IDDRI

Global Adaptation Progress Tracker
(GAP-Track)

Methodological report

Protocol to assess coastal adaptation progress (national-level case study approach)

September 2021

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1. General scope of the project

1.1. The need to assess adaptation progress globally

Context

The question: "are we on track to climate adaptation globally?" is critical to address for at least two reasons. First, as we know that some climate impacts are unavoidable —even under limited global warming scenarios—, there is a need to understand what types of policies and actions are indeed reducing risk in different contexts and across scales, and therefore indicate progress. Second, it is fundamental to validate that the "well below +2°C" mitigation target is sustainable for humankind over the 21st century. Tracking progress on adaptation globally can provide the evidence needed to push forward urgent action in adaptation and sustainable development.

Against this backdrop, the major challenge ahead of us is how to track the extent of adaptation decisions/plans/actions implemented by national to local governments and decision-makers, and their effectiveness to reduce climate risks today and minimize future ones. Understanding adaptation progress is a leading issue amongst policy-makers, the scientific community and practitioners. Several efforts have emerged from various organizations offering interesting perspectives, for example the UNFCCC Adaptation Committee, the UNEP Adaptation Gap Report, and the Global Adaptation Mapping Initiative . One main conclusion is that the scientific literature[1] remains limited in providing evidence of risk reduction as a result of adaptation-related measures and policies. The 2020 Adaptation Gap Report concludes[2] that some national-level progress can be acknowledged globally[3]; however, overall progress is estimated not occurring at the required scale when analyzed against climate trends (especially due to a lack of data, robust monitoring and evaluation systems, and socioeconomic and scientific uncertainties about future adaptation trends). On the policy side, the UNFCCC Adaptation Committee is collecting ideas on tracking approaches in order to feed the Global Stocktake in 2023. The UNFCCC arena is however committed to information produced by the Parties to the UNFCCC, which raises political and

[1] Based on our contribution (advisory board and analysis team) to the Global Adaptation Mapping Initiative (https://globaladaptation.github.io/). See Berrang-Ford et al. (2021), A systematic global stocktake of evidence on human adaptation to climate change, *Nature Climate Change.*

[2] Based on our contribution (synthesis chapter) to the UNEP Adaptation Gap Report 2020 (https://www.unep.org/resources/adaptation-gap-report-2020). See Magnan A.K., Dale T.W., 2021. Global progress on adaptation and outlook. *UNEP Adaptation Gap Report 2020*, *United Nations Environment programme*: 79-85.

[3] More plans/policies/frameworks, increasing adaptation finance and number of adaptation-labelled projects, evolving financial modalities, etc.

diplomatic barriers (e.g. financing issue and reluctance to report on national progress), as well as more scientific and technical concerns (indicators used are often not climate risks-specific, few evidence of risk reduction, issues with the weighting and aggregation of indicators/data sets, etc.)[4]. In this context, IDDRI argues that although all the policy and scientific efforts above need to be pursued and intensified, **there is a need for a complementary approach to adaptation progress tracking**.

Theory of change

There is wide agreement that we need to upscale adaptation efforts worldwide. One of the reasons hindering enhanced adaptation efforts —at least compared to the rate of climate change impacts and risks— is that besides practical challenges (e.g., technical, financial, institutional, etc.), we do not have clear and risk-oriented frameworks and goals to refer to. The Global Goal on Adaptation (GGA) in the Paris Agreement sets an important starting point to discuss collective targets, especially in the lead up to the first Global Stocktake (GST). The GST in 2023 will be the first of a series (every five years) to provide a picture of global progress on mitigation and adaptation under the provisions of the Paris Agreement. It will also set an important signal on the gaps and needs for adaptation policy, finance and implementation in future climate negotiations. Therefore, it is critical to continue clarifying adaptation progress under the framing of the GGA and GST to inform effective adaptation trajectories.

In addition to various conceptual complexities attributed to the GGA including a lack of precise goals, there is also a question of comparable evaluation modalities across varying climate change vulnerability and risk contexts. Indeed, adaptation needs vary across local situations, which means upscaling adaptation as a national and a global concern presents some challenges —especially, how to evaluate across scales while accounting for local sensitivities, values and needs. We need to survey opportunities for adaptation frameworks and goals that can be compatible across scales in order to be able to assess whether we are collectively on track or not, while also ensuring that various types of knowledge and information, including values and perceptions, are taken into account. Taking together these points, we argue that the development of a climate adaptation "alphabet" could help guide the definition of more precise adaptation goals —hereafter *Shared Adaptation Goals*. Based on this, we have three basic postulates:

(1) Such an alphabet relies on the **definition of a set of critical questions to define adaptation progress and goals that can be tailored to context specificities**, rather than on a comprehensive set of detailed indicators or standardized reporting mechanisms (e.g. national adaptation communications);

(2) Such a set of questions applies **across scales**, from the international to national and local levels, thereby providing a consistent framing and assessment framework for

[4] Magnan A.K., Chalastani V.I., 2019. Towards a Global Adaptation Progress Tracker: first thoughts. *IDDRI Working Papers*. 01/2019 (https://www.iddri.org/en/publications-and-events/working-paper/towards-global-adaptation-progress-tracker-first-thoughts). And Berrang-Ford L. Et al., 2019. Tracking global climate change adaptation among governments. *Nature Climate Change* 9(6), 440–449 (https://www.nature.com/articles/s41558-019-0490-0).

adaptation. These questions form a generic framework for understanding adaptation progress, which are then supported by more context-specific information in order to also reflect the diversity of national and local circumstances;

(3) On a more practical side and in order to move away from the usual problems faced by on-going assessment exercises in terms of indicator identification and data (un)availability, an **expert judgment approach to evaluate adaptation progress** provides a flexible, relatively fast and robust alternative. Advantages of the expert judgement approach is that it allows to collate several sources of information, including scientific research on the ground, observations and local indigenous and cultural knowledge in addition to standardized reporting, monitoring and evaluation frameworks (e.g. national adaptation communications).

These three postulates lay the foundations for the development of a new framework inspired by previous work at IDDRI and activities carried out by other partners, including the UK Climate Change Committee[5]. The GAP-Track aims to contribute to the adaptation-tracking question at the scientific and policy nexus, by proposing a **complimentary and independent approach** (discussed in the next section) which could lead to designing more precise S*hared Adaptation Goals*. Clarifying targets could help drive ambitious adaptation trajectories within the framing of the Global Stocktake as well as beyond.

1.2. What does to the GAP-Track project propose to do?

The GAP-Track project proposes to develop a complementary approach to assessing global progress on adaptation that consists of an **independent** and primarily **risk-oriented** framework, and uses a **scientific expert judgement approach** (section 3.1). In this way, it proposes to go beyond indicator/data-oriented approaches and put in place a flexible approach that allows to collate different types of information thereby reinforcing national frameworks (NAPs, monitoring and evaluation frameworks), UNFCCC processes (NDC's and Adaptation Communications) and opening opportunities for subnational inputs, local expertise and community voices. We call it the **Global Adaptation Progress Tracker (GAP-Track).** The project explores methodological challenges and opportunities around adaptation tracking by taking stock of the existing scientific literature and activities already underway by various organizations. The GAP-Track aims to overcome limitations of applicability across scales by fine-tuning a question grid and putting in place an expert judgement exercise. The GAP-Track approach aims at answering **six overarching questions** (see Box 1 for an overview and section 3.3 for a detailed description) on defined *Representative Adaptation Challenges* (RAC) also known as *Key Adaptation Challenges* at a given scale of analysis.

[5] UK CCC. Progress in preparing for climate change. Committee on Climate Change. 2019 report available here: https://www.theccc.org.uk/publication/progress-in-preparing-for-climate-change-2019-progress-report-to-parliament/.

Box 1: synthesis of the GAP-Track approach

Inspired by the work developed by the UK Climate Change Committee, the GAP-Track approach consists of identifying Key Risk Areas and related Adaptation Priorities, called **Representative Adaptation Challenges (RAC)** in the GAP-Track context, in order to structure the assessment framework in relation to context-specificities. At a given scale, the assessment framework could be organized around 3-4 RAC reflecting scale-specific circumstances and concerns, and informed by a set of guiding questions that are generic across RACs (e.g. in case the assessment at the national level uses différents RACs from one country to another), as well as across scales (e.g., similar framing for global- and national-level assessments). Six guiding questions have been identified:

1. Does **scientifically-based knowledge on current and future climate risks** exist at the appropriate scale?
2. Are there national to local **plans** in place and are they implemented?
3. Are **adequate actions** taking place at a relevant scale to reduce climate risks?
4. Are there sufficient **institutional, human and financial capacities** to implement adaptation at the required scale?
5. Is progress being made in **actually reducing current and future climate risk** (including reducing hazards and managing long-term vulnerability)?
6. Is a **pathway-like approach** considered?

Each of these guiding questions (section 3.3) is informed by a set of **sub-questions** (section 3.4) that need to reflect the context-specificities and relevant RACs —with respect to the scale of the assessment— in order for the assessment to rely on ground-rooted relevant data and expertise. These sub-questions are addressed through an **expert judgment exercise** that uses a protocol that is common to all RACs, here again to ensure some cross-RAC consistency in terms of outcomes. The results are delivered using a **scorecard approach** for each RAC, and then brought together to reflect more synthetic, cross-RAC results on adaptation progress. This approach lays the foundations for conclusions to be drawn at both a given scale and across scales.

Demonstrative case studies have been developed in 2021 to help to refine this framework and showcase its usefulness to deliver robust scientifically-based and policy-relevant information. A country-level approach was carried out in 2021, with a focus on one important adaptation challenge: coastal adaptation. This pilot phase lays out the foundations for upscaling the GAP-Track approach at a global-level and provide perspectives on opportunities and limitations in terms of lessons learnt (section 2.1).

The GAP-Track project and pilot phase in 2021 has five main goals:

(i) Define a **common framing and language** on how to assess adaptation progress across scales by developing an alternative approach (question grid, open source information and expert judgement) and (ii) lay the foundations for **the identification of concrete *Shared Adaptation Goals*** at the global level. *Shared Adaptation Goals* could help to refine and clarify collective adaptation targets contributing to greater efforts towards the Global Adaptation Goal established under the Paris Agreement. In this way, the GAP-Track aims at **(iii) raising policy attention** on the need to track adaptation globally in a consistent way across countries and scales, and through an independent scientific assessment process.

Furthermore, the GAP-Track aims at (iv) **highlighting new knowledge on adaptation progress towards climate risk reduction**, in order to contribute to answer the question "are we on track to climate adaptation at the global level?", especially in the perspective of the Global Stocktake in 2023.

1.3. General organization and timeline

The work was developed by IDDRI in close relation with AFD and its regional offices. Two **case studies** have been carried out in the 2021 pilot study (Section 4). A **Steering Committee** made up of members from various international scientific, policy and practitioner organizations provided valuable support in positioning of the approach and policy engagement (section 5). The project **timeline** (April to December 2021; Section 6) includes: a launch of the study and exploration of the methodology in April; case study developments from May to September; a final report released in October and launched at the COP26; follow-up discussions in December on post-COP26 feedback and insights including opportunities and next steps to be developed in 2022.

2. The GAP-Track project workplan (2021)

The GAP-Track project consists of 5 workstreams in 2021 that correspond to the main strategic scientific and policy aims —the development of an expert judgement approach, the exploration of a complimentary method to track global adaptation progress and contribution to the policy discussions on framing *Shared Adaptation Goals* (i.e. refining the GGA). These 5 workstreams are: (1) positioning of the GAP-Track approach, (2) development of the GAP-Track framework, (3) conducting demonstrative case(s), (4) upscaling the approach and lessons learnt, and (5) engaging with the policy arena. Each of the workstreams' objectives and outcomes are further described in this section. It should be noted that these aims extend beyond the 2021 pilot phase and set foundations for exploring follow-up opportunities and further applications of the approach.

2.1. Workstream 1 — Positioning of the GAP-Track

What are the barriers to ambitious adaptation action and for tracking global progress? This first workstream defines the context and boundaries of the project by surveying the state of the art on adaptation progress tracking and identifying gaps to fill. Workstream 1 is firstly informed by a series of interviews carried out with policy-makers, scientific research experts and practitioners from organizations worldwide. These interviews helped to determine the main barriers to enhancing adaptation action (e.g. uncertainties, behavioral biases, political will) and a need for increasing knowledge on effectiveness of adaptation options at the local level, fostering closer ties between scientific research and policy instruments and reinforcing global perspectives (especially, multilateral governance measures) on adaptation progress and goals. This scoping phase set the context and opportunities for the GAP-Track approach by informing a theory of change (Section 1.1). Workstream 1 also aims to clarify the positioning of the GAP-Track approach by drawing from pioneering research carried out by other organizations (UNEP, UNFCCC Adaptation Committee) on adaptation progress and tracking issues. In particular, it builds upon the UNFCCC Adaptation Committee technical paper[6] released in April 2021.

Outcomes

- Internal note (A) on the positioning of the GAP-Track approach. See: Anisimov A., Magnan A.K., Vallejo L. (2021). State of the art of adaptation tracking: Positioning of the GAP-Track approach. Position note, IDDRI. Available here: https://drive.google.com/file/d/17HNGMnP3NLRNnY8PO_ZzPgTwP27qqm78/view?usp=sharing.

2.2. Workstream 2 — Development of the assessment framework

[6] Approaches to reviewing overall progress made in achieving the global goal on adaptation. Available here: https://unfccc.int/documents/273844.

This second workstream aims to develop the assessment framework and guidelines for carrying out the expert judgement exercise. Workstream 2 capitalizes on in-house expertise at IDDRI on adaptation, past experience with the expert judgement approach in other contexts[7] and scientific literature. It sets up the various steps of the assessment protocol, which includes: designing six overarching guidance questions and a set of sub-questions that disaggregate these larger scoping questions into targeted information areas. Once sub-questions are set up, a scoring system using a range from 0-4 is assigned a precise definition and criteria. Workstream 2 benefits from inputs and insights coming out of Workstream 3 through conducting demonstrative case studies, and especially collective discussions with the expert groups that will carry out the expert judgement evaluation.

Outcomes

- Consolidated methodological protocol and associated guidelines (see grid in Annex A2)
- The present Methodological report

2.3. Workstream 3 — Demonstrative case studies

This workstream aims to determine the feasibility of a primarily risk-oriented framework using an expert judgement approach and bring evidence on the added-value of the GAP-Track approach, especially concerning applicability across scales. Workstream 3 tests the GAP-Track approach and refines the methodology by carrying out demonstrative case studies. Two case studies are carried out for the pilot phase in 2021, which allow to dive deeper into the GAP-Track approach and advance the assessment protocol (Section 4 for more information). The case study work and expert judgement exercise feed into Workstream 2 (revisiting the assessment protocol via expert group discussions) and inform Workstream 4 on upscaling the approach from the country level to a global perspective. For the latter, a discussion on the first results of the case studies will provide insights on future implementation of the GAP-Track approach for other *Representative Adaptation Challenges* and for designing *Shared Adaptation Goals*.

Outcomes

- Completion of case studies and final GAP-Track report (October 2021)
- Examples of more specific outcomes are provided in Annex A1, based on the work carried by the UK Climate Change Committee in its 2015 report.

2.4. Workstream 4 — Upscaling the approach (lessons learnt)

This workstream aims to explore the added-value of the GAP-Track approach as a complimentary independent assessment framework to other initiatives (for example by the

[7] Especially our contributions to the IPCC Special Report on Ocean and cryosphere (see Oppenheimer et al., 2019, *Sea Level Rise and Implications for Low Lying Islands, Coasts and Communities*, in IPCC SROCC, WMO, pp. 321-445; https://www.ipcc.ch/site/assets/uploads/sites/3/2019/11/08_SROCC_Ch04_FINAL.pdf) and the Atolls Futures group (see Duvat et al. 2021, Risk to future atoll habitability from climate-driven environmental changes, *WIREs Climate Change*, e700; https://onlinelibrary.wiley.com/doi/10.1002/wcc.700).

UNFCCC Adaptation Committee and UNEP Adaptation Gap Report, etc.). Workstream 4 surveys lessons learnt from workstream 1-3, especially on the assessment framing, its relevance in terms of highlighting new knowledge on adaptation progress, its potential application across scales, and in terms of informing the identification of *Shared Adaptation Goals*. Workstream 4 notably builds upon Workstream 3 by drawing from the case study exercise and lessons learnt on applying the approach at a national scale in the 2021 pilot phase. The aim is to identify the main opportunities for scaling up from a national-level application to a global-level application, e.g. in terms of the *Representative Adaptation Challenges* that could be considered in future applications.

Outcomes

- Summaries of the three Steering Committee sessions highlighting key questions and opportunities on the applicability and future development of the GAP-Track approach.

2.5. Workstream 5 — Policy engagement and dialogue

This workstream aims to create visibility and garner policy engagement for the GAP-Track project in the lead up to the COP26 and set foundations for follow up opportunities in 2022-2023. It will seek, first, to raise policy attention on the need to track adaptation globally using an expert judgment-based approach (and associated question grid; Box 1 and Section 3.3); and second, to ensure the GAP-Track project is informed by key discussions in the adaptation policy arena, including relevant negotiations and decisions to take place at the COP26 (modalities for the Global Stocktake, financing adaptation, developing and developed country perspectives). The work in 2021 will lay the foundations for exploring follow-up work on building a multi-partner GAP-Track framework ahead of the GST 2023. Workstream 5 is supported by the GAP-Track Steering Committee with members from various international organizations to help identify the target areas of policy change, the positioning of the GAP-Track within the framing of the GGA and GST, as well as for shaping adaptation multilateral governance discussions on progress tracking issues (Section 5).

Outcomes

- Internal note (B) on key messages to deliver at COP26.

3. Methodological framing (assessment protocol)

Figure 1 develops the general framing and sequence of research for the development of the GAP-Track expert judgment-based assessment. The following sub-sections provide further details.

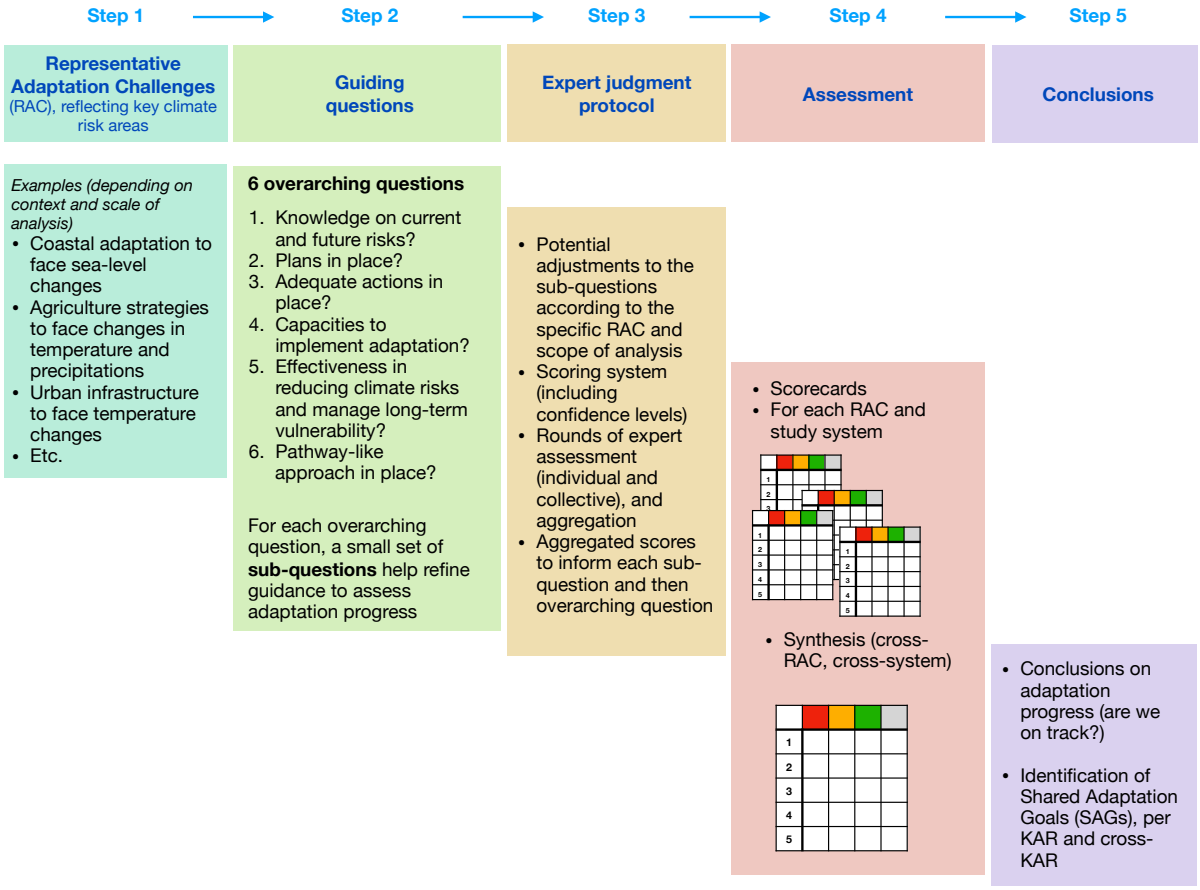


Figure 1. *General overview of the GAP-Track methodological approach.*

For a given *Representative Adaptation Challenge* (step 1, Section 3.2), the assessment framework starts with **six guiding questions** (step 2; section 3.3), which are informed by a set of **sub-questions** (step 2; section 3.4) that aim to address context-specificities and targeted information related to the RAC considered —with respect to the scale of the assessment— and in order for the assessment to rely on ground-rooted relevant data and expertise. These sub-questions are then addressed through an expert judgment exercise using a **scoring approach** (steps 3-4; Sections 3.1, 3.4 and 3.5). The assessment protocol (framing questions

and sub-questions, as well as the scoring system) is common to all RAC in order to ensure consistency of outcomes. For a given RAC, the final scorecard help showcase the results on adaptation progress (step 5; section 3.6). More broadly, such an approach lays the foundations for conclusions to be drawn at both the country level —context of the 2021 pilot study— and, given that it ultimately aims at being applied to several systems/countries and RACs, across systems/countries and RACs. In the context of the 2021 pilot study specifically, a final step consists of considering how to upscale the approach to apply at a global level in follow up explorations in 2022 (Step 5).

3.1. Expert judgment approach

[See step 3 in Figure 1]

There are various ways to define and evaluate adaptation progress. Policy documents (e.g. the adaptation communications of Parties to the UNFCCC), monitoring and evaluations frameworks, as well as quantified indicators and metrics are often the most referenced modalities for providing indications of adaptation progress. While these are signs of progress towards tracking adaptation progress, they are often limited to one type of data source, confront challenges of data availability, are timely and risk overseeing context specificities of adaptation issues. At the same time, the GGA and the GST aim to reach a global vision of where we are on adaptation – and yet, there is still no universal, agreed-upon assessment framework that has emerged to date (see for example the 2017 and 2020 UNEP Adaptation Gap Reports). Therefore, there is room to explore new, multi-source approaches to address adaptation progress tracking.

The GAP-Track relies on an alternative type of approach consisting of a scientific-based assessment using existing literature (scientific and grey), selected indicators/proxies —when it makes sense, for example because they are relevant to describe an adaptation-related process or outcome, and related data is available— and accumulated observations on the ground and experience (i.e. expertise gained over time by local experts). The expert judgment method allows to combine a diversity of resources and information, which helps to avoid difficulties related to a lack of available datasets to inform an indicator-based methodology.

3.2. Representative adaptation challenges

[See step 1 in Figure 1]

The GAP-Track approach focuses on assessing adaptation progress for identified Representative Adaptation Challenges (RAC) reflecting key risk areas. These adaptation priorities are identified from adaptation policy and scientific literature, including recent development on key risks from climate change in the Sixth Assessment cycle of the Intergovernmental Panel on Climate Change (IPCC).

Both in the IPCC Fifth Assessment Report[8] and the Sixth Assessment cycle, coastal areas have been identified as key areas of risk for humankind. Low-lying coastal areas especially are particularly at risk from climate change because of their modest elevation above sea level, climate-sensitive physical and ecological characteristics (e.g. coral beaches, sea ice environments, sand-dune systems), and high societal exposure and vulnerability (e.g. flood-prone high population and asset density, marine-dependent small-scale economies). Low-lying areas also cover a wide diversity of systems, from small islands to megacities, from the Tropics to the Poles, in both the Global North and the Global South. It is estimated that the low-elevation coastal zone (LECZ; continental and island areas hydrologically connected to the sea and no more than 10 m above mean sea level), currently hosts ~11% of the global population and generates ~14% of the global Gross Domestic Product. Critical adaptation challenges are therefore associated to these contexts.

In the post-2021 phase, there will be a need to explore the set of RAC that will have to be considered across contexts and globally. The upcoming contribution of the IPCC Working Group II ("Impact, vulnerability, adaptation") to the Sixth Assessment Cycle will provide an overview of the key risks that could help describe the dangerous interferences with the climate system, as stated in the UNFCCC. This could be a relevant basis for further discussions on defining RACs beyond coastal adaptation.

3.3. Overarching guiding questions

[See step 2 in Figure 1]

The GAP-Track approach proposes a six-question framing that can be applied across contexts, scales and different types of RACs. The six questions aim to be as general as possible and to capture the main issues related to adaptation, and hence to adaptation progress tracking. This framing allows to enhance the development of knowledge on adaptation progress and will potentially lay foundations to contribute to developing *Shared Adaptation Goals*. These questions have been partly inspired by the work carried out by the UK Climate Change Committee.

1. **Does scientifically-based knowledge on current and future climate risks exist at the appropriate scale?**

   Understanding climate risks (their nature, extent and potential future trends) is a key starting point to adaptation progress. Therefore, question 1 aims to determine whether context-relevant climate risks are known, and more specifically if there is scientific knowledge on current and future climate risks at the needed scale (from local to national level and eventually global, depending on the targeted scale of the assessment).

   Each RAC can refer to multiple climate risks. For example coastal adaptation RAC refers to marine flooding, coastal erosion and groundwater and soil salinization as well as hazards from both extreme events and slow onset changes.

[8] See Oppenheimer et al. (2014): https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap19_FINAL.pdf.

Depending on the context and extent of the assessment, the focus can be applied to a set of climate hazards but not necessarily all.

2. **Are there national to local plans in place and are they implemented?**
   In order to enhance adaptation action, it is important to have policies and plans in place to guide decision-making, actions and stakeholders. This question aims to determine whether national and/or local adaptation policies and plans are in place, and more specifically if they are implemented on the ground. It seeks to understand, "whether there is an explicit policy or plan in place that aims to address the relevant climate risks. For example in UK, "the National Planning Policy Framework explicitly considers climate change and provides a basis for appropriate planning decisions that take account of current and future flood risk" (UK CCC 2015, p. 41).

3. **Are adequate actions taking place at a relevant scale to reduce climate risks?**
   This question aims to understand the extent of actions taking place to reduce climate risks, and thereby adaptation progress on the ground. "Action" refers to a wide diversity of options aiming at implementing adaptation on the ground, including specific measures as well as regulatory processes. It is important to note that given the specific focus of the assessment —to understand adaptation to climate change-related risks— only actions that are specifically designed for climate risk reduction are considered. A wide range of measures could contribute more or less directly to climate risk reduction over the long run, for example incentives to enable poor people to access jobs or to reduce socioeconomic inequalities, and more broadly to support the enhancement of the adaptive capacity of individuals, households and society as a whole. However, these actions play as indirect drivers of risk reduction, while the assessment here focuses on actions specifically directed at climate risk reduction. Relevant scale means that these actions are accepted to have an effect on risk reduction at the territory-level.

4. **Are there sufficient institutional, human and financial capacities to implement adaptation at the required scale?**
   The goal of this question is to understand some critical governance arrangements that support adaptation progress, especially institutional, human and financial capacities. The aim is to determine a level of understanding on the extent to which those responsible for carrying out certain tasks are indeed doing so (or in capacity to do so). It is important to note that the focus of this question is on how such capacities can help determine progress on adaptation; it is not an evaluation of "good governance of adaptation".

5. **Is progress being made in actually reducing current and future climate risk (including reducing hazards locally and managing long-term vulnerability)?**
   This question aims to understand to what extent adaptation actions are contributing to risk reduction and more specifically, gather information on available evidence of risk reduction in the present day. It encompasses understanding of those risk reduction

actions undertaken, as well as those actions that could contribute to increasing exposure and vulnerability (maladaptation) as well as the role of communities and society at large in terms of awareness of climate change risks. Inspired by the UK CCC, this question aims at providing understanding on "the assessment takes account of the scale of the current and future risks, and the impact of relevant policies and actions. Where possible, the evaluation is based on the suite of indicators that the [relevant assessment partners have] developed, that measure over time changes in exposure and vulnerability, and observed impacts, within each priority area. Where appropriate, account is taken of whether the actions will take time to deliver measurable changes in vulnerability" (UK CCC 2015, p. 41). Three time horizons could ideally be addressed here in relation to climate risks, i.e. present-day and mid- and end-century.

6. **Is a pathway-like approach considered?**

Scientific works demonstrate that no single measure will offer a comprehensive solution to climate risks, but rather than sequences of measures and decisions have to take place in order to ensure some flexibility in the face of uncertain developments in climate hazards, vulnerability and risks. In that view, adaptation pathways "enable the adjustment of adaptation strategies in response to new information and changing circumstances, in ways that are as efficient and transparent as possible. The approach builds flexibility into an adaptation strategy through the development of a range of options to deal with different climate scenarios" (UK CCC 2015, p. 40). The adaptation pathway approach covers several dimensions; the goal of the GAP-Track approach is not to enter into such complexity, but just inform whether the sequencing of actions over time is part of the strategy and planning tools in place. This question therefore aims to understand whether the use of sequencing adaptation actions over time is considered; and whether synergies and trade-offs among multiple adaptation responses are considered and associated to a multi-decadal roadmap.

3.4. Sub-questions for conducting the assessment

[See step 2 in Figure 1]

The expert judgment team is asked to answer the six overarching questions (Section 3.3) by responding to a set of sub-questions. These latter are tailored for targeted information and specifically designed for the RAC context of the assessment. These set of sub questions help to ensure a robust and comprehensive assessment by disaggregating overarching guidance questions into targeted set of resources, data and information. Table 1 below illustrates such sub-questions for the coastal adaptation RAC studied in the 2021 pilot phase.

Table 1. Questions and subquestions evaluation matrix

Overarching guiding questions	**Sub-questions** (including scope and scale description)

1. Does **scientifically-based knowledge on current and future climate risks** exist at the appropriate scale?	1.1. Are **current climate-related coastal hazards** known? - *Scope: erosion, marine flooding, river flooding, salinization (soils, groundwater) and consideration of hazards from both extreme events (e.g. storms and cyclones) and slow onset changes (e.g. Sea-level rise)* - *Scale: includes national to local levels* 1.2. Are **current drivers of exposure and vulnerability of natural systems** known? - *Scope: drivers influencing the dynamics of key natural coastal systems (beach-dune systems, wetlands, coral reefs, coastal vegetation, etc.)* - *Scale: includes national to local levels* 1.3. Are **current drivers of exposure and vulnerability of human systems** known? - *Scope: drivers related to populations, assets (buildings, infrastructure, etc.) and economic activities (beachside tourism, fisheries, aquaculture, etc.) as well as decision-making processes (public authorities, local communities, private sector). Postulate: while drivers are by definition context-specific, here we focus on drivers that are generic from one case to another (e.g. role of urban densification in flood-prone areas, loss of social capital in face of disasters)* - *Scale: includes national to local levels* 1.4. **Are future climate risks projected (at a relevant/useful scale)?** - *Scope: touches on a forward-looking approach for sub-questions 1.1 + 1.2 + 1.3. I.e., integration of knowledge on future trends in hazards, exposure and vulnerability (for both natural and human systems), for example based on modeling and scenarios. Ideally, projections bringing climate, environmental and socioeconomic scenarios together* - *Scale: includes on national to local levels*
2. Is there a **plan(s)** in place?	2.1. Is there an **adaptation plan(s)** (national to local)? - *Scope: plans and policies specific for climate adaptation, or mainstreaming of adaptation into existing plans and policies. For example, a national plan that has granular / local level interventions scores high on the evaluation scale. Doesn't include implementation aspects (concrete measures and institutional means of implementation are captured in sub-questions 2.2 and 4.1, respectively). Considers that local governments often play a more prominent role than national governments.* - *Scale: includes national to local levels* 2.2. Are there **adaptation plan(s)** (national to local) implemented? - *Scope: plan implementation on the ground. Implicitly includes dimensions of governance and multi-level coordination. Includes processes for monitoring and evaluation* - Scale: includes national to local levels 2.3. Are the **main non-state actors** contributing to the design and implementation of national and local plans/policies? - *Scope: considers the extent to which non-state actors (private sector, communities, NGOs, etc.) are involved in consultations or drafting coastal adaptation strategies. Participation processes to involve the local community in the planning process and adaptation option implementation is considered (key to support implementation).* - *Scale: includes national to local non-sated actors*

3. Are **adequate actions** taking place at a relevant scale **to reduce climate risks**?	3.1. Are there actions targeting the most prominent **climate hazards on the coast**? - *Scope: actions that address the main climate-related hazards identified in sub-question 1.1 (i.e. erosion, marine flooding, river flooding, salinization from both extreme events and slow on-set changes). This includes both nature-based and community-based adaptation activities aimed at directly limiting climate hazards (e.g. through enhanced coastal protection, ecosystem services or coastal defense options). The risk of maladaptation (in relation with context-specificities) is also considered* - *Scale: the focus is on the local scale, with a national-level perspective included* 3.2. Are there actions addressing the main **drivers of exposure & vulnerability of natural systems**? - *Scope: actions addressing the most influential drivers of exposure and vulnerability of natural systems (e.g., mangrove clearing, coral and beach mining). Encompasses both measures to preserve or restore ecosystems and their services, and the existence of measures having detrimental effects on ecosystems* - *Scale: focus on local scale, with a national-level perspective included (as scores increase)* *3.4* Are there actions addressing the main **drivers of exposure & vulnerability of human systems**? - *Scope: actions addressing the most influential drivers of exposure and vulnerability for human systems (people, tangible and intangible assets (including infrastructure), economic activities). The risk of maladaptive outcomes is also considered.* - *Scale: focus on local scale, with a national-level perspective included (as scores increase)*

4. Are there sufficient **institutional, human and financial capacities** in place (for planning and implementation)?	4.1. Are there **governance arrangements** in place to support institutional capacities to coordinate adaptation activities (multi-level governance and mainstreaming across policy areas/sectoral plans)? - *Scope: the focus here is on governance arrangements and institutional capacities to support implementation, not on plans and policy documents (captured in sub-question 2.1). These governance arrangements ensure cross-institutional coordination (across multi-level government and horizontally across policy areas/ sectors and planning tools), to allow for implementing cohesive adaptation-related plans and policies. For example, does a climate adaptation unit exit in a specific Ministry or at the local government level (e.g. municipalities and district councils)?* - *Scale: includes national to local levels of government, including but not limited to the often critical role that local governments play in the implementation of activities, especially in regards to land use and urban planning (e.g. all land use change permits are given at the local government level).* 4.2. Are **human capacities** in place at the relevant scale and at <u>both</u> national and local levels? - *Scope: focus on human means of implementation of plans and policy documents. Considers together the number of people working on adaptation-related dimensions; their level of training in terms of coastal risk management and adaptation; and the level of consistency between number/training and actions/ decisions on the ground and in(national and local institutions* - *Scale: includes national to local levels, and considers the critical role that local governments play* 4.3. Does **specific and sustainable funding** exist that is specifically dedicated to managing climate-related coastal risk and adaptation? - *Scope: This sub-question does not aim at assessing whether available funding for adaptation is enough or not, but rather at describing the finance context for adaptation. Besides the amount of funding available, the main problem encountered in many places is that, first there is no dedicated budget for coastal risk and coastal adaptation, and second, when it exists, it is generally available for a few years (e.g. through externally-funded projects in developing countries). So the challenge is around (i) dedicated funding support, and (ii) sustainable (long-term) funding, including from the private sector.* - *Scale: includes national to local levels, and considers institutions and the private sector*

5. Is there evidence of **effective climate risk (current and projected) and long-term vulnerability reduction**?	5.1. Is there **evidence of risk reduction** today? - *Scope: understand the level of evidence showing to what extent plans, policies and actions in place are actually contributing to coastal risk reduction.* - *Scale: includes national to local levels, all types of interventions and stakeholders (public, private, NGOs, etc.)* 5.2 . Are there indications that the implemented policies and actions contribute to **minimize the risk of maladaptation** on the long run? - *Scope: besides bringing evidence of actual risk reduction, there is a need to ensure that adaptation responses (actions and policies) are not contributing to increasing risk in the future, especially through increased exposure and vulnerability* - *Scale: includes national to local levels, all types of interventions and stakeholders (public, private, NGOs, etc.)* 5.3. Are there indications that **the society is aware of the need** to tackle both current and future coastal climate risks? - *Scope: understand the extent to which the local population is prepared to support adaptation-related responses (actions and policies), as population acceptance is key to the design and implementation of coastal risk reduction strategies at multiple scales* - *Scale: includes a national scale analysis (census) and local communities*
6. Is a **pathway-like approach** considered?	6.1. Are **adaptation goals** established in the short to medium and long-term (multi-decadal scale), and articulated with each other (i.e. how does reaching present-day goals support reaching longer-term ones)? - *Scope: understand the extent to which clear goals on coastal risk reduction in the future (and in connection with goals dedicated to current coastal risk reduction) have been established, and their level of precision (generic/vague vs. precise/ operational)* - *Scale: national level mainly, but also considering local-level situations when they have the potential to inform broader scale situations* 6.2. Are **synergies and trade-offs** between various adaptation-related options considered? - *Scope: understand the extent to which synergies and tradeoff between multiple adaptation responses (actions and policies) are studied (on scientific bases)* - *Scale: national and local level* 6.3. Are options planned **in a sequenced manner and alternative strategies** considered? - *Scope: understand the extent to which synergies and tradeoff between multiple options are studied (on scientific bases) and considered in the design and implementation of coastal adaptation strategies at the national and/or local level* - *Scale: national and local level*

3.4. Scoring system

[See step 3 in Figure 1]

The expert judgment approach can be robust if based on a scientific process, which is in the GAP-Track approach supported by a scoring system described here. The scoring system is

based on a set of 5 scores from 0 (no progress identified) to 4 (high progress identified). Each score is attributed a clear, precise definition with specific criteria to be considered. Table 2 illustrates such a scoring system for selected coastal adaptation RAC sub-questions (the complete table is provided in the ANNEX – see Table A2). Each expert is asked to provide a score for each sub-question ensuring their knowledge on the question and evidence provided match the score's criteria. The score given by the expert should be justified by a review of available information, including references in the literature, data, and other material such as observations on the ground from field-work and interviews.

The scoring system exercise should be completed by a set of experts to allow for comparison of scores and to ensure a robust and informed response set. In addition to individual assessments, a round of collective discussion with the full expert group helps to refine the scores and define shared outcomes. The scoring system therefore presents a method to organize the expert judgment by using a language (scores) that is common to all the sub-questions and experts and, ultimately, can be aggregated if needed and applied across case studies and RACs.

Table 2. Examples of the scoring system for sub-questions on coastal adaptation

Sub-question	Score description
1.1. Are current climate-related coastal hazards known?	NA = Not assessed (either 0 = No information on current climate-related coastal hazards at the coast 1 = Partial knowledge on a very limited number of coastal areas and/or on only one of the main hazards considered 2 = In-depth knowledge for more but still a limited number of coastal areas and/or on only one or two of the main hazards considered. The knowledge is well understood for the case studies, but these latter are too specific (e.g. in terms of physical features) to be representative of most of the non-studied areas 3 = In-depth knowledge for a limited number of coastal areas and/or for most of the main hazards considered. The coastal areas studied are representative enough (in terms of physical features) of most of the other areas, therefore allowing for some lessons to be learnt 4 = Wide understanding of hazards, including a wide diversity of coastal case studies representing the various situations at the country level.

2.1. Is there an adaptation plan(s) (national to local)?	*Dimensions considered: whether a national exist + is supported by local plans (to support implementation on the ground) + existence or not of a monitoring and evaluation system* NA = Not assessed 0 = None 1 = A national policy exists that covers a wide diversity of settlements/sectors/ communities but only consists of a list of options without any guidance on prioritization and/or relevant timescales for implementation. No local plans exist to support implementation on the ground. No monitoring and evaluation system. 2 = A national policy exists (wide diversity of settlements/sectors/communities, list of options) and provides some guidance (action prioritization, timescales for implementation), but only for settlements/sectors/communities at higher risk (hotspots). Only very few, pioneering local plans exist to to support implementation on the ground. A monitoring and evaluation system is at an embryonic stage. 3 = A national policy exists that encompasses the main settlements/sectors/ communities (not only hotspots). Several local plans exist to support implementation on the ground. The monitoring and evaluation system is advanced and (at least partly) operational. 4 = A national policy exists that encompasses the main settlements/sectors/ communities (not only hotspots). Implementation is supported by a lot of local plans for the main settlements/sectors/communities (not only hotspots). The monitoring and evaluation system is fully advanced and operational.
3.1. Are there actions targeting the most prominent climate hazards on the coast?	*Dimensions considered: type of hazards considered, and type of actions (coastal protection, accommodation, retreat) depending on context-specificities, induced risk of maladaptation* NA = Not assessed 0 = No specific action is undertaken to control hazards at the coast 1 = A very limited number of actions are reported on the ground, without any insight on their potential to reduce risk or generate maladaptation. 2 = Only one or two of the main hazards are considered. The majority of responses are inadequate and could imply some degree of maladaptation. For example: hard protection is implemented in non-densely populated areas; accommodation measures are not at scale or only address a small part of impact; coastal retreat is not adequately planned and rather looks like an emergency response 3 = Most of the main hazards are considered. The majority of responses are adequate to address current hazards, e.g. adequately calibrated hard/soft coastal protection, adequate accommodation measures and managed coastal retreat. They are implemented in relevant places and minimize the risk of maladaptation. They however do not fully consider future changes in hazards. 4 = All the main hazards are considered. The majority of responses are adequate to address current hazards, e.g. adequately calibrated hard/soft coastal protection, adequate accommodation measures and managed coastal retreat. They are implemented in relevant places and avoid maladaptation. A forward-looking approach is considered when designing the responses (including planning for adjustments over time).

4.1. Are there governance arrangements in place to support institutional capacities to coordinate adaptation activities (multi-level governance and mainstreaming across policy areas/ sectoral plans)?	*Dimensions considered: arrangements to ensure institutional coordination from the national and local levels (e.g., existence of an adaptation unit and its connection to other institutions)* NA = Not assessed 0 = No institutional arrangements are in place to address adaptation challenges 1 = There are limited and scattered institutional arrangements that consider adaptation challenges, and no governance measures are in place to ensure information sharing and the coordination of activities 2 = One institution is identified at the national level that is dedicated to address adaptation issues (e.g. an adaptation unit), but it remains isolated from other national institutions and is not supported by any governance arrangements to allow for multi-level coordination and communication (information-sharing) with local coastal municipalities and/or districts (e.g. only rare and pioneering ones) 3 = Institutional arrangements exist at the national level and are well connected to other national institutions via coordination and information-sharing measures with increasing influence but that remains limited. In addition, adaptation-dedicated institutional arrangements are more systematically established in local coastal municipalities and/or districts, however there is limited coordination and information-sharing upstream. 4 = Institutional arrangements exist at the national level and cross institutional dialogues are systematically carried (mainstreaming of climate change adaptation policies in other sectoral policies and planning tools). In addition, multi-level governance is in place: there are adaptation-dedicated institutional arrangements at the local/district level, and information-sharing measures are in place to ensure the upstream flow of information to national institutions.
5.1. Is there evidence of risk reduction today?	*Dimension considered: the relationship between responses (policies, actions) implemented and measured reduction in climate risk levels; and the experts own view on risk reduction level (based on their own experience).* NA = Not assessed 0 = No relationship is established (either because there is none, or because risk reduction is not assessed) + no clear view from the expert 1 = No relationship is formally established, but there is intuitive assumption (by the expert or other experts) that responses undertaken support risk reduction. However, such risk reduction is not measured, so that the possibility of "no effect on risk levels" 2 = The assessment of the relationship between responses and risk reduction levels is emerging. There are indications as well as increasing agreement among experts that some responses are contributing to current risk reduction; however, no robust conclusion can be drawn for a broader set of responses. The extent to which these responses also provide risk reduction benefits over the long run remain highly uncertain 3 = The relationship between responses and risk reduction levels is assessed and surveyed; there are emerging indications as well as increasing agreement among experts that most of the responses undertaken have an effect on climate risk reduction today and contribute to future risk reduction 4 = The relationship between responses and risk reduction levels is assessed and surveyed; there are robust indications as well as high agreement among experts that most of the responses undertaken substantially reduce climate risk today and contribute to future risk reduction

6.1. Are adaptation goals established in the short to medium and long-term (multi-decadal scale), and articulated with each other (i.e. how does reaching present-day goals support reaching longer-term ones)?	*Dimensions assessed: existence of a goal(s) considering climate risk; short- to long-term* NA = Not assessed 0 = No coastal risk-specific goal. 1 = A general goal(s) exist at the national level but remains vague in scope in terms of targets, sectors and scales; and in terms of considering coastal risks more specifically. 2 = Only short-term goal(s) is considered for current coastal risks (e.g. ≤2-3 years), but without any clear relation with longer-term ones OR A medium-long term (e.g. ≥ 3-5 years to a decade) goal exists only for a limited number of coastal ''hotspots' (i.e. sectors, areas and communities particularly at risk). 3 = Medium-long term (e.g. ≥ 3-5 years to a decade) goal(s) is established for all coastal hotspots (i.e. sectors, areas and communities particularly at risk), and includes intermediary goals at shorter timescales (e.g. ≤2-3 years). 4 = Longer-term (multiple decades) goal(s) is established not only for hotspots but for most of (all) sectors, areas and communities potentially at risk, and includes intermediary goals for shorter timescales (several years).

3.5. Confidence levels

To enhance the robustness of the results, together with consistency across experts, a confidence level is attributed to the aggregated scores (median of experts' scores) for each sub-question. The confidence level is expressed qualitatively (Low, Medium, High), is supported by the level of evidence provided by the expert, and aims at guiding the interpretation of the results.

It is calculated based on the individual scores of the experts (Table 3). When the individual scores are similar or close to each other (i.e. no more than 1 point of difference, e.g. 0-1 or 3-4), confidence in the median aggregated score is considered High. When the range of experts' scores shows a different of two points (e.g. 0-2 or 2-4), the confidence level is considered Medium. And when the range of experts' scores shows a different of 3 points (e.g. 0-3 or 1-4), the confidence level is considered Low.

Once all experts carried out a first round of evaluation, an independent review follows of all the scorecards to determine a *median score* and a *level of confidence* for each sub-question (See Table 4). Based on this, a second round of individual assessments is organized in order for all experts to see the results of the first round and possibly adjust their own scores according to the assessment and justifications provided by the others. Then a second synthesis is developed based on the second round of assessment, and in the aim of highlighting the remaining areas of disagreement. A final group discussion is organized to discuss remaining issues and come up with a group-level outcome. This multiple rounds allow to cross-compare expert judgement scores, robustness of evidence and ensure validity of the exercise.

Table 3. Confidence levels

Colors used in the synthesis tables	Consensus level among experts	Confidence level
	0 or 1 point of difference between min-max individual scores — High consensus	High
	2 points of difference between min-max individual scores — Medium consensus	Medium
	3 point of difference between min-max individual scores — Low consensus	Low

3.6. Examples of potential outcomes

[See step 5 in Figure 1]

There are several ways to analyse and display the results of the scorecard assessment. Based on the UK CCC report in 2015, Annex A1 presents a few options. More specific approaches will be developed in the Final Report (October 2021).

4. Demonstrative case study in 2021

4.1. Coastal adaptation in Mauritius and Senegal

The objective of the pilot phase is to test the application of the GAP-track approach using national level case studies in order to refine the methodological protocol. Through the expert judgment exercise, discussions on the overarching questions and sub-questions help to develop a common language and understanding of the framing that are important for future applications. These collective discussions with both expert groups for the case studies help to identify advantages and potential gaps to address in the development of the GAP-Track approach, especially the potential to upscale to a global perspective.

For the 2021 pilot study the GAP-Track approach is applied to one *Representative Adaptation Challenge* (coastal adaptation) and at the country level for two cases (Mauritius Island in the South West Indian Ocean, and Senegal in West Africa). These countries were selected by the project funder because of funding for adaptation activities that are ongoing in both locations. Coastal adaptation has been identified as a RAC for two main reasons:

1. The importance of coastal risks worldwide because of coastal areas' modest elevation above sea level (often low-lying), climate-sensitive physical and ecological characteristics (e.g. coral beaches, sea ice environments, sand-dune systems), and high societal exposure and vulnerability (e.g. flood-prone high population and asset density, marine-dependent small-scale economies). The low-elevation coastal zone (LECZ; continental and island areas hydrologically connected to the sea and no more than 10 m above mean sea level), for example, includes a wide diversity of systems, from small islands to megacities, from the Tropics to the Poles, in both the Global North and the Global South; currently hosts ~11% of the global population; and generates ~14% of the global Gross Domestic Product.
2. The pilot study aims to capitalize on the expertise of IDDRI on coastal adaptation that has been developed through over 10 years of research, practice-oriented analyses and on the ground observations in a range of contexts. The pilot phase of the project therefore benefits from IDDRI's in-house expertise on coastal adaptation governance, effectiveness of coastal risk reduction and adaptation measures, coastal adaptation pathways and long term planning tools.

IDDRI plays a coordinating role in the demonstrative case studies in 2021, which includes:
(i) Identifying the experts (Section 4.2)
(ii) Developing the independent review (2 rounds) of the scoring provided by each expert to oversee quality of evidence and level of agreement across scores
(iii) Drafting a synthesis and results on evaluation of coastal adaptation progress in the two case studies by drawing from the expert judgements and taking note of methodological challenges and opportunities to consider in future applications (Deliverable 2: final report).

4.2. Identifying relevant experts

There is no universal way to identify experts for the expert judgment exercise. In the 2021 pilot phase, we applied four main key criteria for participants:

- An expert should have **robust scientific background** in the adaptation challenge considered (pilot 2021: coastal risk management and climate adaptation). The relevance of the GAP-Track lies in its scientifically-based approach especially when it comes to the justification of the scores for the sub-questions;
- An expert should have **in-depth knowledge on the case study** chosen. The 2021 pilot focuses on a national level assessment and calls for in-depth knowledge of what is currently developed in Mauritius and Senegal in terms of coastal risks, risk management and climate adaptation (planning, implementation, capacities, etc.). The experts for the two case studies (Sections 4.3 and 4.4) were selected based on their previous work on adaptation and coastal issues in these countries. A further application (i.e. post-2021) could focus on a regional or global scale, and in that case participants will need to demonstrate expertise at these scales, either because they have carried out activities and developed work on several areas in a given region, or participated in international assessments such as those conducted under the IPCC;
- An expert should have a **broad area of expertise** covering most of the topics considered in the GAP-Track approach, i.e. for the 2021 pilot phase: coastal risks (including future projections; overarching question Q1), risk management and adaptation planning (Q2-Q6), and measures implemented to address current and future coastal risks (Q3 and Q5). It is indeed important that each participant has the competence and knowledge to fill all the score cells in the assessment matrix, in order to allow for groups discussions and a comprehensive final assessment (when all scores by all participants are gathered);
- An expert should have **good collaboration skills**: individual assessments are at one point gathered in order to come up with a group-level assessment, which calls for participants to be open-minded and able to challenge their own expertise based on inputs by other participants (e.g. different scoring and justifications).

4.3. Mauritius expert group

Table 4. Members of the Mauritius expert group.

Name	Organization	Area of expertise	Contact
Dr./Prof. Virginie K.E. Duvat	La Rochelle University (France)	Coastal risks, adaptation-related measures, nature-based solutions	virginie.duvat@univ-lr.fr

Dr. Vassen Kauppaymuthoo	Registered Professional Environmental Engineer (Mauritius)	Integrated Coastal Zone Management, coastal erosion assessment and remedial measures	vassen.kauppaymuthoo@delphiniumconsulting.com
Dr. Sharveen Persand	Managing Director & CEO, Delphinium Ltd. (Mauritius)	Coastal risks management	spersand@gmail.com
Dr. Sanju Deenapanray	Regional Consultant in Marine Environment and Marine Affairs and the Director of CLAMS Ltd (Coastal Land and Marine Solutions) (Mauritius)	Adaptation planning and strategies	sanju@ecolivinginaction.com
Dr. Ariadna Anisimov	IDDRI (France)	Coastal risk governance, adaptation	ariadna.anisimov@iddri.org
Coordination			
Dr./Hab. Alexandre K. Magnan	IDDRI (France)	Coastal risks, adaptation-related measures	alexandre.magnan@iddri.org

4.4. Senegal expert group

Table 5. Members of the Senegal expert group.

Name	Organization	Area of expertise	Contact
Dr. Boubacar Fall	University of Cheikh Anta Diop (Dakar, Senegal)	Coastal risk management and climate adaptation in West Africa	boubafall@yahoo.fr
Dr. Melinda Noblet	Independant consultant & Université Paris 1 Panthéon-Sorbonne (Paris, France)	Coastal risk management and climate adaptation in West Africa	melinda.noblet@gmail.com
Dr. Mamadou Sadio	Climate Analytics (Germany)	Coastal vulnerability and climate adaptation in West Africa	mamadou.sadio@climateanalytics.org, and sadiomamadou@yahoo.fr
Dr Caroline Schaer	Independant consultant (Georgia)	Flood risk management and climate adaptation in Senegal	caro_schaer@yahoo.com
Coordination			
Dr. Ariadna Anisimov	IDDRI (France)	Coastal risk governance, adaptation	ariadna.anisimov@iddri.org
Dr./Hab. Alexandre K. Magnan	IDDRI (France)	Coastal risks, adaptation-related measures	alexandre.magnan@iddri.org

5. GAP-Track Steering Committee

5.1. The role of the Steering Committee

The Steering Committee (SC) is composed of 24 members from different organizations representing the scientific community, potential users of the GAP-Track and funding partners.

The committee has three principle roles in the 2021 pilot phase of the GAP-Track:

1. To provide advice on the development of the 2021 test phase and help challenge and refine the methodological approach;
2. Provide support on outreach on the Gap-Track at COP26 and in other climate change adaptation policy platforms, including ensuring the policy relevance and positioning of the GAP-Track within discussions on the Global Goal on Adaptation and Global Stocktake as well as beyond;
3. Reflect on post-2021 developments and opportunities for application of the GAP-Track at a global perspective, including key questions raised (and initial solutions) on upscaling and potential partners to be involved.

5.2. Members

Table 4. Members of the GAP-Track Steering Committee.

Organization	Representative
Agence Française de Développement (AFD)	Francois Xavier Duporge (duporgefx@afd.fr), Christophe Buffet (buffetc@afd.fr), Bertrand Reysset (reyssetb@afd.fr), Marie-Noëlle Woillez (woillezmn@afd.fr)
French Ministry of Ecological Transition (MTES)	Adele Colvez (adele.colvez@developpement-durable.gouv.fr)
Global Commission for Adaptation	Michiel Schaefferer (Michiel.schaeffer@gca.org)
IDDRI	Lola Vallejo (Chair of the Steering Committee, lola.vallejo@iddri.org), Michel Colombier (michel.colombier@iddri.org), Ariadna Anisimov (ariadna.anisimov@iddri.org), Alexandre Magnan (alexandre.magnan@iddri.org)
IPAM	Karim Anegay (ipam@aaainitiative.org), Karl Schultz (pamtools@aaainitiative.org)
IPCC	Youba Socona (ysokona@gmail.com)

Mauritius ICZM and CC Department	Ram Seenauth (Rseenauth@govmu.org)
Munich University, IPCC WG II	Matthias Garschagen (m.garschagen@lmu.de)
OECD	Catherine Gamper (catherine.gamper@oecd.org)
Stockholm Environment Institute (SEI)	Magnus Benzie (magnus.benzie@sei.org), Katy Harris (katy.harris@sei.org)
UK Climate Change Committee	Miriam Kennedy (Miriam.Kennedy@theccc.org.uk)
UK COP26 Presidency	Liam Upson (liam.upson@cabinetoffice.gov.uk)
UNEP DTU Partnership	Henry Neufeldt (hneu@dtu.dk)
UNFCCC Adaptation Committee	Pilar Bueno (maria.bueno@fcpolit.unr.edu.ar)
Willis Towers Watson	John Firth (j.firth@acclimatise.uk.com)
World Bank	Andrea Liverani (aliverani@worldbank.org)
Still to be confirmed in Sept. 2021 - Representative from Norwegian Agency for Development Cooperation (NORAD) - Representative from the Climate and Coastal Protection Unit, Senegal	

5.3. Steering Committee Sessions

Three Steering Committee sessions (2 hours each) are held between July and December 2021. The dates of these sessions and their themes are listed as follows:

- **Session 1 (Friday 2 July 2021)** 16h00-18h00 CEST
  Kick-off session with a presentation of the GAP-Track approach and positioning, update on progress made and roundtable for feedback, network mobilization (ideas for key contacts and outreach)

- **Session 2 (Friday 24 September 2021)** 15h00-17h00 CEST
  Share case study development and roundtable discussion on GAP-Track approach within current policy discussions, key messaging and preparations for the launch at COP26 (special event)

- **Session 3 (November, 2021)**
  Debriefing of the COP26 event and impact, future opportunities and next steps

6. General timeline

		2021 (towards COP26)									2022-2023 (toward GST)
		A	M	J	Jt	A	S	O	N	D	
Contextualization	W1 Positioning			Internal note A							
Research	W2 Assessment framework				D1						Expanded assessment: multiple KAR-AP, multiple scales (especially global and national)
	W3 Case study							D2			
Policy	W4 Lessons learnt							Internal note B			
	W5 Policy dialogue										
Policy and Coordination	Steering Committee			SC meeting 1			SC meeting 2		SC meeting 3		To be determined
	Outreach								Launch event COP26		

* Cells in grey refer to the main intense phases (dark grey) and preparatory or follow-up phases (light grey).

Main deliverables:

- D1: Methodological paper
- D2: Case study report
- Internal note A: positioning of the GAP-track approach
- Internal note B: policy engagement and key messages for the COP26

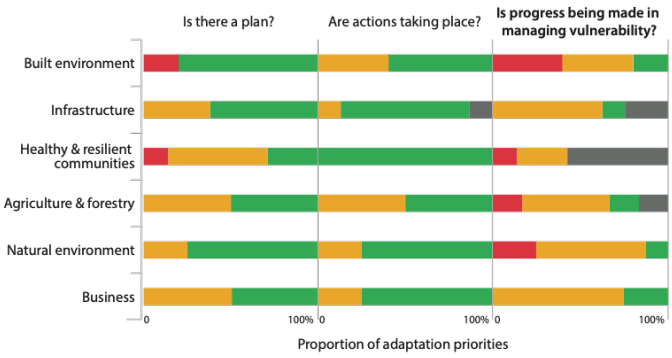
ANNEX A1_Examples of potential outcomes

There are several ways to represent the results of the scorecard assessment. Based on the UK CCC report in 2015 we present a few options in Annex A1. All of these examples could be applied at both the level of each demonstrative case study, and possibly across cases (when combined, representation of the usefulness of the GAP-Track approach for more regional- and global analysis).

Synthesis results

Could be organized through the 6 key guiding question. The UK CC applies it to sections, but another framing could be implemented.

Figure 2: Summary of the ASC's assessment of progress by the National Adaptation Programme

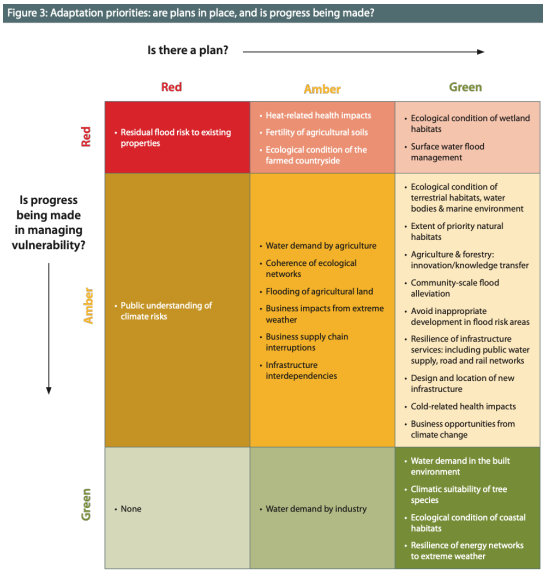


Outcomes per key guiding question

Lessons to be learnt at the scale of each key guiding question, including across the demonstrative case studies.

Here applied to the question "are there plans in place?"

Figure 3: Adaptation priorities: are plans in place, and is progress being made?



Detailed results

To describe specific dimensions under each key guiding questions (case studies, regional/ global)

Box 1: Adaptation priorities where vulnerabilities are increasing, or there is insufficient evidence to judge

The following table presents a summary of why adaptation priorities have been assessed as either red, where vulnerabilities to climate change impacts are increasing, or grey, where we found insufficient evidence to make a judgement. It should also be noted that across the chapters, many adaptation priorities assessed as 'amber' have only partial information available and more evidence would be valuable.

Adaptation priority	Is progress being made in managing vulnerability?	Rationale
Built environment		
Residual flood risk to existing properties	Red	Even in the best case scenario, 45,000 more homes and other properties are expected to fall in to the highest flood risk category by the 2060s. The pace of fitting property-level flood protection measures is slow, and subsidising flood insurance will remove the financial incentive for flood alleviation by high risk households.
Surface water flood management	Red	Trends in urban infill development and impermeable surfacing are likely to be increasing surface water flood risk. Measures to promote SuDS have been weakened. Local authorities are making slow progress in developing local flood risk management strategies.
Built environment / healthy and resilient communities		
Heat-related health impacts	Red	Vulnerability to the impacts of heat is increasing, including as a result of the growing, ageing population. Policies to increase air tightness and the insulation of homes could increase the risk of overheating unless steps are taken to avoid this.
Resilience of infrastructure services		
Ports and airports	Grey	There is very little data on the impacts of severe weather on ports and airports and the scale of action being taken in response.
Digital infrastructure	Grey	IT, communications, and data processing and storage operations, should be inherently resilient, but there is no evidence from the industry or from the Government to support this assertion.
Healthy and resilient communities		
Pathogens, air pollution, and UV radiation	Grey	It is difficult to assess how the combined effects of climate change, demographic change, behaviour of the population, and changes in land use, are altering exposure to these hazards.
Capability of the health and social care system	Grey	There is no data currently available on what magnitude of extreme weather is being planned for by service providers, and what specific measures individual health and social care providers are putting in place to manage risks.
Capability of the emergency planning system	Grey	Information is lacking on capabilities and levels of local resilience to extreme weather events. There has been no assessment of the overall impact on emergency service capabilities from declining resources, and there is no independent scrutiny of local plans.
Capacity of people and communities to recover from flooding	Grey	There is little evidence of the long-term impacts on individuals' health and well-being arising from flood events. It is also not possible to assess whether the steps being taken will mean people will be able to recover from flooding more quickly in future.

Policy recommendations

From scientific results to policy guidance (case studies, regional/ global)

Table 1: Priority recommendations

Adaptation priority	Recommendation
Residual flood risk to existing properties	2. Defra should take steps to address the increasing number of homes and other properties expected to be at high flood risk in the coming decades, publishing a strategy within a year of this report. Full use should be made of the opportunities presented by the Flood Re subsidised insurance scheme to encourage households in high flood risk areas to take steps to reduce the potential for flood damage.
	7. Flood Re's transition plan, required within three months of Flood Re Ltd. being formally designated the scheme administrator, should include clear proposals for how the scheme will promote flood risk alleviation amongst high risk households.
Heat-related health impacts	15. DCLG should, before the ASC's next report in 2017, evaluate the latest evidence and subsequently introduce a new standard or regulation on reducing the risk of overheating in new homes.
	16. DCLG and the Department of Health should develop incentives for the uptake of passive cooling in existing homes, hospitals and care homes and include new measures in the next NAP.
	17. DCLG should adopt and deliver a goal of reversing the decline in urban greenspace, and work with local authorities to begin delivering an implementation strategy by the time of the ASC's next report in 2017.
Fertility of agricultural soils	23. Defra should take action to deliver its policy aspiration for all soils to be sustainably managed by 2030, publishing an action plan within a year of this report to describe how the goal will be achieved. The action plan should include proposals for establishing a scheme to monitor the uptake of soil conservation measures, with enforcement where soils are not being appropriately managed. The action plan should include specific proposals to reverse the on-going loss of lowland peat soils, and be developed in partnership with the farming sector.
Ecological condition of the farmed countryside	29. Natural England should establish within a year of this report a monitoring scheme to assess the extent to which the new Countryside Stewardship scheme will help to deliver coherent ecological networks, and more broadly reduce the vulnerability of farmland wildlife to environmental pressures, including climate change.
Ecological condition of wetland habitats	27. Natural England, in partnership with the Upland Stakeholder Forum, should take further action to deliver the widespread restoration of degraded upland peat habitats. An action plan should be published within a year of this report that includes: (a) a programme for reviewing consents for burning on protected sites; and (b) an assessment of the extent to which agri-environment schemes are being used to fund damaging practices on peatland habitats.
Surface water flood management	3. Defra should (a) amend in this Parliament the 1991 Water Industries Act in order to remove or make conditional the current automatic right to connect new development to public

ANNEX A2_Scoring system full description

Table A2. Scoring system for Coastal Adaptation Progress case studies (2021)

The same grid has been applied to the two case studies conducted in 2021 (Mauritius Island and Senegal). The colors (one per overarching question) only serves to help the navigation throughout this large table.

Sub-questions	Sub-questions	Examples of sources of information
1. Does **scientifically-based knowledge on current and future climate risks** exist at the appropriate scale?	1.1. Are **current climate-related coastal hazards** known? *Scope: erosion, marine flooding, river flooding, salinization (soils, groundwater) + consideration of hazards from both extreme events (e.g. storms and cyclones) and slo onset changes (eg. Sea-level rise)* *Scale: includes on national to local levels*	NA = Not assessed 0 = No information on current climate-related coastal hazards at the coast 1 = Partial knowledge on a very limited number of coastal areas and/or on only one of the main hazards considered 2 = In-depth knowledge for more but still a limited number of coastal areas and/or on only one or two of the main hazards considered. The knowledge is well understood for the case studies, but these latter are too specific (e.g. in terms of physical features) to be representative of most of the non-studied areas 3 = In-depth knowledge for a limited number of coastal areas and/or for most of the main hazards considered. The coastal areas studied are representative enough (in terms of physical features) of most of the other areas, therefore allowing for some lessons to be learnt 4 = Wide understanding of hazards, including a wide diversity of coastal case studies representing the various situations at the country level.
	1.2. Are **current drivers of exposure and vulnerability of natural systems** known? *Scope: drivers influencing the dynamics of key natural coastal systems (beach-dune systems, wetlands, coral reefs, coastal vegetation, etc.)* *Scale: includes on national to local levels*	NA = Not assessed 0 = No information on the drivers of natural systems' exposure and vulnerability 1 = Partial knowledge on a limited number of ecosystems with regard to the drivers of their exposure and/or vulnerability to climate-related hazards 2 = In-depth knowledge for a limited number of ecosystems, but limited potential to extrapolate results to other ecosystems and draw lessons beyond the case studied. I.e. the root and contemporary causes of coastal exposure and vulnerability are well understood for the case studies, but these latter are too specific (e.g. in terms of environmental conditions) to be representative of a wider range of situations at the country level 3 = In-depth knowledge for a limited number of ecosystems but that are representative of most of the other ecosystems, therefore allowing for some lessons to be learnt 4 = Wide understanding of the drivers of natural systems' exposure and/or vulnerability to climate-related hazards across the most representative ecosystems

	1.3. Are **current drivers of exposure and vulnerability of human systems** known? *<u>Scope</u>: drivers related to populations, assets (buildings, infrastructure, etc.) and economic activities (beachside tourism, fisheries, aquaculture, etc.) as well as decision-making processes (public authorities, local communities, private sector)* *Postulate: while drivers are by definition context-specific, here we focus on drivers that are generic from one case to another (e.g. role of urban densification in flood-prone areas, loss of social capital in face of disasters)* *<u>Scale</u>: includes on national to local levels*	NA = Not assessed 0 = No information on the drivers of human systems' exposure and vulnerability 1 = Partial knowledge on a limited number of settlements/sectors/communities with regard to the drivers of their exposure and/or vulnerability to climate-related hazards 2 = In-depth knowledge for a limited number of settlements/sectors/communities, but limited potential to extrapolate results to other settlements/sectors/ communities and draw lessons beyond the case studied. I.e. the root and contemporary causes of coastal exposure and vulnerability are well understood for the case studies, but these latter are too specific (e.g. in terms of socioeconomic conditions) to be representative of a wider range of situations at the country level 3 = In-depth knowledge for a limited number of settlements/sectors/communities but that are representative of most of the other settlements/sectors/ communities, therefore allowing for some lessons to be learnt 4 = Wide understanding of the drivers of human systems' exposure and/or vulnerability to climate-related hazards across the most representative settlements/sectors/ communities

	1.4 Are **future climate risks** projected (at a relevant/ useful scale)? *<u>Scope</u>: touches on a forward-looking approach for 1.1 + 1.2 + 1.3. I.e., integration of knowledge on future trends in hazards, exposure and vulnerability (for both natural and human systems), for example based on modeling and scenarios. Ideally, projections bringing climate, environmental and socioeconomic scenarios together* *The effect of alternative adaptation scenarios could be considered (eg. low vs. high adaptation). Needs o be specified in the "Justification" column* *<u>Scale</u>: includes on national to local levels*	NA = Not assessed 0 = No projections available at an adequate scale (e.g. only global or for wide ocean regions) 1 = Projections exist only for a limited number of places and only consider a single warming scenario and a business-as-usual socio-economic scenario. Adaptation scenarios are not considered. 2 = Projections exist for a number of places, but most often only consider 1 warming scenario and a business-as-usual socioeconomic scenario. Adaptation scenarios helping contrasting future risk with and without enhanced adaptation efforts, are not considered. 3 = Projections use contrasting/various warming scenarios but only business-as-usual socioeconomic scenario. Projections exist for many places that are representative of most of the other situations at the country level, therefore allowing for some lessons to be learnt. Adaptation scenarios helping contrasting future risk with and without enhanced adaptation efforts, are not considered. 4 = Projections bringing climate, environmental and socioeconomic scenarios together exist for many places that are representative of a wider range of situation at the country level. These projections use contrasting/ various warming scenarios and several socioeconomic scenarios. Also, some adaptation scenarios are considered, even roughly, that help contrast future risk with and without enhanced adaptation efforts.

2. Are there national to local **plans** in place and implemented?	2.1. Is there an **adaptation plan(s)** (national to local)? *<u>Scope</u>: plans and policies specific for climate adaptation, or mainstreaming of adaptation into existing plans and policies. For example, a national plan that has granular / local level interventions scores high on the evaluation scale. Doesn't include implementation aspects (concrete measures and institutional means of implementation are captured in 2.2 and 4.1, respectively). Considers that local governments often play a more prominent role than national governments.* *<u>Scale</u>: includes national to local levels*	*Dimensions considered: whether a national exist + is supported by local plans (to support implementation on the ground) + existence or not of a monitoring and evaluation system* NA = Not assessed 0 = None 1 = A national policy exists that covers a wide diversity of settlements/sectors/communities but only consists of a list of options without any guidance on prioritization and/or relevant timescales for implementation. No local plans exist to support implementation on the ground. No monitoring and evaluation system. 2 = A national policy exists (wide diversity of settlements/ sectors/communities, list of options) and provides some guidance (action prioritization, timescales for implementation), but only for settlements/sectors/ communities at higher risk (hotspots). Only very few, pioneering local plans exist to to support implementation on the ground. A monitoring and evaluation system is at an embryonic stage. 3 = A national policy exists that encompasses the main settlements/sectors/communities (not only hotspots). Several local plans exist to support implementation on the ground. The monitoring and evaluation system is advanced and (at least partly) operational. 4 = A national policy exists that encompasses the main settlements/sectors/communities (not only hotspots). Implementation is supported by a lot of local plans for the main settlements/sectors/communities (not only hotspots). The monitoring and evaluation system is fully advanced and operational.

	2.2. Are there **adaptation plan(s)** (national to local) implemented? *Scope: plan implementation on the ground. Implicitly includes dimensions of governance and multi-level coordination. Includes processes for monitoring and evaluation* *Scale: includes national to local levels*	*Dimensions considered: level of implementation of the national and local plans (from no to full implementation) + existence or not of a monitoring and evaluation system* NA = Not assessed 0 = No implementation activities 1 = Pilot implementation only in a very limited number of settlements/sectors/communities. Only partial level of implementation. No monitoring and evaluation system. 2 = Implementation only in settlements/sectors/ communities at higher risk (hotspots). Only partial implementation (only some of the dimensions of the plan). A monitoring and evaluation system is at an embryonic stage. 3 = Implementation in the main settlements/sectors/ communities (not only hotspots). Close to full implementation of all the dimensions of the plan. The monitoring and evaluation system is advanced and (at least partly) operational. 4 = Implementation in almost all settlements/sectors/ communities (not only hotspots or main settlements/ sectors/communities). Close to full implementation of all the dimensions of the plan. The monitoring and evaluation system is fully advanced and operational.
	2.3. Are the **main non-state actors** contributing to the design and implementation of national and local plans/ policies? *Scope: considers the extent to which non-state actors (private sector, communities, NGOs, etc.) are involved in consultations or drafting coastal adaptation strategies. Participation processes to involve the local community in the planning process and adaptation option implementation is considered (key to support implementation).* *Scale: includes national to local non-sated actors*	NA = Not assessed 0 = No participation processes are reported 1 = Paricipation is limited, e.g. for a specific sector or community in a specific place, but not at the municipal or national scale for example 2 = Some level of participation of a still limited number of non-state actors is reported at the national scale and/or for several local contexts, however consultations/ participatory processes are not carried out regularly ('check the box' process) 3 = Some level of participation of the most representative non-state actors (e.g. representative of major economic sectors, main communities and main local NGOs) is reported at the national scale and in several local contexts 4 = High level of participation of the most representative non-state actors (e.g. representative of major economic sectors, main communities and main local NGOs) is reported at the national scale and in most of the local contexts. These participatory measures are maintained, to review and revise existing policies/plans.

3. Are **adequate actions** taking place at a relevant scale **to reduce climate risks**? *"Action" here refers to a wide diversity of options aiming at implementing adaptation on the ground, including specific measures as well as regulatory processes*	3.1. Are there actions targeting the most prominent **climate hazards on the coast**? *Scope: actions that address the main climate-related hazards identified in sub-question 1.1 (i.e. erosion, marine flooding, river flooding, salinization from both extreme events and slow on-set changes). This includes both nature-based and community-based adaptation activities aimed at directly limiting climate hazards (e.g. through enhanced coastal protection, ecosystem services or coastal defense options). The risk of maladaptation (in relation with context-specificities) is also considered* *Scale: the focus is on the local scale, with a national-level perspective included*	*Dimensions considered: type of hazards considered, and type of actions (coastal protection, accommodation, retreat) depending on context-specificities, induced risk of maladaptation* NA = Not assessed 0 = No specific action is undertaken to control hazards at the coast 1 = A very limited number of actions are reported on the ground, without any insight on their potential to reduce risk or generate maladaptation. 2 = Only one or two of the main hazards are considered. The majority of responses are inadequate and could imply some degree of maladaptation. For example: hard protection is implemented in non-densely populated areas; accommodation measures are not at scale or only address a small part of impact; coastal retreat is not adequately planned and rather looks like an emergency response 3 = Most of the main hazards are considered. The majority of responses are adequate to address current hazards, e.g. adequately calibrated hard/soft coastal protection, adequate accommodation measures and managed coastal retreat. They are implemented in relevant places and minimize the risk of maladaptation. They however do not fully consider future changes in hazards. 4 = All the main hazards are considered. The majority of responses are adequate to address current hazards, e.g. adequately calibrated hard/soft coastal protection, adequate accommodation measures and managed coastal retreat. They are implemented in relevant places and avoid maladaptation. A forward-looking approach is considered when designing the responses (including planning for adjustments over time).

	3.2. Are there actions addressing the main **drivers of exposure & vulnerability of natural systems**? *Scope: actions addressing the most influential drivers of exposure and vulnerability for natural systems (e.g., mangrove clearing, coral and beach mining). Encompasses both measures to preserve or restore ecosystems and their services, and the existence of measures having detrimental effects on ecosystems* *Scale: focus on local scale, with a national-level perspective included (as scores increase)*	*Dimensions considered: preservation and restoration activities to enhance coastal ecosystems' resilience to climate change (e.g., vegetation replanting, coral farming, etc.) as well as ecosystem services (e.g. provisional ecosystem services for water and food); N.B. coastal protection ecosystem services are primarily considered in 3.1. Implemented measures having detrimental effects on ecosystems are also considered.* NA = Not assessed 0 = No response targets the preservation or restoration of key coastal ecosystems and their services. In addition, there are some evidence for other adaptation-related activities that contribute to ecosystem degradation (e.g. hard protection of buildings and infrastructure from waves, which affect local natural dynamics) 1 = Only pilot and localized preservation or restoration measures are in place, and these address a very limited number of ecosystems (buffers and water/food providers). In addition, there are some evidence for other adaptation-related activities that contribute to ecosystem degradation 2 = Preservation or restoration measures are emerging at a broader scale, but still focused on ecosystems that are already at risk (acknowledged as hotspots). The risk for induced ecosystem degradation is considered in the design and implementation of other adaptation-related activities 3 = A larger scale (i.e. not only localized) implementation of preservation or restoration measures is carried out, but still mainly focuses on ecosystems that are already at risk to degradation. The detrimental effects to ecosystems of other adaptation-related activities are fully recognized but not systematically considered. 4 = Most —if not all— of the coastal ecosystems benefit from preservation or restoration measures at a large scale (national level). Detrimental effects to ecosystems of other adaptation-related activities are systematically considered.

	3.3. Are there actions addressing the main **drivers of exposure & vulnerability of human systems**? *<u>Scope</u>: actions addressing the most influential drivers of exposure and vulnerability for human systems (people, tangible and intangible assets (including infrastructure), economic activities). The risk of maladaptive outcomes is also considered.* *<u>Scale</u>: focus on local scale, with a national-level perspective included (as scores increase)*	Main dimensions considered: activities reducing the exposure of the population, assets (tangible and intangible) and the economy (e.g. mainstreaming climate risk in design and maintenance activities), and enhancing societal adaptive capacity (e.g. risk awareness, equity in access to safe places and resources) + risk of maladaptive outcomes NA = Not assessed 0 = No response targets the underlying socioeconomic drivers of exposure and vulnerability 1 = Adaptation-related actions are sparse and not surveyed, so that the risk of maladaptation remains high 2 = Only pilot actions are undertaken to prevent direct impacts to some —but not all— of the dimensions above (people, tangible and intangible assets, economic activities). The risk of maladaptive outcomes is not considered 3 = A wider range of actions are undertaken that, together, address most —but not all— of the dimensions above (people, tangible and intangible assets, economic activities). Current climate impacts are adequately considered, but there is no systematic forward-looking approach to also consider the potential for future changes in climate risk, so that the risk of maladaptation is considered but not fully minimized 4 = Together, actions consider all the dimensions above (people, tangible and intangible assets, economic activities) and current and future climate impacts are almost systematically considered in the design, implementation and adjustments of responses. The risk of maladaptation is fully minimized (but not fully eliminated).

4. Are there sufficient **institutional, human and financial capacities** to implement adaptation at the required scale? *General scope: The goal here is to understand the extent to which those responsible for carrying out certain tasks are indeed doing so (or in capacity to do so). Several items could contribute to ensure this, but here the focus should be on how such items can help determine progress on coastal adaptation and not an evaluation of "good governance of adaptation"*	4.1. Are there **governance arrangements** in place to support institutional capacities to coordinate adaptation activities (multi-level governance and mainstreaming across policy areas/sectoral plans)? *Scope: the focus here is on governance arrangements and institutional capacities to support implementation, not on plans and policy documents (captured in 2.1). These governance arrangements ensure cross-institutional coordination (across multi-level government and horizontally across policy areas/sectors and planning tools), to allow for implementing cohesive adaptation-related plans and policies. For example, does a climate adaptation unit exit in a specific Ministry or at the local government level (e.g. municipalities and district councils)?* *Scale: includes national to local levels of government, including but not limited to the often critical role that local governments play in the implementation of activities, especially in regards to land use and urban planning (e.g. all land use change permits are given at the local government level).*	*Dimensions considered: arrangements to ensure institutional coordination from the national and local levels (e.g., existence of an adaptation unit and its connection to other institutions)* NA = Not assessed 0 = No institutional arrangements are in place to address adaptation challenges 1 = There are limited and scattered institutional arrangements that consider adaptation challenges, and no governance measures are in place to ensure information sharing and the coordination of activities 2 = One institution is identified at the national level that is dedicated to address adaptation issues (e.g. an adaptation unit), but it remains isolated from other national institutions and is not supported by any governance arrangements to allow for multi-level coordination and communication (information-sharing) with local coastal municipalities and/or districts (e.g. only rare and pioneering ones) 3 = Institutional arrangements exist at the national level and are well connected to other national institutions via coordination and information-sharing measures with increasing influence but that remains limited. In addition, adaptation-dedicated institutional arrangements are more systematically established in local coastal municipalities and/or districts, however there is limited coordination and information-sharing upstream. 4 = Institutional arrangements exist at the national level and cross institutional dialogues are systematically carried (mainstreaming of climate change adaptation policies in other sectoral policies and planning tools). In addition, multi-level governance is in place: there are adaptation-dedicated institutional arrangements at the local/district level, and information-sharing measures are in place to ensure the upstream flow of information to national institutions.

	4.2. Are **human capacities** in place at the relevant scale and at <u>both</u> national and local levels? <u>Scope</u>*: focus on human means of implementation of plans and policy documents. Considers together the number of people working on adaptation-related dimensions; their level of training on terms of coastal risk management and adaptation; and the level of consistency between number/training and actions/decisions on the ground and in(national and local institutions* <u>Scale</u>*: includes national to local levels, and considers local governments as critical puzzle pieces*	*Dimensions considered: number of people working on adaptation-related dimensions, level of training of these people on coastal risk management and adaptation, and consistency between the training level and the way actions/decisions are operationalized on the ground and in institutions (national and local).* NA = Not assessed 0 = No people dedicated to coastal risk management and climate adaptation 1 = Very limited number of people working on adaptation + not trained or have very limited training on coastal risk management and adaptation + no clear evidence of good practices and decisions (e.g. in case of an extreme event). This category also includes a situation where a more substantial amount of non-trained people are dedicated to coastal risk management and adaptation (no training means increased risk of non adaptation-compatible practices and decisions, hence increased risk of maladaptation) 2 = Limited number of people working on adaptation but with light training on coastal risk management and adaptation + emerging evidence of good practices and decisions (e.g. in case of an extreme event). 3 = Adequate number (i.e. at scale) of people working on adaptation but with robust training on coastal risk management and adaptation + increasing evidence of adaptation-compatible practices and decisions (e.g. in case of an extreme event). 4 = Adequate number (i.e. at scale) of people working on adaptation but with robust training on coastal risk management and adaptation + adaptation-compatible practices and decisions are predominant both in case of an extreme event and when considering slow-onset changes

	4.3. Does **specific and sustainable funding** exist that is specifically dedicated to managing climate-related coastal risk and adaptation? *<u>Scope</u>: This sub-question does not aim at assessing whether available funding for adaptation is enough or not, but rather at describing the finance context for adaptation. Besides the amount of funding available, the main problem encountered in many places is that, first there is no dedicated budget for coastal risk and coastal adaptation, and second, when it exists, it is generally available for a few years (e.g. through externally-funded projects in developing countries). So the challenge is around (i) dedicated funding support, and (ii) sustainable (long-term) funding, including from the private sector.* *<u>Scale</u>: includes national to local levels, and considers institutions and the private sector*	NA = Not assessed 0 = No 1 = Specific budget dedicated to coastal risks and adaptation exists but is not clearly defined 2 = A specific budget is available to manage coastal risks but only for specific sectors, communities, networks, etc., and for a limited period of time (several years at best). There is no clear strategy for sustaining finance over the long run and fully include projected risks (decades ahead) 3 = A specific budget is available to manage coastal risks and is not limited specific sectors, communities, networks, etc. It remains however designed for a limited period of time (several years at best). A strategy for sustaining finance over the long run and fully include projected risks (decades ahead) is only emerging 4 = A specific budget is available to manage coastal risks which is not limited specific sectors, communities, networks, etc. and is designed to support multi-year projects. There is also a more consolidated funding strategy over the long run and that fully include projected risks (decades ahead)

5. Is progress being made in **actually reducing current and future climate risk** (including reducing hazards locally* and managing long-term vulnerability)? ** Does not consider greenhouse gaz mitigation efforts, but evidence that local hazards are tackled*	5.1. Is there **evidence of risk reduction** today? *<u>Scope</u>: understand the level of evidence showing to what extent plans, policies and actions in place are actually contributing to coastal risk reduction. The expert's own views on risk reduction level across cales are also considered.* *<u>Scale</u>: includes national to local levels, all types of interventions and stakeholders (public, private, NGOs, etc.)*	*Dimension considered: the relationship between responses (policies, actions) implemented and measured reduction in climate risk levels; and the experts own view on risk reduction level (based on their own experience).* NA = Not assessed 0 = No relationship is established (either because there is none, or because risk reduction is not assessed) + no clear view from the expert 1 = No relationship is formally established, but there is intuitive assumption (by the expert or other experts) that responses undertaken support risk reduction. However, such risk reduction is not measured, so that the possibility of "no effect on risk levels" 2 = The assessment of the relationship between responses and risk reduction levels is emerging. There are indications as well as increasing agreement among experts that some responses are contributing to current risk reduction; however, no robust conclusion can be drawn for a broader set of responses. The extent to which these responses also provide risk reduction benefits over the long run remain highly uncertain 3 = The relationship between responses and risk reduction levels is assessed and surveyed; there are emerging indications as well as increasing agreement among experts that most of the responses undertaken have an effect on climate risk reduction today and contribute to future risk reduction 4 = The relationship between responses and risk reduction levels is assessed and surveyed; there are robust indications as well as high agreement among experts that most of the responses undertaken substantially reduce climate risk today and contribute to future risk reduction

	5.2. Are there indications that the implemented policies and actions contribute to **minimize the risk of maladaptation** on the long run? *<u>Scope</u>: besides bringing evidence of actual risk reduction, there is a need to ensure that adaptation responses (actions and policies) are not contributing to increasing risk in the future, especially through increased exposure and vulnerability* *<u>Scale</u>: includes national to local levels, all types of interventions and stakeholders (public, private, NGOs, etc.)*	*Dimensions considered: level of evidence describing whether the strategy in place intends (e.g. has formal maladaptation targets) or actually do contributes (i.e. through risk reduction targets more broadly) to minimizing the risk of maladaptation* NA = Not assessed and, in the worst case scenario, ther are signs of an insidious contribution to increasing coastal risk (maladaptation) cannot be excluded 0 = No indication, so that an insidious but substantial contribution to increasing coastal risk (maladaptation) cannot be excluded 1 = Very little indications that the strategy in place intends or does contribute to minimizing the risk of maladaptation, so that an insidious but substantial contribution to increasing coastal risk (maladaptation) cannot be excluded 2 = Indications that the strategy in place intends to minimizing the risk of maladaptation, but an overall lack of clear evidence that makes interpretation of potential actual contribution too difficult/subjective 3 = Increasing evidence that the strategy in place both intends and contributes to minimizing the risk of maladaptation 4 = Clear evidence that the strategy in place intends and actually contributes to minimizing the risk of maladaptation

	5.3. Are there indications that **the society is aware of the need** to tackle both current and future coastal climate risks? *Scope: understand the extent to which the local population is prepared to support adaptation-related responses (actions and policies), as population acceptance is key to the design and implementation of coastal risk reduction strategies at multiple scales* *Scale: includes the national population and local communities*	*Dimensions considered: current/future risk perception, knowledge on the drivers of climate risk (climate variability and change, environmental, anthropogenic). Weather and climate risks at large, not only coastal.* NA = Not assessed 0 = No indication that the national population and/or local communities neither correctly perceive nor understand the challenges related to coastal risk and adaptation 1 = Only sparse indications (but not supported by evidence). Coastal risk awareness at the society level is considered almost non-existent, i.e. limited to individuals or small groups of population. 2 = Emerging signs: sparse surveys/knowledge among the national population and local communities (at best, only isolated examples), and indicating a limited degree of risk perception of climate risk and/or of knowledge of the drivers of coastal risk. Coastal risk awareness at the society level is considered only emerging 3 = Advanced signs: increasing surveys/knowledge among the national population and local communities (not only isolated examples), and indicating an increasing degree of risk perception of climate risk and/or of knowledge of the drivers of coastal risk. Coastal risk awareness at the society level is considered in place and increasing 4 = Confirmation stage: extended surveys/knowledge among the national population and local communities, and indicating a relatively high degree of risk perception of climate risk and/or of knowledge of the drivers of coastal risk. Coastal risk awareness at the society level is considered substantial.

6. Is a **pathway-like approach** considered? *The adaptation pathway approach covers a lot of dimensions, and here the goal is not to enter such complexity, but just inform whether the sequencing of actions over time is part of the strategy and planning tools. That is: are synergies and trade-offs among multiple adaptation response considered and associated to a*	6.1. Are **adaptation goals** established in the short to medium and long-term (multi-decadal scale), and articulated with each other (i.e. how does reaching present-day goals support reaching longer-term ones)? *Scope: understand the extent to which clear goals on coastal risk reduction in the future (and in connection with goals dedicated to current coastal risk reduction) have been established, and their level of precision (generic/vague vs. precise/operational)* *Scale: national level mainly, but also considering local-level situations when they have the potential to inform broader scale situations*	*Dimensions assessed: existence of a goal(s) considering climate risk; short- to long-term* NA = Not assessed 0 = No coastal risk-specific goal. 1 = A general goal(s) exist at the national level but remains vague in scope in terms of targets, sectors and scales; and in terms of considering coastal risks more specifically. 2 = Only short-term goal(s) is considered for current coastal risks (e.g. ≤2-3 years), but without any clear relation with longer-term ones OR A medium-long term (e.g. ≥ 3-5 years to a decade) goal exists only for a limited number of coastal ''hotspots' (i.e. sectors, areas and communities particularly at risk). 3 = Medium-long term (e.g. ≥ 3-5 years to a decade) goal(s) is established for all coastal hotspots (i.e. sectors, areas and communities particularly at risk), and includes intermediary goals at shorter timescales (e.g. ≤2-3 years). 4 = Longer-term (multiple decades) goal(s) is established not only for hotspots but for most of (all) sectors, areas and communities potentially at risk, and includes intermediary goals for shorter timescales (several years).

multi-decadal roadmap? The goal is not to assess the robustness of any adaptation pathway. whether is it just the use of planning tools to sequence actions?	6.2. Are **synergies and trade-offs** between various adaptation-related options considered? *Scope: understand the extent to which synergies and tradeoff between multiple adaptation responses (actions and policies) are studied (on scientific bases)* *Scale: national and local level*	*Dimensions assessed: efforts to understand synergies and tradeoffs among a wide range of adaptation responses (actions and policies)* NA = Not assessed 0 = Synergies and trade-offs between different adaptation responses are neither known nor considered 1 = Synergies and trade-offs are barely considered (e.g. only for a very small set of options in a very specific location) 2 = Knowledge on synergies and trade-offs between various adaptation responses is emerging but is not supported by a scientifically-based assessment framework. There are only emerging signs that these considerations on synergies and trade-offs influence the design and implementation of coastal adaptation strategies at the national and/or local levels 3 = Knowledge on synergies and trade-offs between various adaptation responses is now supported by a rough scientifically-based assessment framework, and there is some evidence that it influences the design and implementation of coastal adaptation strategies at the national and/or local levels 4 = Knowledge on synergies and trade-offs between various adaptation responses is supported by an advanced scientifically-based assessment framework and is fully considered in the design and implementation of coastal adaptation strategies at the national and/or local levels, and possibly also in monitoring and evaluation systems.

	6.3. Are options planned **in a sequenced manner and alternative strategies** considered? *<u>Scope</u>: understand the extent to which synergies and tradeoff between multiple options are studied (on scientific bases) and considered in the design and implementation of coastal adaptation strategies at the national and/or local level* *<u>Scale</u>: national and local level*	NA = Not assessed 0 = Synergies and trade-offs between different adaptation responses are not considered when designing and implementing adaptation strategies neither at the national nor the local level. Responses are planned separately from each other 1 = Synergies and trade-offs are barely considered, e.g. only for a very small set of options in a very specific location. No nationwide consideration. Responses are still mainly planned separately from each other 2 = There are only emerging signs that knowledge on synergies/trade-offs influences the design and implementation of coastal adaptation strategies at the national and/or local levels. Early examples of strategies bringing together multiple responses and organizing them by considering trade-offs and synergies over time are available, however there is no formal process of establishing an "adaptation pathway" at the national level 3 = There is medium evidence that knowledge on synergies and trade-offs influences the design and implementation of coastal adaptation strategies at the national and/or local levels. The establishment of an "adaptation pathway" is under way, and there is an increasing number of local strategies bringing together multiple responses and organizing them by considering trade-offs and synergies over time 4 = Knowledge on synergies and trade-offs is fully considered in the design and implementation of coastal adaptation strategies at the national and/or local levels, and possibly also in monitoring and evaluation systems. A national "adaptation pathway" has been established (or is close to be) and several local strategies are in place that bring together multiple responses and organize them by considering trade-offs and synergies over time