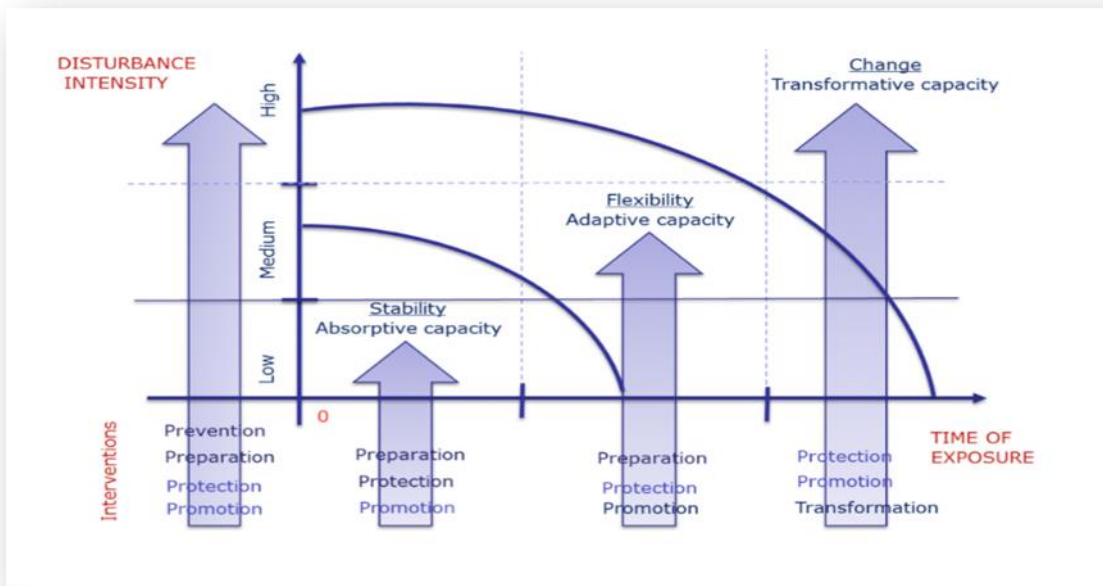


Figure 2: Link between capacities and interventions Source: Manca, Benczur and Giovannini (2017)

It is noteworthy that while the JRC framework was not specifically designed for the evaluation of climate disturbances, it nevertheless offers a useful conceptual approach for understanding the dynamics of climate distress and requisite capacities essential for fostering climate resilience. In the context of the RMC framework, we explicitly articulate the conceptualization of capacities and interventions related to climate distress. This is achieved through the integration of the JRC framework with “3A +T” framework, specifically designed to monitor resilience outcomes in the face of climate-induced shocks and stresses (Bahadur et al., 2015).

Designed in the context of extensive international development and climate change adaptation projects, the “3A+ T” framework proposes that a community’s ability to deal with climate shocks and stresses emanates from interlinked absorptive, anticipatory and adaptive capacities (3As). In the context of climate change adaptation, interventions can commence even before a climate disturbance occurs. Preventive measures, for instance, aim at reducing the incidence and size of shocks, and in the best case try to avert them. Correspondingly, anticipatory capacity denotes the ability of systems, institutions and humans to anticipate and reduce the impact of climate variability and extremes through preparedness and planning. Anticipatory capacity is seen in proactive action before a foreseen event to avoid upheaval, either by avoiding or reducing exposure or by minimizing vulnerability to specific hazards. Key actions include, amongst others, putting in place early warning systems, climate risk assessments, preparation of disaster risk mitigation plans and training of community members.

In situations where exposure time is limited, and intensity is moderate, absorptive capacity becomes crucial. Absorptive capacity involves stability, supported by preparatory measures enabling the system to cope with climate variations and extremes. Preparatory measures are accompanied by protective mechanisms, aiming to mitigate the impact and provide relief from potential deprivation or a decline in the standard of living. Key actions include establishing safety nets and insurance, development of social networks, social protection mechanisms, and broader utilization of adaptation finance investments.

While protection measures focus on reinforcing absorptive capacities (stability), promotion measures come into play to stimulate adaptive capacity (flexibility) necessary for dealing with longer and more severe disturbances. Adaptive capacity, therefore, refers to the ability of systems, institutions and humans, to adjust to potential damage, to take advantage of opportunities, or to respond to consequences. Key actions include development of legislation, policies or regulation concerning climate change adaptation. This may also include making available a slew of adaptation options for regions to adapt to changing circumstances.

Ultimately, in the face of significant and enduring distress, a point may be reached where the existing system is no longer sustainable, necessitating more profound and often challenging changes. Transformative capacity measures are designed to facilitate this process, preventing unnecessarily abrupt changes. Key actions include the implementation of policy reforms, or institutional overhauls, that can effectively navigate and manage the complexities arising from significant and sustained distress.

## 2 How does the RMC work?

To effectively track the progress of regions and local authorities across the range of interventions, the four resilient capacities have been further broken down into indicators grouped around the seven critical measurement areas (of organisational capabilities) as outlined in Table 3-9. These indicators serve a dual purpose, functioning both as process-based metrics and output/outcome-oriented benchmarks. Output indicators specifically gauge regional resilience performance, while process-based indicators provide insights into what transformative adaptation may look like at a regional and community level (Mäkinen et al., 2018). The combination of the two is a unique feature of the RMC that both enhances the region's ability to measure progress in adaptation planning (as a key dynamic capability of public organisations) and deepens its comprehension of transformative adaptation using the lens of resilience capacities.

The seven critical measurement areas (of organisational capabilities) are pivotal components essential for enabling transformative climate resilience pathways. They encompass: policy and legislative frameworks addressing climate risks, effective governance mechanisms enabling inclusive decision-making, vertical and horizontal coordination, budgeting and financing systems for adaptation, institutional capacity for dealing with climate risks, shocks and stresses, climate resilient planning processes, and monitoring, evaluation and learning processes for tracking the impact of climate action (see Figure 3).

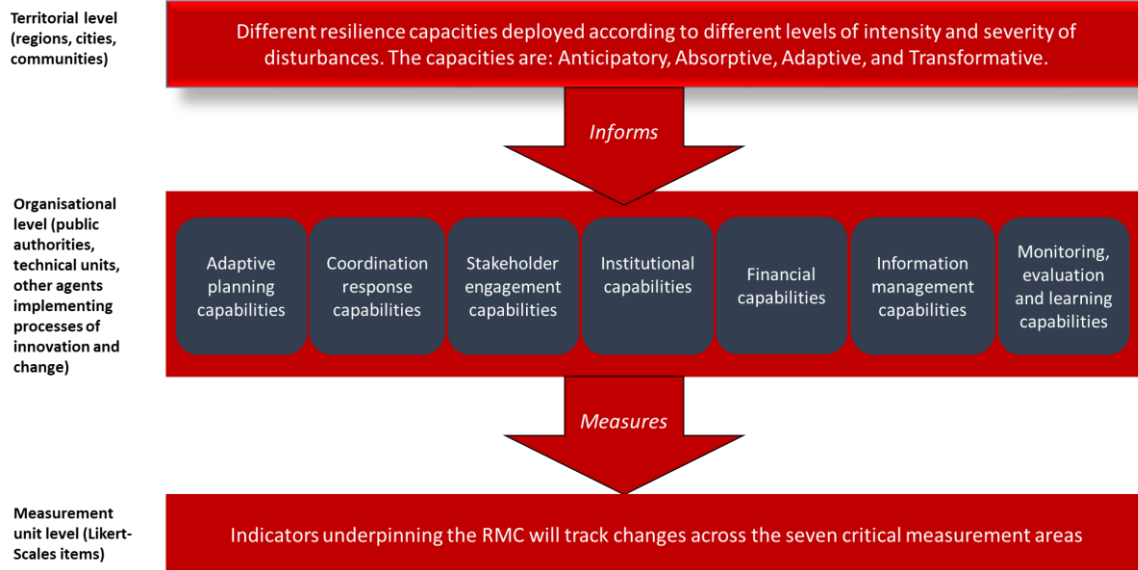


Figure 3: Link between resilience capacities, the critical measurement areas, and the indicators Source: Authors

The approach is inspired by the *Tracking Adaptation and Measuring Development (TAMD)* framework, successfully implemented in various countries worldwide, including Kenya, Uganda, Cambodia, Ethiopia, Ghana, Mozambique, Pakistan, and Nepal (IIED, 2013b; IIED, 2013c; IIED, 2013d; IIED, 2013e; IIED, 2014; IIED, 2015a; IIED, 2015b; IIED, 2015C). Experiences from these implementations underscore the significance of translating theoretical adaptation concepts into practical measurements and keeping track of the institutional and procedural changes in local, regional and national administrations. As noted earlier, it also incorporates the latest research insights in the field of systems innovation and transformative innovation policy for climate adaptation and resilience (c.f. Harding & Nauwelaers, 2023, Alvial Palavicino, et. al. 2023; Kattel, 2023).

The critical measurement areas provide a structured framework for local and regional decision makers, facilitating the clear identification and monitoring of necessary changes in, planning, budgetary allocations, and evaluative processes to address challenges and risks posed by climate change. This approach empowers decision-makers to proactively enhance their overall capacities and resilience in the face of evolving climate-induced shocks and stresses.

### 3 What does the RMC include? Structure of the self-assessment tool

The RMC is operationalised through a self-assessment questionnaire structured around seven critical measurement areas, informed by the four distinct resilience capacities (anticipatory, absorptive, adaptive and transformative). These measurement areas serve as an organizational framework for various actions and processes essential for climate change adaptation planning at regional and local levels. Furthermore, the critical measurement areas are broken down into indicators and questions, designed to be completed by regions and communities. In responding to each question or statement, regions use a 5-point Likert scale with options ranging from 'strongly agree', 'agree', 'neutral', 'disagree', 'strongly disagree' to 'do not know/NA' (Table 2). This allows regions to express their preferences on the agreement scale, considering their local context and current situation.

## 4 The primary purpose of the self-assessment tool

The self-assessment tool is a practical aid to empower regions and communities in enhancing the efficiency of their adaptation policy formulation processes. It helps regions and communities identify priority areas for capacity building, providing a tangible means for them to navigate the complexities of climate change resilience.

Moreover, the tool spearheads a structured approach to resilience monitoring, transcending the limitations of conventional methods. By enhancing the overall monitoring of resilience levels, it provides guidance to identify critical intervention points throughout the adaptation policy lifecycle. In a shift away from traditional approaches, the self-assessment tool enables transformative adaptation. Beyond the conventional focus on "repair and maintenance" in DRR, and single sector adaptation plans, the self-assessment tool fosters a deeper comprehension of transformative adaptation, promoting innovative approaches and strategies for climate resilience.

## 5 Benefits and use of the self-assessment tool

This self-assessment tool can support regions and communities to:

1. **Measure baseline resilience capacity:** Gain a comprehensive understanding of your current resilience levels, establishing a baseline for future improvement.
2. **Identify resilience gaps:** Pinpoint gaps in resilience capacities across seven critical measurement areas, providing a roadmap for targeted enhancements.
3. **Measure and identify key organisational capabilities:** determine the existence of key organizational routines, capabilities, resources, and competences to adequately design and conduct a process of (public policy) innovation and change.
4. **Enhance awareness:** Improve awareness and understanding of adaptation planning and resilience challenges, fostering a more informed and proactive community.
5. **Facilitate stakeholder dialogue:** Initiate meaningful dialogue and the development of a shared vision among diverse stakeholders, paving the way for collaborative efforts.
6. **Prioritise investments:** Enable the discussion of priorities for investment and action based on a shared understanding of the current situation, ensuring resources are strategically allocated.
7. **Prepare the ground for innovation agendas:** Translate insights into tangible portfolios of interventions and implementable innovation projects (part of an innovation agenda), ensuring a tangible, measurable impact on transformative regional resilience over time.
8. **Measure and monitor progress:** Provide regional authorities with measurable indicators against which they can assess their progress, creating a continuous feedback loop for improvement.

The use of the RMC as a self-assessment instrument can be done in two distinctive (and complementary) models of operation, as indicated in the figure below:



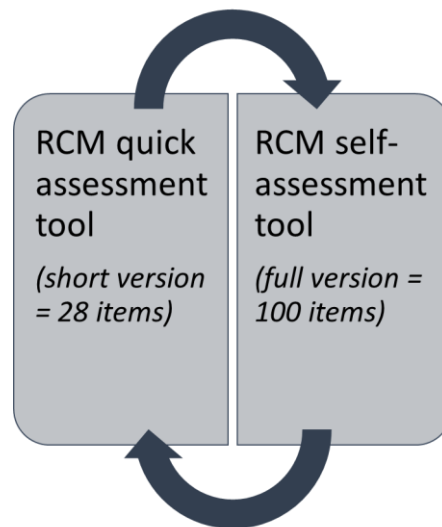


Figure 4 Two version of the RMC tool: quick scan and full version.

Firstly, as shown in annex 2, a short version of the RMC of 28 items can be used as a monitoring and evaluation tool to conduct targeted baseline assessments as a quick scan instrument, (corresponding to each of the four resilience ‘capacities’ across the seven organisational capabilities of respondents). Secondly, it can also be used to perform full assessments and to monitor the growth in resilience capacities of respondents using 100 items across the different measurement areas (see section 9).<sup>4</sup> The results of both assessments can be used as part of the inputs of the monitoring and learning framework to assess the gradual or radical transformation of a region to a higher capacity to adapt to climate change (e.g. by increasing its maturity to implement processes of innovation and change e.g. climate adaptation planning, portfolio management and investment planning).

## 6 Who should use the self-assessment tool?

The self-assessment tool is intended for a specific audience based on its alignment with the EU Adaptation Strategy. According to the strategy, the local level is the bedrock of adaptation, emphasizing the need to enhance local resilience. Therefore, the primary users of this self-assessment tool are regional and local authorities involved in adaptation planning. The tool caters to their specific needs and aims to facilitate the upscaling of local and regional adaptation efforts while ensuring coordinated policies across various administrative levels, a critical dimension for successful climate change adaptation.

Moreover, the tool extends its utility to local communities, offering them insights into the challenges and opportunities associated with an efficient and systematic adaptation planning process. Additionally, sector-specific stakeholders, such as those involved in Sector Adaptation Plans (SAPs), can leverage the tool to explicitly integrate adaptation actions into the specific policies and plans of their respective sectors.

<sup>4</sup> In Pathways2Resilience, the quick scan version of the RMC is used as a tool aiding the review process of the first and second call for applicants of P2R. The RMC is used as a monitoring and evaluation tool to assess the ‘adaptive capacity’ of respondents’ organisations (see [https://www.pathways2resilience.eu/wp-content/uploads/2023/11/P2R\\_WP3\\_FSTP\\_Call-1.pdf](https://www.pathways2resilience.eu/wp-content/uploads/2023/11/P2R_WP3_FSTP_Call-1.pdf)) In contrast, the full version of the RMC is used as part of the onboarding of the sub-grantee regions (cascade funding) and as part of the monitoring and learning services of the P2R programme.

It's important to note that the self-assessment tool is a dynamic work-in-progress. To enhance its effectiveness, active engagement and contribution from both researchers and practitioners in the field of climate change adaptation are encouraged. This collaborative approach ensures continuous refinement and improvement of the tool's functionalities, making it a valuable resource for a diverse range of users involved in climate change adaptation initiatives.

## 7 How does the evaluation rubrics work?

The RMC produces two types of scores: an aggregated score for each critical measurement area, and a whole top line aggregated score relating to the overall capacity of regions. The two scores are developed through a two-tier scoring system based on the answers of the RMC self-assessment questionnaire.

The RMC self-assessment is designed as a monitoring and evaluation tool to assess the maturity of regions and communities on their existing resilience capacities. The questionnaire uses five-point Likert-type scale questions with answers ranging from 'Strongly Disagree' to 'Strongly Agree' (and a NA/Do not know answer). Each answer is associated with a score from 0 to 1 as per table 2 below.

Answer	Score
Strongly disagree	0
Disagree	.25
Neither agree nor disagree	.5
Agree	.75
Strongly agree	1
N/A / Do not know	0

Table 2: Scores associated with Likert type responses of the self-assessment questionnaire

For the specific case of the RMC, the use of Likert-type scales offers certain advantages to obtain high quality data, high response rates, and permitting comparability across respondents (which are based at different territorial and organisational levels, namely countries, regions, and cities).<sup>5</sup>

Subsequently scores for each critical measurement area and the overall resilience capacity score are calculated as the average scores associated with the self-assessment answers. Finally, in order to have a scale from 0 to 10, these numbers are multiplied by 10. Thus, each measurement area and the overall resilience capacity score will result in a continuous number on a scale from

<sup>5</sup> The use of Likert scales (5 and 7 points) in self-assessment instruments is often recommended when aiming at understanding trends, attitudes, opinions, or behaviours based on qualitative linear measures (e.g. from 'very bad' to 'very good'). In terms of methodological design of the RMC, the use of Likert-scales enables respondents to a full pairwise comparison and a careful examination of the outcome before going to the next question. This ensures a much better evaluation of each of the items in a given measurement area (see Section 9). This type of scaled measurement is well-established in quantitative studies in the area of green innovation studies, behavioural, social and medical research due to the likeliness to produce high-quality data (c.f. Diefenbach, et al 1993, Finstad 2010; Montalvo 2002, Diaz Lopez, 2009). Nonetheless, it is increasingly being used as part of the research methods in climate change studies, for instance in climate risk reduction and management (c.f. Pescaroli, et al 2020), urban resilience (c.f. Alabi & Jelili, 2023), or behavioural change responses to climate policies (e.g. Tobler et al 2012).

0 to 10. This results in a more “normalised” scoring, with the intention to reduce bias in the interpretation of results of the self-assessment process.

## 8 What does the scoring say?

Scoring of the assessment tool can be aggregated in different ways and presented visually in multiple forms. For example, regions can easily aggregate their score for each critical measurement area, at the same time, they can obtain a score for each capacity since all indicators are mapped against them. Finally, they can obtain an overall resilience capacity score which can be plotted against the resilience maturity curve, to understand overall changes in capacities over time.

In addition, the RMC scoring can be used in combination with a climate risk score, which can be accessed on the [webpage](#) of the European Commission Disaster Risk Management Knowledge Centre (DRMKC)- Risk Data Hub. DRMKC provides a very useful dashboard which illustrates vulnerability to disasters in different regions and communities of Europe. The DRMKC vulnerability index is also provided in a scale from 0 to 10 and therefore it can be easily cross referenced with the RMC final score.

By cross-referencing the two scores regions can gain an understanding of their level of capacities in relation to the risk they face. By plotting the risk score on the Y axis, and the capacity score on the X axis, we obtain a two-by-two matrix with four quadrants: high risk and low capacity on the upper left; low risk and low capacity on the lower left; high capacity and high risk on the upper right; and high capacity and low risk on the lower right<sup>6</sup>.

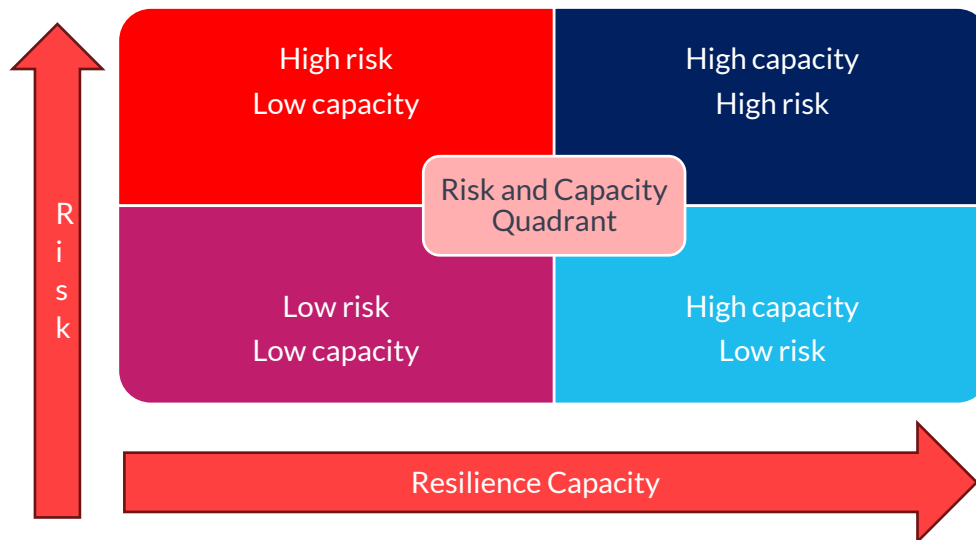


Figure 5: Matrix Risk vs Resilience Capacity Source: Adapted from Chen, C & Hellmann, J et al (2015)

- Upper left quadrant refers to regions with high levels of climate risks and low capacities to adapt. These regions require urgent adaptation action, alongside a steady improvement of their capacities.

<sup>6</sup> The two-by-two matrix has been adapted from the University of Notre Dame Global Adaptation Initiative. For more details, see- <https://gain.nd.edu/>

- Lower left quadrant refers to regions with low levels of risk and low capacities to adapt. Though these regions do not face high levels of risk, however, their capacities to build resilience are also limited.
- Upper right quadrant refers to regions with high levels of capacity and high levels of risk. While these regions are facing high risk from climate impact, they are also well-positioned to build overall resilience.
- Lower right quadrant relate to regions with high level of capacities and low levels of risk. These regions are low at risk of climate impact, but they still need to adapt and are in a good position to do so.

## 9 Alignment with P2R’s Regional Resilience Journey

Pathways2Resilience introduces an innovative framework namely the Regional Resilience Journey (RRJ) (Koetz, Arbau, et. al. 2023), designed for regions and communities aspiring to plan for and implement a just climate transition through a transformational adaptation approach. The RRJ offers step-by-step guidance, a suite of activities, tools, and milestones enabling regions at different maturity levels to engage in a comprehensive resilience-building process. In practice, this translates into a highly adaptable approach, accommodating a spectrum of activities, ranging from the initiation of a climate resilience plan and portfolio of innovation actions to the enhancement of existing regional adaptation plans based on an application of a systematic approach, incorporating just transition principles, and utilization of transformative innovation. An initial version of this framework is presented below.<sup>7</sup>

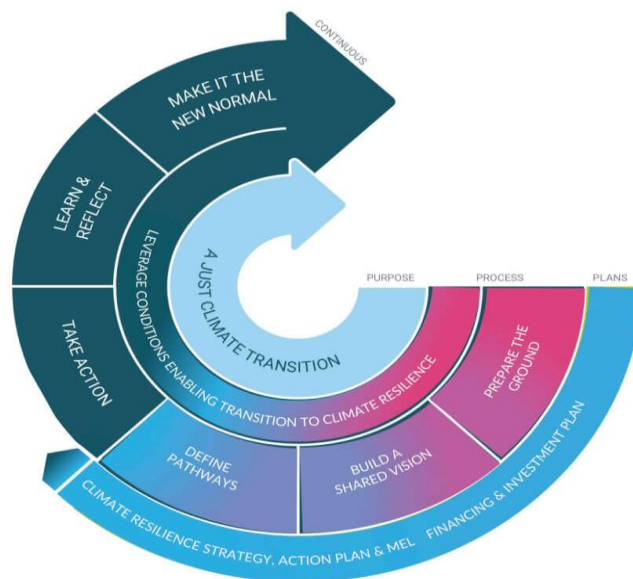


Figure 6: Regional Resilience Journey. Source: Koetz, Arbau, et. al. (2023)

Within this RRJ framework, the RMC serves to evaluate the capabilities of a regional organisation, particularly in initiating a process of innovation and change (and in particular of public policy innovation). As a first step, the RMC can be used to assess the existing capabilities of a regional authority before embarking on the transformational adaptation approach. This collected information can be utilised as input during the "establish a baseline" step of the RRJ to

<sup>7</sup> More details can be accessed on the P2R website <https://www.pathways2resilience.eu/regional-resilience-journey-map/>

"Prepare the Ground" for their effective participation in the P2R programme. Next, RMC assessment integrates into the "assess risks and vulnerabilities" step of the RRJ, evaluating resources, capabilities, competencies and risks at the regional level. Lastly, RMC assesses the resilience maturity of the region across several different enabling conditions, shedding light on required capabilities and skills, and other critical gaps in the operational environment. These gaps span from finance and resources, governance mechanisms, to scientific data requirements, contributing to a comprehensive understanding of the region's readiness for transformative climate change adaptation.

## Critical Measurement Area 1: Pursue adaptive planning for climate resilience.

Planning at regional levels in times of climate uncertainty requires an adaptive management process that takes into consideration:

1. Integrating climate risks and uncertainties in regional planning: Regional planning takes into consideration the range of climate risks and uncertainties facing the region. This includes identifying potential hazards, vulnerabilities, and the exposure of communities and assets to these risks. Furthermore, risks and uncertain conditions need to be incorporated into the regional plans in a way that thresholds (within the range) are identified, and potential adaptation options are considered.
2. Addressing maladaptation risks: These need to be carefully considered at an early stage in planning so adaptation strategies can be redesigned where risks are significant. More specifically, this calls for regions to anticipate the future consequences of adaptation options, preferably in partnership with all relevant stakeholders and outside of their individual sector-specific silos.
3. Anticipatory plans and DRR related preparedness: In order to mitigate the impact of climate-related disasters, regions need to conduct risk assessments, develop early warning systems, and prepare in advance suitable response plans to handle the needs of survivors and affected communities. Response plans should be reviewed in light of the protective infrastructure (levees, flood barriers, sea walls, shelters, storm drains, green spaces), and related critical infrastructure services (water and sanitation, transportation, health and food systems, etc.) should be assessed. It is crucial that anticipatory risk assessment and related response plans draw from the learnings of previous experience in handling similar climate events. Such retrospective and post-disaster assessments should be actively integrated into current and future planning. This will ensure that lessons learned from previous events inform better future rehabilitation, recovery and reconstruction activities.
4. Promoting systems innovation and transformative adaptation: Understanding and transforming complex systems requires fostering a culture of active learning and experimentation at both individual, organizational and institutional levels. Regions must facilitate the creation of spaces, allocate resources, and establish networks for the development and testing of novel solutions, innovative practices, technologies, and systems. Innovation, in this context, encompasses a wide array of (public) interventions, including new policies and regulations, innovative climate financing options, novel business models, and improved monitoring and learning frameworks, among others.

Transformative adaptation solutions instigate significant changes in the structures and functions of the system, emphasizing the phasing out of unsustainable dependencies and maladaptation contributing to the current predicament.

Note: Please indicate your level of agreement with the statement provided in the assessment area, taking into account the specifics of your region or community. Use a 5-point Likert scale range and scores as outlined in Table 2 to record your response.

Ref. no	Assessment area	Description	Related Capacity	Assessment Source
1	Planning has resulted in a formal climate safeguards system that integrates climate risk screening, climate risk assessment (where required), climate risk reduction measures (identification, prioritization), evaluation and learning. (e.g. in the form of Climate Action Plans, Sectoral Plans)	Adaptation planning should integrate a mechanism or a safeguard system that ensures that climate screening is followed by a climate risk assessment, followed by identification, prioritization of risk reduction measures across all climate-sensitive sectors.	Anticipatory capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
2	Regional plans take into account the range of uncertainties about how climate will change over time (e.g., in terms of maximum and minimum extremes in terms of temperature, precipitation, sea-level rise, water availability etc).	Planning cannot assume that future climate conditions will resemble those of today. Regional plans should incorporate a range of potential future conditions. These conditions may be defined based on climate modelling at the appropriate scale or based on plausible ranges inferred from global or regional projections in combination with expert judgment.	Transformative capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
3	Regional plans take into account scenario planning exercises based on the range of	Once the range of potential future conditions has been identified, appropriate steps need to be taken to	Adaptive capacity	IIED (2013a). TAMD Climate Risk

	uncertainties identified previously.	plan for the varied possibilities. Scenario planning includes the identification of thresholds (within the range) beyond which the viability of existing systems or practices is in doubt and the identification of sets of potential adaptation strategies and measures, e.g. in collaboration with key stakeholders.		Management Indicators. Methodology Note.
4	Region has prepared a response plan for relevant rapid onset hazards related to the climate, such as fire, heatwave, flooding, extreme rainfall, and cyclone/storm.	Response plans should be based on climate hazards most relevant to the regions. Response plan to consider changes in the frequency, magnitude or impact of the hazard.	Anticipatory capacity	A similar question on exposure to hazards is frequently reported from most national adaptation plans. However, less is known about adaptive capacities at the sub-regional level.
5	Region has prepared a response plan for relevant slow onset events such as sea level rise, temperature increase, ocean acidification, land degradation and deforestation, loss of bio-diversity, desertification, salinization and glacial retreat.	Regions should develop responses based on climate hazards most relevant to them. Response plan to consider changes in the frequency, magnitude or impact of the hazard.	Anticipatory capacity	A similar question on exposure to hazards is frequently reported in most national adaptation plans. However, less is known about adaptive capacities at the sub-

				regional level.
6	Region has clear guidelines and criteria in place, including an established minimum amount of time that a response can be maintained, or a criterion to end a response.	Response plans at the regional level should be guided by an understanding and identification of different timescales over which impact will occur.	Anticipatory capacity	UNDRR (2017), Disaster Resilience Scorecard for Cities.
7	Region has the appropriate infrastructure (shelters, sirens, levees, emergency alert systems, etc.) in place for rapid onset hazards related to climate.	Regions should be sufficiently prepared to handle the needs of survivors and affected communities in case of climate disasters. Contingency plans to include regular review of protective infrastructure (levees, flood barriers, sea walls, shelters, storm drains, green spaces ) and related critical infrastructure services ( water and sanitation, transportation, health and food systems etc.).	Absorptive capacity	UNDRR (2017), Disaster Resilience Scorecard for Cities.
8	Responses to climate emergencies can be deployed quickly in the region.	Regions should be able to effectively, and in a timely manner execute a response plan.	Adaptive capacity	UNDRR (2017), Disaster Resilience Scorecard for Cities.
9	Regional climate change adaptation strategy supports a move from localized experiments to mainstreaming approaches.	Adaptation strategies should move beyond localized solutions in specific sectors towards more systemic solutions that are mainstreamed across sectors and immediate zones of influence.	Adaptive Capacity.	McKenzie et al. (2021), Greater than the sum of its part. How can a whole-of-government approach to climate change improve Canada's climate



				performance, IISD Publication.
10	Consideration of climate change is mainstreamed into the region's overall Medium Term Expenditure Framework.	Screening budgets for risks of climate change and ensuring adaptation plans can help boost the amount of public finance.	Adaptive capacity	New indicator
11	Region has policies assessing 'Grey options' (physical infrastructure - new or existing upgrade. E.g. Building codes, rehabilitation measures etc.)	Adaptation options can be wide-ranging and may include actions such as the creation of new or improvement of existing physical infrastructure.	Adaptive capacity	The adaptation options are categorized according to the Key Type of Measures (KTM) developed by Leitner et al. (2021).
12	Region has policies assessing 'Technological options' ( e.g. early warning systems, hazard/ risk mapping systems, critical service/ process applications etc.).	Adaptation options can be wide-ranging and may include technological options to help regions better prepare and manage climate risks and disasters.	Adaptive capacity	The adaptation options are categorized according to the Key Type of Measures (KTM) developed by Leitner et al. (2021).
13	Region has policies assessing 'Green options' (green infrastructure – new or existing upgrade. e.g. Natural, semi-natural land use management)	Adaptation options can be wide-ranging and may include actions implemented on the ground such as the creation of new or improvement of existing green infrastructure.	Adaptive capacity	The adaptation options are categorized according to the Key Type of Measures (KTM) developed by Leitner et al. (2021).
14	Region has policies assessing 'Blue options' (blue infrastructure- new or existing. e.g.	Adaptation options can be wide-ranging and may include actions pertaining	Adaptive capacity	The adaptation options are categorized according to

	Marine and water infrastructure)	to water-related infrastructure.		the Key Type of Measures (KTM) developed by Leitner et al. (2021).
15	Regional adaptation strategy includes adaptation options covering behavioral issues at various governance, sectoral or cross-sectoral levels.	Adaptation options can be wide-ranging and may include actions pertaining to behavioral change through policies, economic incentives, information sharing of best practices, training and knowledge transfer.	Adaptive capacity	The adaptation options are categorized according to the Key Type of Measures (KTM) developed by Leitner et al. (2021).
16	Planning explicitly addresses risks associated with unintended negative consequences of climate responses (i.e., maladaptation) and potential trade-offs.	Maladaptation occurs when adaptation solutions end up increasing the vulnerability and / or exposure to climate change instead of reducing it. It can be caused due to a variety of factors such as hasty decision-making; insufficient use of knowledge and data; and individual sector-specific planning that fails to incorporate its impact on other sectors and the future.	Transformative Capacity	Adapted from REGILIENCE (Regional Pathways to Climate Resilience), Maladaptation self-assessment check list, 2023.
17	Region has dealt with climate events in the past that are similar to the risks projected in the future.	Risk assessment and related response plans draw from the learnings of previous experience in handling similar climate events. Such retrospective and post-disaster assessments should be actively integrated into future planning. This will ensure that lessons learned from rehabilitation, recovery and reconstruction can be	Adaptive capacity	UNDRR (2017), Disaster Resilience Scorecard for Cities

		planned as much as possible in advance.		
18	Regional climate change adaptation strategy is regularly renewed reflecting the climate-related changes facing your region.	A proactive approach should be adopted to ensure that the climate change adaptation strategy remains responsive and effective in addressing region's unique climate situation. Regular updates also enable the incorporation of latest technological advancements, scientific insights, and community feedback, thereby enhancing the strategy relevance over time.	Adaptive Capacity	New indicator
19	Regional climate change adaptation strategy is regularly renewed to forecast different scenarios emerging out of not only climate uncertainties but other geo-political and global health-related uncertainties (e.g.-shocks due to wars, pandemics, and economic recessions).	Adaptation strategies can be severely impacted by external shocks and stresses to the system. These shocks can be in the form of recessions, pandemics, wars and conflicts, that may divert attention and resources from adaptation goals. In the face of the “new normal” certain options may become less relevant for regions. Alternatively, it may be the case that outside pressure may “tip the scale” and accelerate a favorable transition. Regions should conduct scenario planning exercises keeping in mind these non-climactic eventualities, their diverse potential outcomes, and the necessary skills and competencies needed to absorb the shocks while remaining ready for acceleration (EEA, 2022).	Transformative capacity	EEA (2022), Risks and resilience of EU’s sustainability transitions - exploring regional dimensions, Background Paper, Prague.
20	Regional climate change adaptation strategy explicitly	Regional authorities to consider assessing the impact of climate change	Transformative capacity	New indicator

	addresses the link between broader societal transformational issues, for instance, pertaining to “green transition” and climate change mitigation.	against the backdrop of non-climate factors and events like biodiversity loss, overall unsustainable consumption of natural resources, land and water degradation, rapid urbanization, demographic shifts, social and economic inequities etc.		
21	Regional adaptation plans take into consideration issues around transboundary climate risks.	Regional adaptation plans include provisions to conduct scoping studies and assessments to understand the complexity of the impacts of transboundary climate risks (where relevant). Attention is paid to understanding the transboundary effects of climate change adaptation - both positive and negative effect, where action of country impacts the other.	Adaptive capacity	Terton et al. (2023). Transboundary Climate Risks and the National Adaptation Planning Process. IISD. Available at: <a href="https://napglobalnetwork.org/resource/transboundary-climate-risks-and-nap-process/">https://napglobalnetwork.org/resource/transboundary-climate-risks-and-nap-process/</a>
22	Regional climate change adaptation strategy makes use of transdisciplinary for research at the nexus of climate change and innovation.	Innovative solutions for climate change require cross-fertilization between scientific disciplines. While traditionally climate change solutions have been sought through a single disciplinary approach (eg. Low-carbon technologies), more integrated and interdisciplinary research is needed to better understand and address the range of factors impeding the acceleration	Transformative capacity	Matos et al. (2022), Innovation and climate change: a review and introduction to the special issue Technovation, 117 (2022)

		of sustainability transitions.		
23	Regional climate change adaptation strategy allows for a “room for experimentation” approach.	Transformative adaptation requires that there is space for experimentation and learning. These experimental approaches can vary per region and may include instruments like regulatory sandboxes, innovative public procurement models or other niches for experimentation.	Transformative capacity	Harding & Nauwelaers (2023). Transformative Innovation for Climate Change Adaptation: A mapping-based framework, Brussels.
24	Regional climate change adaptation strategy makes use of “systemic instruments” such as innovation platforms, collaborative flagship initiatives, living labs etc.	Transformative adaptation planning requires creating spaces, networks and resources where innovation can be tested and developed.	Transformative capacity	Harding & Nauwelaers (2023). Transformative Innovation for Climate Change Adaptation: A mapping-based framework, Brussels.
25	Regional climate change adaptation strategy includes multiple policy instruments of a diverse nature (e.g. funding lines, incentives, soft support, and regulations).	Transformative adaptation requires moving away from fragmented interventions to policy portfolios - a combination of diverse interventions, designed to operate in an integrated and coherent manner.	Transformative capacity	Harding & Nauwelaers (2023). Transformative Innovation for Climate Change Adaptation: A mapping-based framework, Brussels.
26	Regional climate change adaptation strategy incorporates a portfolio of interventions acting in synergy, maximizing co-benefits and	Transformative adaptation requires moving away from fragmented interventions to policy portfolios- a combination of diverse interventions, designed to operate in an integrated and coherent manner to	Transformative capacity	Harding & Nauwelaers (2023). Transformative Innovation for Climate Change Adaptation: A mapping-

	avoiding perverse adaptation outputs.	maximize the benefits and avoid perverse effects		based framework, Brussels.
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Table 3: Pursue adaptive planning for climate resilience and related indicators

## Critical Measurement Area 2: Ensure effective coordination response

Climate change is a cross-sectoral issue, and efforts to tackle it will need to be coordinated across sectors if they are to be effective at regional and national scales. This is particularly necessary in order to ensure that adaptation in one sector is not undermined by, and/or does not result in, maladaptation in another sector. At the same time, for coordination efforts to be truly empowering, they depend on higher-level political support and endorsement. Cross-sector coordination mechanisms need to be accompanied by institutionalization of multi-level governance systems with clear demarcation of roles/powers and corresponding accountability. The guiding principle here is the “whole of government” approach calling for greater integration in adaptation planning and concerted coordination efforts for implementation.

At the regional level, what makes “whole of government” initiatives possible is:

1. The presence of a dedicated body, strategically positioned either centrally within an executive office or at a departmental level, wielding substantial authority and a clear mandate to enforce requirements across all sectors.
2. A seamless flow of regular communication and correspondence between this coordinating body and the pertinent ministries and agencies spanning the spectrum of relevant sectors.
3. A reliable and sustainable funding source to establish and sustain the coordinating body's operations.
4. Strategic orchestration of policy planning and execution that transcends the different tiers of government.
5. A multi-level governance coordination model firmly anchored in transparent responsibility and accountability mechanisms.

Note: Please indicate your level of agreement with the statement provided in the assessment area, taking into account the specifics of your region or community. Use a 5-point Likert scale range and scores as outlined in Table 2 to record your response.

Ref no	Assessment area	Description	Related Capacity	Assessment Source
1	Region has a designated authority/institution responsible for coordinating plans and actions to address climate change adaptation.	Regions should have an authoritative body with a clear mandate.	Adaptive Capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.

2	Coordinating institution has a high convening authority/hierarchical importance across other cross-sectoral departments or ministries.	Regions should have an authoritative body that can impose requirements on other bodies.	Adaptive Capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
3	Region has a dedicated institutional mechanism for coordination and implementation of climate change adaptation strategy across sectors.	An effective mechanism needs to be in place that delivers coordinated action.	Adaptive Capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
4	Region has dedicated funding or certainty of long-term funding for sustaining this institutional coordination mechanism.	Effective mechanism that delivers coordinated action should be accompanied by financial support including formal long-term funding commitment.	Adaptive Capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
5	There exists regular contact between the coordinating body and relevant ministries and/or relevant agencies (e.g. in key climate-sensitive sectors).	There should be well-functioning formal mechanisms to ensure regular contact between coordinating institution and relevant ministries at national level, and/or agencies at the regional level	Adaptive Capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
6	Coordinating body adequately addresses the “silosation” in climate change adaptation planning.	Silosation in policy planning occurs when there is little or no coordination between the different policy fields across political and administrative silos. It may also occur due to the lack of consistency in policy priorities across the different levels of	Transformative Capacity	Larrue (2021), The design and implementation of mission-oriented innovation policies: A new systemic policy approach to address societal challenges", OECD Science, Technology and Industry Policy

		government or across the different sectors of the government.		Papers, No. 100, OECD Publishing, Paris.
7	Coordinating body adequately addresses the “silosation” in climate change adaptation implementation.	Silosation in policy implementation occurs when there is little or no coordination between the different political and administrative silos. In policy implementation, it might lead to duplication of efforts or conflicting policy outcomes.	Transformative Capacity	Larrue (2021), The design and implementation of mission-oriented innovation policies: A new systemic policy approach to address societal challenges", OECD Science, Technology and Industry Policy Papers, No. 100, OECD Publishing, Paris.
8	Coordinating institution has responsibility for coordinating plans and actions across various levels of governance (e.g. local, regional, national, EU).	Coordinating institution is nested within a multi-level governance structure.	Adaptive Capacity	McKenzie and Kuehl (2021), Greater than the sum of its part. How can a whole-of- government approach to climate change improve Canada’s climate performance, IISD Publication
9	There is a dedicated institutional mechanism for effective synergies between territorial governance levels.	An effective mechanism is in place that delivers coordinated action across the multi-level governance structure.	Adaptive Capacity	McKenzie and Kuehl (2021), Greater than the sum of its part. How can a whole-of- government approach to climate change improve Canada’s climate performance, IISD Publication
10	There is regular contact between the coordinating body and authorities at different levels of governance.	There should be well-functioning formal mechanisms to ensure regular contact between	Adaptive Capacity	McKenzie and Kuehl (2021), Greater than the sum of its part. How can a whole-



		coordinating institutions and authorities at different levels of governance.		of- government approach to climate change improve Canada's climate performance, IISD Publication
11	There is strong collaboration between the financial divisions and the coordinating body to develop the Climate Resilience Strategy, Investment Plan and bankable projects.	Appropriate mobilization of investment requires strong collaboration between financial actors and adaptation professionals to ensure public and private investment criteria are met, and processes are adjusted.	Adaptive Capacity	New indicator
12	Coordinating authority operates within an effective multi-level governance structure that appropriately distributes decision-making power across different levels when it comes to climate change adaptation interventions.	Multi-level governance coordination on climate change adaptation comes with clear responsibilities and accountability mechanisms.	Adaptive Capacity	McKenzie, and Kuehl (2021), Greater than the sum of its part. How can a whole-of- government approach to climate change improve Canada's climate performance, IISD Publication
13	Region depends on the coordinating institution for the implementation of climate emergency response mechanism.	Coordinating institution enjoys a wide-ranging mandate. It may engage in issues such as climate emergency response.	Adaptive Capacity	McKenzie, and Kuehl, (2021), Greater than the sum of its part. How can a whole-of- government approach to climate change improve Canada's climate performance, IISD Publication

Table 4: Ensure effective coordination response and related indicators

## Critical Measurement Area 3: Empower through dynamic stakeholder engagement

Continuous involvement of stakeholders in co-creating and co-implementing adaptation strategies is crucial. This increases public support, integrates diverse perspectives, ensures legitimacy, brings knowledge diversity, creates ownership, and fosters transparency and trust. A dynamic stakeholder engagement plan depends on the following:

1. Political support: The extent to which climate change adaptation issues enjoy high priority in the regional political agenda. While political leaders may change with elections, climate change adaptation must remain a steadfast priority.
2. Inclusion measures: Whether and to what extent perspectives of those most impacted by climate change are included in the decision-making.
3. Co-production measures: Levels of engagement in stakeholder engagement and citizen mobilization activities.
4. Wider-stakeholder measures: Even if not traditionally central to regional adaptation planning, actively encouraging the private sector to participate in the climate change adaptation economy can unlock innovative solutions and resources.

Note: Please indicate your level of agreement with the statement provided in the assessment area, taking into account the specifics of your region or community. Use a 5-point Likert scale range and scores as outlined in Table 2 to record your response.

Ref. no	Assessment area	Description	Related Capacity	Assessment Source
1	Climate risks and associated options facing the region are discussed in the regional political debate.	Climate change adaptation is a high priority in regional politics.	Adaptive capacity	New indicator
2	Climate change adaptation planning involves engagement with all relevant stakeholders in climate-sensitive sectors, e.g. citizen groups, civil society organizations, climate experts, industry/sector representatives (public and private), and political leaders.	Extent to which regional authorities have engaged with various stakeholders.	Adaptive capacity	New indicator
3	Regional stakeholder engagement involves citizen groups participation in deciding measures to tackle the effects of climate change in your region.	The extent to which engagement strategy has fostered citizen groups and participatory mechanisms involving the general public.	Adaptive capacity	New indicator

4	Private sector organizations are ready to support/respond to climate risks in areas where the public sector does/ cannot.	Private sector participation in climate change adaptation action is ensured.	Adaptive capacity	New indicator
5	A network of civil society organizations is helping communities cope with the impacts of climate change.	Civil society organizations' participate in managing the impact of climate change.	Adaptive capacity	New indicator
6	Climate change adaptation planning and implementation involves those who will potentially be adversely impacted by climate change.	The extent to which those impacted by climate risks are involved in the adaptation planning and implementation.	Adaptive capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
7	Participation of the most vulnerable groups is sustained throughout the planning and implementation of climate change adaptation measures	The extent to which vulnerable individuals and groups are involved in developing adaptation policies and decision-making.	Adaptive capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
8	Regional climate change adaptation strategy respects, recognizes and enters into robust engagement with diverse cultures and perspectives (Co-production).	The extent to which climate change adaptation strategy focuses on respect, fair consideration, and robust engagement with the different cultures and perspectives. The emphasis here is on co-producing adaptation strategies by deploying bottom-up methodologies, such as involving groups and communities to identify their own needs.	Adaptive capacity	New indicator
9	Regional climate change adaptation strategy includes business-oriented incentives and innovation instruments to promote wider private sector participation/.	The extent to which there are incentives in place to promote business participation.	Transformative capacity	New indicator

Table 5: Empower through dynamic stakeholder engagement and related indicators

## Critical Measurement Area 4: Strengthen institutional capabilities

The inherently complex and uncertain nature of climate risks necessitates the ability of institutions to anticipate, adapt, and respond to varied climate eventualities, while still maintaining functional persistence. Typically, this requires adaptive capacities manifest in conditions enabling institutional processes to be flexible, proactive, and with scope for continuous learning. They are also reflected in the ability of regional institutions to prepare and plan for multiple, climate-related risks. In addition, regions require transformative capacities that go beyond repair and maintenance and refer to the ability of the region to change the fundamental attributes of the system. It is geared towards systemic strategies with an emphasis on phasing out unsustainable practices, behaviors, and path dependencies. The fundamental tenets here are a systemic approach/ systems thinking instead of single issues or sectors.

At an institutional level, underpinning these capacities, are a set of skills and competencies spanning a wide spectrum:

1. Knowledge domain: Covers a comprehensive assessment of the regional authority's knowledge and expertise on climate change adaptation, mainstreaming/integration, climate risks evaluation, including transition and liability risks, as well as vulnerability assessment.
2. Financial domain: It pertains to the regional authority's expertise in accounting for financial costs and mobilizing resources to fund adaptation initiatives.
3. Human resources domain: This reflects the regional authority's ability to meet the diverse training needs of stakeholders.
4. Learning domain: This covers the continuous development of institutional knowledge and adaptive skills to effectively respond to challenges posed by climate change.

Note: Please indicate your level of agreement with the statement provided in the assessment area, taking into account the specifics of your region or community. Use a 5-point Likert scale range and scores as outlined in Table 2 to record your response.

Ref. no	Assessment area	Description	Related Capacity	Assessment Source
1	Integrating climate change into planning is overseen by individuals with in-depth knowledge of integration/mainstreaming processes.	Mainstreaming of climate change is overseen by staff with relevant experience, knowledge or training, and are empowered to integrate climate change into planning.	Anticipatory capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
2	Integrating climate change into planning is overseen by individuals with in-depth knowledge of climate change risk management approaches (e.g. adaptation and mitigation).	Many and/or key staff have formal training in climate change (e.g. science, policy, etc.).	Anticipatory capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.

3	Capacities exist for assessing the costs associated with measures to address climate change adaptation (such as those identified during climate screening/risk assessment).	Measures are routinely costed and costing methodologies are well understood.	Anticipatory capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
4	Region has the capacity to interpret and use climate information (e.g. in scenario planning, risk and vulnerability assessments) emerging from Met department and other international organisations (EUCRA, ESPON data).	Risk frameworks, vulnerability assessments and scenario planning used routinely and excessively in the region.	Anticipatory capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
5	Region has the capacity to assess risks and vulnerabilities, including complex and cascading risks associated with climate change.	Institutional capacities exist to assess complex and cascading risks associated with climate change impact.	Anticipatory capacity	IPCC (2022) Summary for Policymakers
6	Region has the capacity to assess compound risks associated with climate change.	Institutional capacities exist to assess compound risks associated with climate change impact.	Anticipatory capacity	IPCC (2022) Summary for Policymakers
7	Region has the capacity to assess transition risks associated with a transition to a low-carbon economy.	Institutional capacities exist to assess transition risks typically associated with a transition to a low-carbon economy. These risks are wide-ranging and may include policy risks; Legal; Technology; Market; Liability risk; and Reputational. These risks may arise if public authorities fail to mitigate, fail to comply, or fail to disclose, when managing the impact of climate change.	Transformative capacity	Reisinger, et al. (2020) The Concept of Risk in the IPCC Sixth Assessment Report: A Summary of Cross-Working Group Discussions. Intergovernmental Panel on Climate Change, Geneva, Switzerland. pp15.
8	Region has the capacity to assess liability risks associated with response	Institutional capacities exist to assess liability risks which may arise either due to the failure	Transformative capacity	Reisinger et al., (2020) The Concept of

	(or lack thereof) to climate change.	of the regional authorities to respond to climate change or because of a failure to assess the impact of climate change or because of a failure to protect people from the impacts of climate change, especially when a duty of care or other legal obligation exists.		Risk in the IPCC Sixth Assessment Report: A Summary of Cross-Working Group Discussions. Intergovernmental Panel on Climate Change, Geneva, Switzerland. pp15.
9	Regional planning involves individuals with formal training in climate change adaptation.	Key staff in positions of influence have attended accredited courses dealing with climate change adaptation and mainstreaming.	Adaptive capacity	IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
10	Regional authorities and administrators are aware of potential, available, or ongoing climate change responses and adaptation options.	Sufficient regional expertise exists to identify and assess adaptation options.	Adaptive capacity	Climate-ADAPT
11	Region has the capacity to implement and monitor adaptation options.	Sufficient regional expertise exists to implement and monitor adaptation options.	Anticipatory capacity	New indicator
12	Region has the relevant knowledge and skills in regional investment planning and /or bankable adaptation projects.	Successfully mobilising finance requires staff who understand how to plan investment and develop projects in line with Public Expenditure Management and Public investment Management criteria, as well as private sector expectations (e.g. Internal Rates of Return, Net Present Value).	Absorptive capacity	New indicator
13	Region has the capacity to develop climate change adaptation pathways and innovation agendas.	Transformative adaptation requires that regions have capacities to develop climate resilience	Transformative capacity	New indicator

		action plans. This could include innovative agendas and portfolio of interventions. <sup>8</sup>		
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Table 6: Strengthen institutional capacity and related indicators

## Critical Measurement Area 5: Increase financial capabilities

In order to mobilise finance in a region, P2R regions are supported to produce an Adaptation Investment Plan<sup>9</sup>. This process takes high level adaptation priorities and translates them into individual investments that meet public financial management criteria. However, doing this successfully relies on a wide range of enabling conditions, including resources, data, governance, skills and knowledge, as well as wider regulatory and policy reform.

Note: Please indicate your level of agreement with the statement provided in the assessment area, taking into account the specifics of your region or community. Use a 5-point Likert scale range and scores as outlined in Table 2 to record your response.

Ref. no	Assessment area	Description	Related Capacity	Assessment Source
1	A dedicated budget to cover the costs of the necessary climate change adaptation measures identified (and costed) during the risk assessment.	Adequate funding exists to implement all (priority) measures identified in climate risk assessments.	Absorptive capacity	Adapted from IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
2	A dedicated budget to cover the costs of developing an adaptation investment plan.	Adequate funding exist to develop and regional adaptation investment plan.	Anticipatory capacity	New indicator
3	The region has a mechanism in place for capturing the historic costs of extreme weather.	Historic costs can provide a useful baseline of a ‘do nothing’ scenario – helping create the case for change.	Anticipatory capacity	New indicator
4	The region has a green budgeting approach which allows appropriate monitoring and tracking of existing financial flows.	Green Budgeting, or budget tagging, can help a region understand the extent to which existing budgets contribute to adaptation and the	Anticipatory capacity	New indicator

<sup>8</sup> For more details on innovative tools, see - <https://www.pathways2resilience.eu/regional-resilience-journey-map/>

<sup>9</sup> For more details, see - <https://www.pathways2resilience.eu/adaptation-investment-cycle/>

		scope for leveraging further public resources. They can also demonstrate alignment with the EU Taxonomy, helping generate private sector confidence for wider investment.		
5	Funding is available to pilot innovative measures that address climate change adaptation.	Piloting of measures to address climate change is not constrained by lack of funding.	Absorptive capacity	Adapted from IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
6	Funding is available to support the mainstreaming/integration of climate change adaptation plans into regional policies and interventions.	Funding fully supports mainstreaming processes; climate risk assessments are performed for all high-risk initiatives, and are of adequate duration and depth.	Absorptive capacity	Adapted from IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
7	A dedicated budget to support the population affected by extreme events or disasters such as those related to climate change.	Essential here to ensure that there is protected and adequate funding available for local disaster risk reduction, and which may not be diverted to other uses.	Absorptive capacity	UNDRR (2017), Disaster Resilience Scorecard for Cities
8	Financial resources are regularly allocated to ensure an effective response to climate emergencies and climate risks in your region.	Funding allocations are regularly revised and updated in accordance with climate risk scenarios.	Absorptive capacity	UNDRR (2017), Disaster Resilience Scorecard for Cities
9	Access to a larger (e.g. national/regional) pool of resources in case of climate emergency is available.	Additional funding from the national pool can be easily secured at the time	Absorptive capacity	New indicator



		of climate emergency.		
10	Regional authority understands all external sources and instruments of funding and financing and is actively developing business models to facilitate adaptation investments.	Regional authorities understand all routes to secure funding for climate change adaptation and is actively pursuing a range of these.	Anticipatory capacity	New indicator
11	Region has developed an Adaptation Investment Plan which sets out total investment needs, envisioned roles of the public and private sector, and priorities for bankable investments within available fiscal space	Adaptation Investment Plans help ensure that the region has the appropriate ability to meet its financing needs within the designated fiscal space.	Absorptive capacity	New indicator
12	Actions to address climate change adaptation supported by an authoritative financial entity (e.g. at the national level, Ministry of Finance)	Evidence that financial support is forthcoming for required measures, actions and processes; climate change is a priority for financial entity concerned.	Absorptive capacity	Adapted from IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
13	Regulations, programs/policies, or initiatives are in place to encourage the public and private sector to channel resources toward transformative adaptation plans and actions.	Institutional arrangements, including policy and financial de-risking instruments, are in place to boost private sector engagement.	Transformative capacity	Adapted from UNDP (2021). Engaging the private sector in the context of climate change adaptation, Strategy Note.
14	Subsidies and incentives exist for different sectors and segments of business and society to support transformative adaptation plans and actions.	Regional adaptation strategy includes financial instruments to adjust risk-return profiles of climate change adaptation measures to encourage public	Transformative capacity	Adapted from UNDP (2021). Engaging the private sector in the context of climate change adaptation, Strategy Note.

		and private investment.		
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Table 7: Increase financial capabilities and related indicators

## Critical Measurement Area 6: Use and dissemination of climate information (knowledge & data management)

This dimension assesses the utilization and production of climate data to provide context and insights for making decisions related to adaptation. It involves leveraging climate information to assess current and future climate-related risks. These risks encompass shifts in the frequency and intensity of extreme events such as heatwaves, droughts, and heavy rainfall leading to flooding and landslides, among others. Additionally, it involves analyzing longer-term changes and trends in essential climatic factors like temperature, precipitation, humidity, wind, and ocean currents.

Various forms of this climate information hold value for the general public and decision-makers in climate-sensitive sectors. Regional authorities should customize this information to suit the specific needs of relevant stakeholders and ensure broad accessibility.

Note: Please indicate your level of agreement with the statement provided in the assessment area, taking into account the specifics of your region or community. Use a 5-point Likert scale range and scores as outlined in Table 2 to record your response.

Ref. no	Assessment area	Description	Related Capacity	Assessment Source
1	Regional planning includes climate information and real-time observations on climate trends and variability.	Required observational data available/used; data available for all major regions/locations of interest, due to well-resourced met services and observing networks.	Anticipatory capacity	Adapted from IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
2	Climate information (forecasts, projections, information on responses) is readily accessible via information-sharing platforms or networks (e.g. for screening).	Met and climate data readily and freely available through publicly accessible mechanisms.	Anticipatory capacity	Adapted from IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
3	Regional authorities systematically access climate information	Data/information from international/foreign organisations routinely accessed and used due to	Anticipatory capacity	Adapted from IIED (2013a). TAMD Climate Risk Management

	generated by international organizations (e.g. IPCC, EUCRA).	existence of effective access mechanisms.		Indicators. Methodology Note.
4	Relevant climate information reaches key stakeholders (e.g. in climate-sensitive sectors).	Widespread access to climate information in form that is useful to stakeholders, as result of engagement that enables information to be tailored to needs of stakeholders.	Anticipatory capacity	Adapted from IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
5	Regional authority raises awareness of and disseminates information about climate change (e.g. risks, impacts, responses)	Institution(s) given formal mandate for climate change awareness raising, with significant support (financial, technical, etc..) to achieve this.	Adaptive capacity	Adapted from IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
6	Climate change adaptation plans are regularly revised and updated with new information and the latest available climate information.	Mechanisms to ensure that climate change adaptation plans are regularly revised and updated with new information and the latest available climate data are in place.	Adaptive capacity	Adapted from IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.
7	The use of scientific information is integrated with the use of local and indigenous knowledge.	High-level recognition of potential usefulness of Local, Indigenous and Traditional Knowledge (LITK) and active engagement with LITK to add value to scientific knowledge and inform decision-making.	Transformative capacity	Adapted from IIED (2013a). TAMD Climate Risk Management Indicators. Methodology Note.

Table 8: Use and dissemination of climate information and related indicators

## Critical Measurement Area 7: Monitoring, evaluation and learning capabilities

Climate change adaptation is complex and diverse, spanning various sectors, and timeframes. This complexity makes it challenging to develop standardized monitoring frameworks that can capture the nuances of different adaptation efforts. At the same time, attributing observed changes or improvements solely to adaptation actions can be difficult, as multiple factors can influence outcomes, including natural variability and other non-climatic factors. Recognizing

the attribution challenge inherent to climate change adaptation, this dimension advocates for a broader interpretation of Monitoring Evaluation and Learning frameworks. It calls for the identification of multiple purposes for establishing MEL frameworks, recognizing that a more versatile approach is indispensable in the realm of climate change adaptation.

1. Providing new information: Monitoring and evaluation efforts can play a crucial role in enhancing our grasp of evolving climate risks. They can bridge knowledge gaps and illuminate critical challenges and opportunities, thereby laying a robust groundwork for effective adaptation planning.
2. Improving adaptation policy: In a cyclical policy and agenda-setting process, the insights gained from monitoring and evaluation activities can become crucial knowledge for shaping and refining adaptation policies and measures. Understanding what works, under what conditions, and why empowers regions to enhance their adaptation policies.
3. Building accountability, especially towards the most vulnerable: Monitoring and evaluating not only the physical but also the social effects and outcomes of adaptation actions are paramount. This includes assessing their distribution among different population groups. The objective is to ensure that adaptation actions are equitable and supportive of vulnerable communities, without unintentionally exacerbating inequalities.
4. Assessing existing capacity: By employing proxy indicators, MEL frameworks can gauge the region's existing capacity—social, economic, and environmental—to manage the impact of climate change.

Note: Please indicate your level of agreement with the statement provided in the assessment area, taking into account the specifics of your region or community. Use a 5-point Likert scale range and scores as outlined in Table 2 to record your response.

Ref . no	Assessment area	Description	Related Capacity	Assessment Source
1	Systematic procedures for data collection, analysis, and learning about the impact of climate change on the region are in place.	Impact assessment studies are regularly conducted to examine the impact of climate change on the region.	Adaptive capacity	EEA (2020). Monitoring and evaluation of national adaptation policies throughout the policy cycle. EEA Report No 06/2020.
2	An indicator-based system to track the long-term effects of climate change and its impact on social and productive activities is in place (E.g. Drought related issues affecting access to water and agriculture incomes;	Impact assessment studies are backed by specific indicator-based systems that examine the impact of climate change at the social level.	Adaptive capacity	EEA (2020). Monitoring and evaluation of national adaptation policies throughout the policy cycle. EEA Report No 06/2020.

	heatwaves impacting population health).			
3	Regional authorities are tracking potential economic losses due to climate variability and extremes (e.g. through economic losses indices).	Indicators are developed to track the potential and existing losses due to climate variability. Such data provides the necessary evidence base to undertake adaptation action.	Adaptive capacity	EEA (2020). Monitoring and evaluation of national adaptation policies throughout the policy cycle. EEA Report Report  No 06/2020.
4	Beyond a cost-benefit approach, the regional adaptation strategy takes into consideration non-economic benefits such as place attachment, community relationships, livelihoods, and spiritual and cultural significance of locations.	Regional adaptation strategy pays attention to non-economic benefits in the design and execution of adaptation policy measures.	Adaptive capacity	New indicator
5	Key sectoral policies have integrated climate change impact into their respective plans.	Key sectoral policies in the region have identified the climate impact/risk as well as key intervention/policy goals needed to mitigate the impact for their respective sector.	Adaptive capacity	European Commission (2023). Guidelines on adaptation strategies and plans.
6	Regional authorities are tracking climate change adaptation progress and challenges of all key sectors.	Indicators are developed for regular monitoring of adaptation-related actions as already articulated in the sectoral policies. E.g. Agriculture – climate impact/risk is drought–identified effect is loss of income---policy goal is reducing vulnerabilities of farmers–related	Adaptive capacity	European Commission (2023). Guidelines on adaptation strategies and plans.

		<p>indicator could be increase in the number of farmers with insurance for extreme climate events;          Proportion of agriculture businesses using climate forecasts;          Biodiversity-increased surface area for biodiversity;          Transportation - railway lines adapted to withstand higher temperatures, etc.</p>		
7	All key sectors are making progress in terms of climate change adaptation.	Based on the output and outcome indicators, it can be argued that key sectors are achieving their target, and no negative impact (direct or indirect) is resulting from it.	Adaptive capacity	New indicator
8	Regional authorities are tracking climate change adaptation progress and challenges against relevant climate hazards.	Hazard-specific indices have been developed or existing tools are being used by the regional authorities to monitor and track progress on climate change adaptation. E.g. heat action index, sea level projection tool, integrated storm water management tool etc.	Anticipatory capacity	A range of tools are available at the Climate-Adapt website. The tool options are searchable as per the choice of the sector or climate impact. For more details access here- <a href="https://climate-adapt.eea.europa.eu/en/knowledge/adaptation-information/adaptation-options">https://climate-adapt.eea.europa.eu/en/knowledge/adaptation-information/adaptation-options</a>
9	Regional authorities are tracking climate change adaptation progress and challenges in all key	This is an adaptation response indicator suggesting that regional authorities monitor the adaptation action	Adaptive capacity	Lager et al. (2023). Just Resilience for Europe: Towards

	sectors with a focus on the most marginalized.	(process/outcome) for marginalized individuals, groups, and/or places.		measuring justice in climate change adaptation. ETC CA.
10	Regional climate change adaptation strategy includes instruments for creating an evidence base for action, e.g. localized data observatories, and citizen science projects for collecting and recording climate change (and impact) data.	Stakeholder engagement is crucial in adaptation planning. This indicator captures the extent to which innovative steps have been taken to engage the stakeholders in a dynamic policy planning process.	Transformative capacity	Harding et al. (2023). Transformative Innovation for Climate Change Adaptation: A mapping-based framework, Brussels
11	Regional adaptation strategy includes indicators for measuring innovation tracking capacities, especially relating to green and climate technology.	These indicators could be patent statistics, participation of regional innovators in BRIGAD etc.	Adaptive capacity	Climate innovation window- <a href="https://climateinnovationwindow.eu/">https://climateinnovationwindow.eu/</a>
12	Regional adaptation strategy includes indicators for tracking catalytic impact. E.g.- changes beyond the direct area of influence, including shifts or changes in regional policies.	This aims to not only track direct outcomes but also to gauge broader effects on the surrounding region. By considering changes in regional policies, it ensures a comprehensive evaluation of the strategy's impact, taking into account shifts that may occur at a larger scale beyond the initial scope of influence.	Transformative capacity	New indicator
13	Regional adaptation strategy includes indicators for measuring the societal capacity to absorb shocks. E.g.- unemployment	Such indicators gauge the resilience of the community in the face of various challenges, providing insights into the social and economic	Absorptive capacity	This can be accessed from other sources.

	statistics/ regional human poverty development index.	adaptability of the region.		
14	Regional adaptation strategy includes indicators for measuring the economic capacity to absorb shocks. E.g.- Number of households with significant savings which allows for at least a year without significant income; Number of households using financial risk-spreading mechanisms; Number of households modifying livelihoods as a result of changes in climate risks; Number of households with different income streams.	These indicators evaluate the economic capacity to absorb shocks comprehensively.	Absorptive capacity	This can be accessed from other sources.
15	Regional adaptation strategy includes indicators for measuring the environmental capacity to absorb shocks. E.g.- for urban areas, the size of green areas compared to built area, bio-diversity index, water and air quality indices.	These indicators help assess the environmental capacity to absorb shocks.	Absorptive capacity	This can be accessed from other sources.
16	Regional adaptation strategy includes indicators for measuring the infrastructural capacity to absorb shocks. E.g.- number of hospitals/hospital	These indicators help assess the physical and infrastructural capacity to absorb shocks.	Absorptive capacity	This can be accessed from other sources.



	beds, number of fire stations.			
17	Regional adaptation strategy includes indicators for measuring leadership and a new decision-making approach. E.g.- changes in voice and engagement in policy processes/ number and type of stakeholders involved in decision-making.	These indicators help assess leadership and changes in decision making approaches.	Absorptive capacity	New indicator
18	Regional adaptation strategy includes indicators for measuring empowerment (including gender dynamics). E.g.- instances of change and the number of women in the decision-making process.	These indicators help measure empowerment, with a specific focus on gender dynamics.	Absorptive capacity	New indicator
19	Regional climate change adaptation strategy promotes open and accessible policy evaluations.	These indicators assess the extent to which adaptation strategy fosters transparency, inclusivity, and accountability in the decision-making processes related to climate change adaptation.	Absorptive capacity	New indicator
20	Regional authorities actively engage with the insights gained from monitoring and evaluation activities to shape and refine adaptation policies and measures.	In a cyclical policy and agenda-setting process, the insights gained from monitoring and evaluation activities can become crucial knowledge for shaping and refining adaptation policies and measures. Understanding what works, under what conditions, and why empowers regions to	Adaptive capacity	New indicator

		enhance their adaptation policies.		
21	Regional planning involves tracking education and training plans for relevant stakeholders (e.g. Education programs in schools and universities, preparedness drills and training for citizens, public sector staff training and workshops).	Planning involves monitoring the training needs of diverse stakeholders. This may include training programs to update existing knowledge and level of awareness, as well as initiating programs to build awareness and knowledge capacity on climate change adaptation.	Adaptive capacity	Adapted from Smart Mature Resilience (2017). Resilience Maturity Model.

Table 9: Monitoring, evaluation and learning and related indicators

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## Annex 1. Glossary

**Anticipatory capacity:** The ability of systems, institutions and humans to anticipate, prepare, and plan for future climate risks.

**Absorptive capacity (climate change):** The ability of systems, institutions and humans, to stabilise and resist the impact of climate change by responding in ways that enable effective and feasible adaptation solutions.

**Adaptive capacity:** The ability of systems, institutions and humans, to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.

**Co-creation (public policy):** co-creation is a process by which multiple stakeholders (private, public as well as citizens) come together to develop new practices that traditionally would have emerged from bureaucratic, top-down process. For a public sector agency, this means to open the problem-framing and solution development to the stakeholders who are served by this agency.

**Indicator:** These are output, outcome, or process-based indicators depending on how they are utilized. As outcome-based indicators, they assess whether and to what extent the desired results stemming from the intervention's outputs have been attained (Brooks et al., 2013). Thus, outcome indicators gauge the achievement of specific outcomes in the journey towards enhanced resilience. At the same time, these indicators can also be interpreted as process-based indicators that capture the significant processes involved in improving resilience. When utilised as process-based indicators, the focus shifts away from measuring performance and reporting outcomes, instead emphasizing the understanding of how and why specific outcomes were either realized or not (Leagnavar et al., 2015).

**Liability risk:** This refers to lack of response to climate change creates risk of liability for failure to accurately assess risk of climate change to company infrastructure and business lines, failure to assess and plan for climate change impacts before decision-making, and failure to protect people from impacts of climate change when a duty of care or other legal obligation exists (Resisinger et al., 2020).

**Maladaptation:** This refers to actions, or inaction that may lead to increased risk of adverse climate-related outcomes, increased vulnerability to climate change, or diminished welfare, now or in the future (IPCC, 2014).

**Resilience:** The capacity of social, economic and environmental systems to cope with a hazardous event, trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure while also maintaining the capacity for adaptation, learning and transformation.

**Resilience Maturity Curve:** A monitoring and evaluation framework which enables the establishment of regional maturity baselines, the identification of the resilience capacities that need to be strengthened, and the tools to monitor and evaluate progress against them.

**Risk:** The potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems. Risks can arise from potential impacts of climate change as well as human responses to climate change. Relevant adverse consequences include those on lives, livelihoods, health and wellbeing, economic, social and

cultural assets and investments, infrastructure, services (including ecosystem services), ecosystems and species (IPCC, 2022).

*Systems innovation*: is a radical innovation in socio-technical systems which fulfil societal functions, entailing changes in both the components and architecture of systems. It involves: a) fundamentally different knowledge base and technical capabilities that either disrupt existing competencies and technologies or complement them, resulting in new combinations; b) changes in consumer practices and markets; and c) changes in infrastructure, skills and other elements, including policy and culture (OECD, 2015; p. 16).

*Transformative capacity (climate change)*: The ability to change the fundamental attributes of a system in response to climate and its effects.

*Transformative innovation*: refers to innovations (technical, social, public, or a combination) that change the core rules and assumptions about how a system works, triggering a wave of new opportunities for further innovation and radically different ways of solving a problem or addressing a need. Transformative innovations often start at niche level and scale, in processes that might require exnovation (the discontinuation of a technology or a practice) and change in the dominant regime.

*Transboundary climate risks*: Transboundary climate risks are “consequences of climate change that occur remotely from the location of their initial impact, where both impacts, and potentially also responses to those impacts such as adaptation, are transmitted across one or more borders” (Carter et al., 2021, p.2).

## Annex 2. Quick scan version of the resilience maturity curve

Part 1. General information and experience with/relevance of the EU mission on adaptation to climate change.

### 1.1. Socio-demographics of respondents.

Item	#	QUESTION	RESPONSE (open ended or Likert scale)
SD1		<b>Please provide the following information about yourself and the region or community you represent</b>	
SD1.1	1	<ul style="list-style-type: none"> <li>Name of the region/community</li> <li>Name of respondent</li> <li>Role in organisation</li> <li>Department/Area of work</li> </ul>	<i>Open ended for each item</i>
SD1.2	2	EU Member State or Horizon Europe Associated Country in which your region or community is based. (Horizon Europe Associated Countries: Albania, Armenia, Bosnia and Herzegovina, Faroe Islands, Georgia, Iceland, Kosovo, Moldova, Montenegro, North Macedonia, Norway, Serbia, Turkey, and Ukraine.)	<i>Drop down menu with EU + associated countries?</i> <i>This is the list:</i> Albania Armenia Austria Belgium Bosnia and Herzegovina Bulgaria Croatia Cyprus Czechia Denmark Estonia Faroe Islands Finland France Georgia Germany Greece Hungary Iceland Ireland Italy Kosovo Latvia Lithuania Luxembourg Malta Moldova Montenegro Netherlands North Macedonia Norway Poland Portugal Romania Serbia Slovakia Slovenia Spain Sweden Türkiye Ukraine
SD1.3	3	Region or community that you represent (Pathways2Resilience programme will work with regions and communities on the sub-regional level, such as provinces, metropolitan areas, cities, towns and local authorities covering NUTS1, NUTS2 and	<i>Drop-down menu with NUTS codes, for instance those used by Eurostat:</i> <a href="https://ec.europa.eu/eurostat/documents/3859598/15193590/KS-GQ-22-010-EN-N.pdf/82e738dc-fe63-6594-8b2c-1b131ab3f877?t=1666687530717">https://ec.europa.eu/eurostat/documents/3859598/15193590/KS-GQ-22-010-EN-N.pdf/82e738dc-fe63-6594-8b2c-1b131ab3f877?t=1666687530717</a>

		NUTS3 levels and LAU (Local Administrative Unit).					
SD1.4	4	Please indicate the NUTS level of your region, or, if you represent a LAU (Local Administrative Unit). <i>Information on the different NUTS levels can be found here and information on LAU can be found here.</i>	NUTS 1	NUTS 2	NUTS 3	LAU	<i>Other, please elaborate:</i>

## 1.2. Experience with the EU adaptation mission.

AM1	5	<b>Has your region/ community signed the Mission Adaptation Charter?</b>	Yes	No				
AM2	6	<b>How would you best describe your region/ community's local/regional adaptation plan or strategy?</b>	We do not have a plan or strategy in place.	We do not yet have a plan or strategy in place, but we soon plan to elaborate one.	We are currently in the process of developing a plan or strategy.	We already have a plan or strategy in place, but it is in the early stages of implementation.	We already have a plan or strategy in place, and have made good implementation progress	N/A/ Do not know
			1	2	3	4	5	0
AM3	7	<b>In the past three years, how much experience does your region/community have with public sector innovation projects or activities, with direct involvement of the public authority?</b> <i>(Public sector innovation is the use new approaches, from policy design to service delivery) for a high performing, more responsive public sector)</i>	Unexperienced	Slightly experienced	Moderately experienced	Experienced	Very experienced	NA/ Do not know
			1	2	3	4	5	0
AM4	8	<b>In the context of climate adaptation, how much of a priority are the following Key Community Systems (KCS) for your region/community:</b>	Low priority	Relatively low priority	Medium priority	Relatively high priority	High priority	NA/ Do not know
AM4.1		Water management	1	2	3	4	5	0
AM4.2		Ecosystems and nature-based solutions	1	2	3	4	5	0
AM4.3		Climate proofing of critical public infrastructure	1	2	3	4	5	0
AM4.4		Land use and food systems	1	2	3	4	5	0
AM4.5		Health and human wellbeing	1	2	3	4	5	0
AM4.6		Local economic systems	1	2	3	4	5	0
AM4.7		<i>Are these KCSs currently being addressed as priorities? If so, please briefly describe and please specify the areas with progress (water management, ecosystem and nature-based solutions, critical infrastructure, etc). If not, please briefly describe whether you see them as main barriers for actional adaptation that you would like to address?</i>	Open ended					
AM5	9	<b>In the context of climate adaptation, how much of a priority are the following Key Enabling Conditions (KEC) for your region/community:</b>	Low priority	Relatively low priority	Medium priority	Relatively high priority	High priority	NA/ Do not know
AM5.1		Knowledge and data	1	2	3	4	5	0
AM5.2		Governance, engagement, and collaboration	1	2	3	4	5	0

AM5.3	Finances and resources	1	2	3	4	5	0
AM5.4	Capabilities and skills	1	2	3	4	5	0
AM5.5	Behavioural change	1	2	3	4	5	0
AM5.6	Experimentation, strategic learning, and reflective adjustment	1	2	3	4	5	0
AM5.7	<i>Are these KECs currently being addressed as priorities? If so, please briefly describe and specify the areas with progress (knowledge and data; governance, engagement, and collaboration; finances and resources; etc.): If not, please briefly describe whether you see them as main barriers for actional adaptation that you would like to address?</i>	Open ended					

## Part 2. Regional Maturity Capabilities Assessment

Organisational capability dimensions	Resilience Capacity	Item	#	Considering your region/community situation, please specify how strongly you agree with each of the following statements.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	NA/Do not know
Planning	<b>Anticipatory</b>	IC	1	Regional planning includes climate risk screening, climate risk assessment, climate risk reduction measures (identification, prioritization), evaluation and learning, which results in a comprehensive climate plan.	1	2	3	4	5	0
	<b>Adaptive</b>	P2	2	Regional plans take account of new climate data, scenario planning exercises, and the range of uncertainties about how climate will change over time (e.g., in terms of maximum and minimum extremes in terms of temperature, precipitation, sea-level rise, water availability etc.).	1	2	3	4	5	0
	<b>Absorptive</b>	P7	3	Regional planning systematically collects and reviews available information about regional strengths and weaknesses, as well as barriers to building climate resilience and the specific environmental, financial, and social systems that enable the adoption of feasible adaptation solutions.	1	2	3	4	5	0
	<b>Transformative</b>	P21	4	Regional planning or adaptation strategy allows for a “room for experimentation” approach, using systemic policy instruments and portfolio management that consider the key enabling conditions of the EU mission (e.g. experimental approaches may include interventions like regulatory sandboxes, innovation platforms, innovative public procurement models, policy labs, or other niches for experimentation).	1	2	3	4	5	0
Coordination	<b>Adaptive</b>	C1	5	Region has a designated authority/institution responsible for coordinating plans and actions to address climate change adaptation.	1	2	3	4	5	0
	<b>Transformative</b>	C7	6	The coordinating body adequately avoids the creation of silos and ensures cross-departmental/ministerial coordination in climate adaptation planning and implementation.	1	2	3	4	5	0

	<b>Absorptive</b>	C10	7	There is a dedicated institutional mechanism for effective synergies between territorial governance levels.	1	2	3	4	5	0
	<b>Adaptive</b>	C12	8	Coordinating authority operates within an effective multi-level governance structure that appropriately distributes decision-making power across different levels when it comes to climate change adaptation interventions.	1	2	3	4	5	0
Stakeholder	<b>Absorptive</b>	S1	9	The climate risks encountered by regions, along with their associated adaptation strategies, are given importance and actively discussed in regional political debates.	1	2	3	4	5	0
	<b>Adaptive</b>	S2	10	Climate adaptation planning involves engagement with all relevant stakeholders in climate-sensitive sectors, e.g. citizen groups, civil society organizations, climate experts, industry/sector representatives (public and private), and political leaders.	1	2	3	4	5	0
	<b>Transformative</b>	S8	11	Regional climate adaptation processes and activities allow for the engagement of multi-sectoral stakeholder groups (from planning to implementation), including their active participation in co-creating and committing to a joint vision for a climate-resilient future.	1	2	3	4	5	0
	<b>Anticipatory</b>	S3	12	Based on a comprehensive regional stakeholder mapping, the participation of vulnerable groups is sustained throughout the planning and implementation of climate adaptation measures	1	2	3	4	5	0
Institutional	<b>Adaptive</b>	IC1	13	Integrating climate change into planning is overseen by individuals with in-depth knowledge of integration and or mainstreaming processes.	1	2	3	4	5	0
	<b>Absorptive</b>	IC3	14	Region has the capacity to assess the costs and benefits associated with measures for addressing climate change adaptation.	1	2	3	4	5	0
	<b>Anticipatory</b>	IC5	15	Region has the capacity to assess risks and vulnerabilities, including complex, cascading and compound risks associated with climate change.	1	2	3	4	5	0
	<b>Transformative</b>	IC7	16	Region has the capacity to design and implement public policies / interventions with the objective to promote a <i>just transition</i> to a climate-resilient economy.	1	2	3	4	5	0
Financial	<b>Absorptive</b>	F1	17	A dedicated budget exists to implement all (priority) climate change adaptation measures identified (and costed) in risk assessments.	1	2	3	4	5	0
	<b>Anticipatory</b>	F7	18	Regional authority understands all external sources and instruments, of funding and financing, and is actively developing business models to facilitate adaptation investments.	1	2	3	4	5	0
	<b>Absorptive</b>	F8	19	Region has developed an Adaptation Investment Plan, which sets out total investment needs, envisioned roles of the public and private sector, and priorities for bankable investments within the available fiscal space.	1	2	3	4	5	0
	<b>Transformative</b>	F9	20	Regulations, programs/policies, or initiatives are in place to encourage the public and private sector to channel resources toward climate adaptation plans and the implementation of transformative actions.	1	2	3	4	5	0
Climate info	<b>Anticipatory</b>	C11	21	Regional decision-making activities include climate information and real-time observations on climate trends and variability.	1	2	3	4	5	0

	<b>Anticipatory</b>	CI2	22	Climate information (forecasts, projections, information on responses) is readily accessible via information-sharing platforms or networks (e.g. for screening).	1	2	3	4	5	0
	<b>Adaptive</b>	CI6	23	The latest climate information, including new data, is tailored for effective decision-making and it is comprehensible to relevant stakeholders.	1	2	3	4	5	0
	<b>Transformative</b>	CI7	24	All relevant data and knowledge to support a just transition to climate resilience is integrated in support of decision making.	1	2	3	4	5	0
MEL	<b>Anticipatory</b>	M 8	25	Regional authorities are tracking climate adaptation progress and challenges against all relevant climate hazards.	1	2	3	4	5	0
	<b>Adaptive</b>	M 6	26	Regional authorities are tracking climate adaptation progress and challenges of all key sectors and challenges of all key community systems and key enabling conditions.	1	2	3	4	5	0
	<b>Absorptive</b>	M 18	27	Adaptation plans and objectives are periodically reviewed in alignment with the evaluation of existing actions.	1	2	3	4	5	0
	<b>Transformative</b>	M 12	28	Regional adaptation strategy includes indicators for tracking catalytic impact (e.g.- changes beyond the direct area of influence, including shifts or changes in regional policies.)	1	2	3	4	5	0