ACT

ACT | ASSESSING LOW CARBON TRANSITION ®

ACT ADAPTATION METHODOLOGY

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AUTHORS AND FUNDERS

EDITORIAL **Stephia LATINO** (ADEME); Stephia.LATINO@ademe.fr

Romain POIVET (ADEME); **Robert BELLINI** (ADEME)

A critical review of the ACT Adaptation draft methodology from February 2022 has been conducted by two independent experts

- Adelphi Consult GmbH: Walter Kahlenborn and Linda Hölscher
- Climate Adaptation Leader & Climate Adaptation Works: Ira Feldman; Karl Schultz; Linus Adler; Leila d'Heurle; Paul Forte

The critical review comments have led to this version of the methodology.

Contents

1. Introduction

The world has already exceeded +1°C global warming compared to the pre-industrial period (1850-1900). Climate change has been definitively linked with severe and widespread consequences across the globe (see the World Weather Attribution initiative). Thus, adaptation to the current and future climate system is essential and must be taken into consideration alongside mitigation efforts. All actors (private actors, companies, territories, governments etc.) have to start acting now to adapt.

Article 7 of the Paris Agreement defines the global goal of "enhancing adaptive capacity, strengthening resilience and reducing vulnerabilities to climate change"[1]. It also requires that all Parties should engage in adaptation planning and implementation through, for example, national adaptation plans, vulnerability assessments, monitoring and evaluation, and economic diversification.

Despite the growing concern for adaptation, there is a lack of standardized and operational frameworks for analysing physical risks and assessing the adaptation strategies of private actors. Existing standards provide generic guidelines and recommendations (e.g., ISO 14090 and ISO 14091). This ACT Adaptation methodology is not a risk analysis methodology, i.e. it does not provides guidance and tools to analyse the potential negative consequences from physical climate events or trends on the company. ACT Adaptation rather aims at assessing the quality and comprehensiveness of company's adaptation strategy, from their physical risk analysis to their governance. As a result, an ACT Adaptation assessment does not quantify the company's level of climate resilience, but it quantifies and qualifies to which extent a company has implemented a comprehensive, coherent, effective and robust adaptation strategy.

The principles and structure of ACT Adaptation are consistent with those of ACT Mitigation. These two parts of the ACT initiative are independent but can be combined to obtain a comprehensive climate strategy assessment. The ACT Adaptation methodology has been developed based on

- ADEME's expertise regarding adaptation to climate change and bibliographical review;
- Preliminary methodological discussions and tests from ACT Initiative sectoral Technical Working Groups: Agriculture & Agrofood, Iron & Steel, Glass, Pulp & Paper, Chemicals and Aluminium; and a public consultation of the ACT Adaptation methodology first draft;
- An independent critical review by two experts: Adelphi Consult GmbH and Climate Adaptation Leader & Climate Adaptation Works.

The ACT Adaptation assessment structure is composed of three dimensions: Governance; Physical climate risks; Adaptive capacity and adaptation activities. Each dimension is composed of several modules and indicators. This structure aims to carry out a holistic assessment of the company's strategy, organisation and operation, along its entire value chain.

[1]https://unfccc.int/topics/adaptation-and-resilience/the-big-picture/new-elements-and-dimensions-of-adaptation-under-the-paris-agreement-article-7

2. Principles

The application of principles is fundamental to ensuring the quality and comprehensiveness of the adaptation strategy assessment. The principles are the basis for, and will guide the application of, the requirements in the present methodology. The principles ensure the strategy coherence between physical risks, adaptive capacity, adaptation activities and governance.

COMPREHENSIVENESS of adaptation measures designed – All of the risks identified in the physical risk analysis should be addressed by the measures included in the adaptation strategy.
COHERENCE with results of the physical risk analysis - The adaptation measures and activities of the company should be clearly based on and aligned with the results of the physical risk analysis.
EFFECTIVENESS of measures in adaptation strategy - The anticipated extent to which adaptation can reduce climate risk, through decreases in exposure and vulnerability.
FEASIBILITY - The degree to which adaptation response options are considered possible and desirable, taking into consideration barriers, enablers, synergies, and trade-offs, balancing diverse perspectives and values.
INCREASING Adaptive capacity - The adaptation strategy should be likely to increase the company's adaptive capacity.
VERIFIABILITY - The data required for the assessment shall be verified or verifiable and sufficiently relevant.

TABLE 1: PRINCIPLES FOR IMPLEMENTATION

RATIONALE

The analysis shall be carried out against these principles. They form the basis of the assessment for all the indicators of the ACT Adaptation methodology.

3. Scope

3.1. Scope of the document

This document presents the ACT Adaptation methodology. It includes requirements, rationales, definitions, indicators, guidance and weightings for assessment.

The examples of risks for the different activities of a company along its value chain are not exhaustive. The company may decide to focus on the most relevant ones for its activity. Any other risk or opportunity that is relevant to the company and its specific sector can be considered and analysed.

3.2. Scope of the ACT Adaptation methodology

The ACT Adaptation methodology evaluates the physical risk analysis and the adaptation strategy of a company, as well as its governance. Although specific adaptation measures do depend on the sector or size of a company, the general framework for analysing its exposure and vulnerability to hazards can be standardised. Adaptation principles and measures have general features, no matter the size or sector of the company. Thus, this methodology applies to all sectors and can be used by companies of various sizes.

This ACT Adaptation methodology aligns with ACT Mitigation methodologies regarding its structure (e.g., maturity matrices, modules, etc.) and the use of indicator- and module-level weightings. However, it is independent and can be applied separately.

4. Boundaries

The boundary defines the areas of a company's activities and influence to which the methodology can be applied.

In terms of temporal boundaries

- Past events fall within the scope, since they can help the analyst to understand the company's track record in terms of its vulnerability to hazards and thus it may help to build its adaptive capacity.
- Current weather events are also within the scope, since the world's climate is already changing and influencing the company's activity.
- However, this methodology is strongly future-orientated, as much for exposure, vulnerabilities, risks and opportunities as for the adaptation strategy. Anticipating future climate change through scientific scenarios and company planning is key.

The analysis and adaptation measures must be consistent within the expected lifetime of the activity.

In terms of activities: nature and location

As illustrated in Figure 1, company activities are broken down into three scopes of process and control. Scope A in Figure 1 represents the direct scope of the company, that is to say, assets directly controlled or operated by the company (e.g., equipment, vehicles, buildings, etc.). Scope B corresponds to the stakeholders with which the company is in direct contact, including network infrastructures (e.g. water, electricity, waste removal, rank 1 suppliers). Scope C represents the stakeholders with which the company is in indirect contact upstream or downstream of the value chain, such as rank 2 suppliers on which the company's direct suppliers depend. These three scopes are part of the analysis in ACT Adaptation. Indeed, hazards occurring at all stages of the value chain, from network infrastructure (e.g., water, electricity) to suppliers or clients of any rank (i.e., scope B or C in Figure 1), can affect the company directly or indirectly. Thus, the complete value chain is included within the system boundaries. A list of activities included in each scope is presented in Appendix 1 and can guide the analysis.

Analysis and adaptation measures must be consistent with the specificities and location of the facilities. Location is an important aspect to consider in the activities of the company on the three scopes and not only as part of adaptation measures but also regarding the company's overall adaptation strategy. It is a very significant factor regarding the assets and activities of a company since climate impacts are always location-specific.

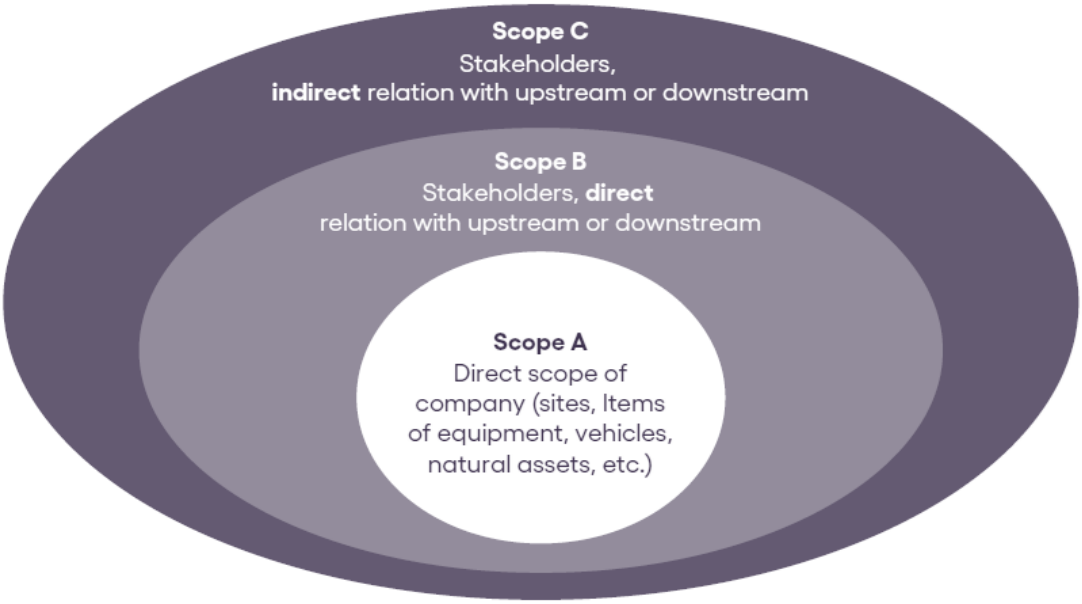

FIGURE 1: SCOPES OF ANALYSIS INCLUDED IN ACT ADAPTATION (FROM OCARA METHODOLOGY, CARBONE 4, 2021)

5. Methodological framework

5.1. General

This chapter details the ACT Adaptation methodology, as well as the steps for applying the methodology to the adaptation strategy of a company.

The bibliographical review for the development of the ACT Adaptation methodology includes publications from the World Resource Institute (WRI), the Intergovernmental Panel on Climate Change (IPCC) and the ISO standards. The Physical climate risks dimension also draws on publications from Carbone 4 and the Institute for Climate Economics (I4CE). The indicators and the structure of the Adaptation dimension mainly draw upon on reports from ADEME. Modules and indicators include recommendations from the European Taxonomy (EU Taxonomy), the European Bank for Reconstruction and Development (EBRD, 2018), Task Force on Climate-related Financial Disclosures (TCFD) and ISO 14090 standard. All references can be found in Section 7 – Sources.

The ACT adaptation methodology relies on three dimensions that enable to ensure the high-quality and comprehensiveness of the company's adaptation strategy and its associated plan: Governance, Physical climate risks, and Adaptive capacity and adaptation activities. ACT relies on the development of indicators, which provide insights and assessment of the company's adaptation strategy. The application of the principles presented in Section 2 is fundamental to ensuring the quality and comprehensiveness of the adaptation strategy of the company.

The objective of the assessment is to ensure that the adaptive capacity and adaptation activities planned or implemented are relevant and proportionate to the risks and opportunities identified, and

that it relies on appropriate governance. The goal of an adaptation strategy and the measures included in it is thus to minimize negative consequences from climate change for the company and to take advantage of opportunities. A component of a good adaptation strategy is therefore whether it is targeting the risks identified in the physical risk analysis and includes effective measures to reduce those risks. A good adaptation strategy means that the company is on a path to becoming climate-resilient through adaptation. ACT Adaptation is consistent with ISO 14090 framework. However, ACT Adaptation is intended to be more operational and follows the ACT Framework[2].

5.2. ASSESSMENT FRAMEWORK

As a starting point, the ACT Assessment framework proposes five guiding questions as the basis to steer the development of the ACT Adaptation methodology and create consistent ACT ratings.

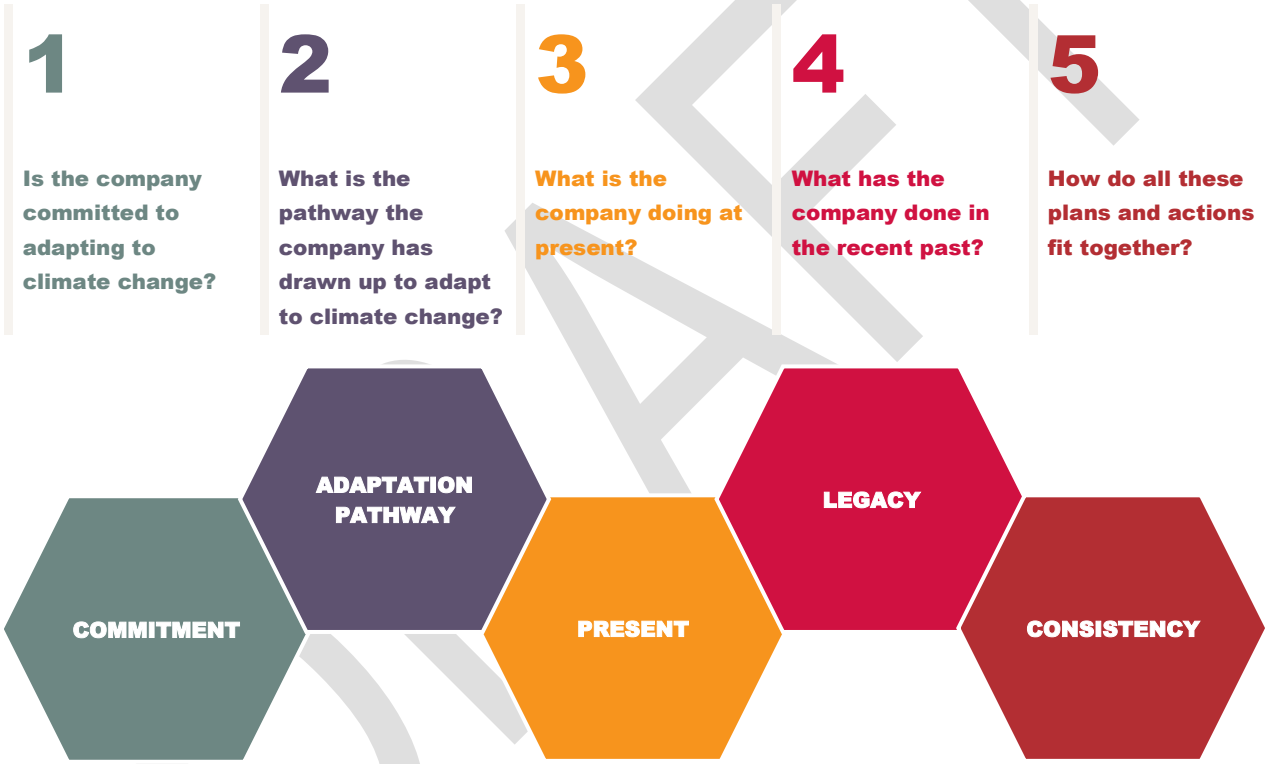

FIGURE 2: ACT ADAPTATION ASSESSMENT FRAMEWORK

The assessment framework shall remain similar for the development of all ACT methodologies. It is here adapted to the context and elements of ACT Adaptation. The first 4 questions express the dynamic vision of companies progressing towards adaptation to climate change. Starting by assessing a company's commitment (Q1), the methodology will then evaluate the associated means to be deployed to achieve that commitment (Q2), including those already in place (Q3, Q4) and subsequently validate that the company's business models are consistent and credible (Q5).

[2] see https://actinitiative.org/act-methodologies/

RATIONALE

The key question to begin our assessment is “Is the company committed to adapt to climate change?”. In order to assess this question, a particular focus will be placed on the company long-term vision: is it aware of the climate change and its consequences on the company business? Is it explicitly committed in the adaptation process? Does it have long term, strategic objectives that cope with climate change?

Once we know that the company is committed to adapt to climate change, we should seek to understand what the company is planning to do. The key question is then “What is the pathway the company has drawn up to adapt to climate change?”.

While the companies’ intentions and strategy to adapt to climate change are extremely important, past actions and current performance will also be considered. The key questions then relate to “What is the company doing at the present?” and “What has the company done in the recent past?”. To a larger extent, the answer to these questions not only determines the adaptation gap, but also make its commitments well-founded and credible.

Finally, from the 4 questions discussed above a fifth key question then emerges, which is “how do all these plans and actions fit together?” to ensure a comprehensive, coherent, effective, and feasible adaptation strategy, encompassing the principles presented in Section 2.

5.3. DATA SOURCES

In order to carry out a company-level assessment, many data points, whether quantitative or qualitative, need to be gathered from various sources. ACT principally relies on the voluntary provision of data by the assessed companies. The nature and format of data provided might differ from one company to another. In addition, external data sources might be consulted in order to streamline the process, ensure fairness, and provide additional value for verification and validation. Some of this third-party data may be replaced by reported data from companies, provided that there is a rationale for doing so.

The ACT Adaptation principles for implementation (Comprehensiveness, Coherence, etc.: see Table 1) drive data collection. Information on the credibility of the data used for the assessment shall eventually accompany the ACT ratings. The quality of data used for this assessment, as well as for the climate physical risk assessment that forms a part of it, is of very high importance and will determine the quality of the assessment of the company's adaptation strategy.

5.4. METHODOLOGY STRUCTURE

The ACT Adaptation methodology is composed of three dimensions: Governance; Physical climate risks; Adaptative capacity and adaptation activities.

Governance refers to “the system by which an organization is directed and controlled in the interests of shareholders and other stakeholders. It involves a set of relationships between an organization’s management, its board, its shareholders, and other stakeholders. Governance provides the structure and processes through which the objectives of the organization are set, progress against performance is monitored, and results are evaluated” (TCFD, June 2017). Climate governance refers to “the structures, processes, and actions through which private and public actors seek to mitigate

and adapt to climate change (IPCC, AR6 WGII Final Draft, 2022). Governance bodies provide the strategic vision and impetus for the company to adapt to climate change. Governance is a fundamental dimension of the adaptation strategy since it ensures that the necessary adaptation measures are being implemented by the company. It is completed by two other operational dimensions: the company's physical climate risks and opportunities along the entire value chain; and the company's adaptive capacity and adaptation activities.

Each one of the three dimensions contains several modules, such as analysis, production and organisational capacity. A module is evaluated through several indicators, but each indicator is independent of the other ones. Each indicator is assessed using a maturity matrix.

The maturity matrix is built on five levels of progressive maturity, from Basic to Best Adaptive Practice (see Table 2). When relevant, the five levels of maturity are described in the matrix of the indicators to frame and describe different shades of practices. In any case, even when only three levels of maturity are described, the analyst shall assess and position the company's performance somewhere on the five possible levels of maturity.

Evaluation level	Basic	Standard	Advanced	Next Practice	Best Adaptive Practice
Score	0	0.25	0.5	0.75	1

TABLE 2: MATURITY MATRIX SCORING

The level of maturity that the company reaches for an indicator results in a corresponding score between 0 and 1 (see

Table 2). The assessor should supply a short narrative supporting their judgment with respect to each indicator for the level of maturity achieved and listing the specific data provided by the company from which they draw their conclusions.

The five levels of the maturity matrix are similar to the ones that are used in ACT Mitigation methodology, except for the last one, "Best Adaptive Practice (instead of "Low-carbon transition aligned"), to better suit adaptation to climate change terminology.

5.5. INDICATORS

Table 3 lists the modules and indicators used within the ACT Adaptation methodology.

DIMENSION	MODULE	INDICATOR	SUB-INDICATORS (IF EXISTING)
GOVERNANCE	1. INTERNAL GOVERNANCE	1.1 Long-term vision and corporate projects	
	2. COHERENCE WITH EXTERNAL POLICIES AND STRATEGIES	2.1 Coherence with public policy	
		2.2 Interested parties	
	3. ENVIRONMENTAL SAFEGUARDS	3.1 Do No Significant Harm Principle	
PHYSICAL CLIMATE RISKS	4. ANALYSIS	4.1 Data and scenarios	
		4.2 Inclusion of all critical components of the value chain	
	5. PHYSICAL CLIMATE RISK ANALYSIS	5.1 Raw materials	5.1.1 Exposure
			5.1.2 Vulnerability
			5.1.3 Risks and opportunities
		5.2 Production, operations, processes and infrastructure	5.2.1 Exposure
			5.2.2 Vulnerability
			5.2.3 Risks and opportunities
		5.3 Networks and systems (water, energy and telecommunication)	5.3.1 Exposure
			5.3.2 Vulnerability
			5.3.3 Risks and opportunities
		5.4 Logistics and transport	5.4.1 Exposure
			5.4.2 Vulnerability
			5.4.3 Risks and opportunities
		5.5 Demand and sales	5.5.1 Exposure
			5.5.2 Vulnerability
			5.5.3 Risks and opportunities

DIMENSION	MODULE	INDICATOR	SUB-INDICATORS (IF EXISTING)
ADAPTIVE CAPACITY AND ADAPTATION ACTIVITIES	6. ORGANIZATION	6.1 Organizational capacity for adaptation	6.1.1 Decision-making processes
			6.1.2 Adaptation leadership and responsibilities
		6.2 Consideration of the company's context and regular updates	
		6.3 Diversification of activities	
	7. FINANCE	7.1 Financial capacity	
		7.2 Mainstreaming of climate adaptation into investment decisions	
	8. TECHNOLOGIES AND NATURE-BASED SOLUTIONS	8.1 Technologies and nature-based solutions for adaptive capacity	
	9. HUMAN	9.1 Competences and skills	
		9.2 Trainings and capacity building	
		9.3 Adaptation measures to working conditions	

TABLE 3: ACT ADAPTATION INDICATORS

Rationale

As a systemic challenge, adaptation to climate change is a multi-level and multi-agent subject, as well as a multi-thematic policy. Therefore, as stated in ISO 14090 and confirmed in the case studies "How to make business decisions to adapt to climate change?" by ADEME 2021, the climate governance of the company shall take commitment and responsibility on systemic grounds. This refers to the internal governance, as well as to the external governance with communities and other stakeholders.

Consistent and efficient governance and decision-making is based on the analysis of the physical hazards to which the company is exposed and the effect these can have on the company.

Risks from climate change impacts arise from the interaction between hazards (triggered by an event or trend related to climate change), vulnerability (susceptibility to harm) and exposure (people, assets or ecosystems at risk).

FIGURE 3: INTERACTION BETWEEN HAZARDS, EXPOSURE AND VULNERABILITY

Hazards refer to the potential occurrence of a natural or human-induced physical event, trend or the physical impacts of these events/trends, that may cause loss of life, injury, or other health impacts, as well as damage to and loss of property, infrastructure, livelihoods, service provision, ecosystems and environmental resources. Thus, the term “hazard” includes processes that range from brief events, such as severe storms, to slow trends, such as temperature rise, multi-decade droughts or multi-century sea level rise (IPCC, 2014). The chosen hazards classification for ACT Adaptation is presented in the Glossary of this document. In order to study hazards and their future evolution, an analysis of climate data and scenarios is a key step.

Exposure is the degree to which a company’s value chain (e.g., assets, operations, supply chain, customers) has the potential to be impacted by physical climate hazards due to its geographic location. These metrics should link part of a company’s value chain (e.g., physical assets) with specific physical climate hazards (e.g., tropical cyclones) (IPCC, 2014).

Vulnerability is the propensity or predisposition to be adversely affected and encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt. (from IPCC, AR6 WGII Assessment Report Final Draft). These metrics should assess specific characteristics of a company’s value chain (e.g., water intensity) that may make that part of the value chain more or less likely to suffer negative consequences from climate change (WRI, 2021). This combination leads to physical risks, as illustrated in Appendix 2.

Physical risks may impact the complete value chain of the company and affect it in various ways. An analysis of the exposure and vulnerability along the different parts of the value chain is important to understand where and how to adapt. The Physical risks module and its indicators cover all these aspects of risk.

The third module focuses on adaptive capacity and adaptation activities, which contribute to making the company more flexible, capable of quickly adapting to changes, and even more competitive. According to ISO 14090 (and exemplified in ADEME (2019), *Adaptive capacity of businesses to the impacts of climate change: case studies)*, four major capacities permit a company to reinforce its adaptation to climate change: organizational capacity (governance, exchange and decision-making bodies), financial resources (financing available to implement actions), technological resources (technologies, techniques and new solutions) and human resources (the specific skills and working time that the company mobilizes). These elements make up the four modules of the Adaptive capacity and adaptation activities dimension of ACT Adaptation.

Governance dimension

1. INTERNAL GOVERNANCE

1.1 LONG-TERM VISION AND CORPORATE PROJECTS

DESCRIPTION & REQUIREMENTS **1.1 LONG-TERM VISION AND CORPORATE PROJECTS**

SHORT DESCRIPTION OF INDICATOR

This indicator measures how the long-term strategy of the company considers climate change and its impacts on activities and business. It also considers how physical risks and adaptation are formalised and integrated into corporate projects and policies (mainly by the individual with the highest responsibility for climate change: 1.2 Adaptation leadership and responsibilities) and how they are communicated within the company.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not adopted any long-term adaptation strategy. Adaptation is not formalised in corporate projects and policies, nor communicated within the company.	The company has identified some major gaps and issues in the long-term strategy. It recognises the need to adapt to climate change, through corporate projects and policies.	The company has identified gaps and progress in the long-term strategy. It is starting to put in place an adaptation strategy in some corporate projects and policies. (e.g., major plans of action, risk management policies, annual budgets, reviewing and guiding strategy). The Heads of Departments are informed and mobilised.	The company has established an adaptation strategy in at least the major corporate projects and policies (e.g., major plans of action, risk management policies, annual budgets, reviewing and guiding strategy). It considers climate change and its consequences. The company communicates its strategy to all its employees.	The company has established an adaptation strategy, which is regularly updated. All corporate projects and policies are intended to be adapted to climate change and its consequences. The company communicates its strategy to all its employees. Employees from all relevant departments have been involved in the process.

DATA REQUIREMENTS

The scoring of this indicator shall rely on the company's public reporting (activity report, extra-financial report, etc.) and any other relevant document such as the company's corporate projects and policies communicated internally, internal notes or policies.

HOW THE ANALYSIS WILL BE DONE

The assessment evaluates the extent to which the company is aware of climate change and its impacts on the company and translates this knowledge into a strategic vision. It also evaluates the extent to which the adaptation strategy translates into a strategic vision for the company and leads to a mainstreaming of climate risks and adaptation considerations into the long-term strategy and decisions about corporate projects. The assessment may integrate three components: a narrative evaluation of the company's strategic vision; the number of corporate projects that integrate adaptation to climate change; the extent and effectiveness of internal communication.

RATIONALE OF THE INDICATOR

The governance and decision-making bodies within the company enable and are the main drivers of its adaptation. Indeed, climate change impacts directly or indirectly all aspects of the company and its activities. Only the company's governance can support and drive systemic change by providing a long-term strategy and corporate projects that are consistent and adapted to future climate impacts. The adaptation strategy of a company shall translate into a strategic vision and lead to a mainstreaming of climate risks and adaptation considerations into the long-term strategy and decisions about corporate projects.

2. COHERENCE WITH EXTERNAL POLICIES AND STRATEGIES

2.1 COHERENCE WITH PUBLIC POLICY

DESCRIPTION & REQUIREMENTS **2.1 COHERENCE WITH PUBLIC POLICY**

SHORT DESCRIPTION OF INDICATOR

This indicator evaluates the extent to which the governance of climate adaptation in a company is done in coordination and cooperation with relevant actors in regions where the company operates. The company's adaptation strategy has to be consistent with existing international, national, regional or local adaptation activities and should be based on exchanges and cooperation with relevant local actors to ensure coherence and effectiveness and avoid possible unwanted side effects.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company's adaptation strategy is not consistent with international, national, regional and local adaptation efforts and strategies. The adaptation strategy does not contain safeguards to ensure the adaptation activities do not significantly harm the adaptation efforts of other local actors. The development of the adaptation strategy does not include participation of and engagement with relevant local actors.		The company's adaptation strategy is aware of international, national, regional and local adaptation efforts and strategies. The development of the adaptation strategy included some limited participation of and engagement with relevant local actors.		The company's adaptation strategy is consistent with international, national, regional and local adaptation efforts and strategies. The development of the adaptation strategy included participation of and engagement with relevant local actors. The adaptation strategy contains safeguards to ensure the adaptation activities do not significantly harm the adaptation efforts of other local actors.

DATA REQUIREMENTS	The company should provide any relevant documents, reporting and compliance with related recommendations. The company shall show its compliance by referring to various international, national, regional or local adaptation plans (e.g., local urban plans, natural hazard prevention plans, etc.). In cases where such adaptation plans or natural risk prevention plans do not exist in the locations where the company's operations occur, the company shall explain how it engages and still ensure consistency with local authorities' adaptation efforts, actions and strategy or natural risk management.
HOW THE ANALYSIS WILL BE DONE	The adaptation strategy detailed by the company should not threaten or have negative consequences for the adaptation of local, regional, national and international actors. It should be consistent and aligned with local, regional, national and international plans and efforts, avoiding any maladaptation[3] of negative externalities. Engagements and discussions with relevant local and national actors help companies identify, assess and manage climate-related physical risks and adaptation, without maladaptation. For instance, in the case of a water-intensive consumer company, a major issue would be coordination on water resources at the basin scale.
RATIONALE OF THE INDICATOR	Depending on the local context, territories might have their own adaptation strategy that is specific to the context and needs of that location. Companies located in these territories must have an adaptation strategy that is consistent (or more ambitious than) and aligned with international, national, regional or local adaptation plans and efforts, avoiding any maladaptation of negative externalities. It must also be consistent and aligned with other companies' adaptation efforts. The company should engage with relevant local and national actors to create consistency and dialogue. Indeed, consultation and coordination with relevant actors can guarantee mutual adaptation benefits.

2.2 INTERESTED PARTIES

DESCRIPTION & REQUIREMENTS	**2.2 INTERESTED PARTIES**
SHORT DESCRIPTION OF INDICATOR	This indicator focuses on how the governance of the company is aligned and coordinated with interested parties, including those of the value chain of the company. It corresponds to the stakeholders, person or organization that can affect, be affected by, or perceive itself to be affected by a decision or activity (ISO 14090:2019). It includes having a corporate adaptation strategy that is consistent with other industry players' adaptation strategies. The company should engage with them as much as possible in their process towards adaptation.

[3] See definition in the Glossary (Section 8)

Basic

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The adaptation strategy does not contain safeguards to ensure that the adaptation actions it includes do not significantly harm, or even have a positive impact on climate change mitigation, biodiversity, health, pollution, resource depletion, etc.		The adaptation strategy contains safeguards to ensure that the adaptation actions it includes partly consider other environmental issues (such as impacts on climate mitigation, biodiversity, health, pollution, etc.). Every adaptation measure included in the strategy is checked against this principle.		The adaptation strategy contains safeguards to ensure that the adaptation actions it includes do not significantly harm, or even have a positive impact on climate change mitigation, biodiversity, health, pollution, resource depletion, etc. Every adaptation measure included in the strategy is checked against this principle.

DATA REQUIREMENTS

The company shall provide its compliance with the EU Taxonomy DNSH criterion, or any relevant documents or company reporting showing evidence that the adaptation strategy contains safeguards to ensure that the adaptation actions it includes do not significantly harm, or even have a positive impact on climate change mitigation, biodiversity, health, pollution, resource depletion, etc.

HOW THE ANALYSIS WILL BE DONE

The analyst should check that adaptation measures and the company's adaptation strategy contain safeguards to ensure that no significant harm is done (or even positive impacts are done) to climate change mitigation, biodiversity, health, pollution, resource depletion, etc. The analyst can rely on references made to the EU Taxonomy DNSH criterion by the company.

The company should favour, when possible, nature-based solutions for adaptation and should specify which ones have been used. According to the International Union for Conservation of Nature (IUCN), Nature-Based Solutions "are actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits."

RATIONALE OF THE INDICATOR

These criteria that ensure that no significant harm is done to climate change mitigation, biodiversity, health, pollution, etc. are present in various recommendations, including the EU Taxonomy, which makes explicit that adaptation actions and measures taken by the company should not do such harm, or even have a positive impact.

Physical climate risks dimension

4. ANALYSIS

4.1 DATA AND SCENARIOS

DESCRIPTION & REQUIREMENTS **4.1 DATA AND SCENARIOS**

SHORT DESCRIPTION OF INDICATOR

This indicator corresponds to the analysis of climate data, weather variability and scenarios to assess exposure and vulnerability.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not conducted any physical climate risk projections, climate scenario analysis or assessment.	The company considers past and current weather events in its regular risk analysis. The company has explored some climate data and projections, but no specific resources are dedicated to climate scenarios.	The company considers historical and current weather events and variability in its regular risk analysis. It draws up climate projections based on available climate data and projections across at least one climate scenario.	The company considers historical and current weather events and variability. Climate data and projections are based on at least two contrasted climate scenarios, consistent with the lifespans of the company's activities and infrastructure.	The company has built up a consistent set of climate data from reliable data sources. It establishes state-of-the-art projections across a range of future climate scenarios.

DATA REQUIREMENTS

The company shall provide its complete physical risk and resilience analysis or at least a summary of the main elements found, especially the climate data, projections and scenarios used.

HOW THE ANALYSIS WILL BE DONE	The analysis focuses on: - The time scale: historical time series, current climate, mid-term and long-term projections - The quality of data: sources, length of time series, consistency - The use of different climate scenarios. The Representative Concentration Pathways (RCP) or the Shared Socioeconomic Pathways (SSP) are the most common and preferred. Two scenarios should be preferentially considered: a scenario that limits global warming to +2°C compared to the pre-industrial period and a worst-case scenario for physical risk analysis to better account for exposure and vulnerability. However, any other relevant climate scenarios, projections and data (e.g., mean, extremes and variability) can be used for this indicator, as long as sources and justifications are present, and the number of scenarios analysed is respected. The analysis may indicate whether the company has internal expertise in climate data analysis, or whether this is externally employed. It may also indicate if uncertainties related to climate data, projections and scenarios have been considered.
RATIONALE OF THE INDICATOR	Analysis of past weather events can help the company to understand how it has been affected in the past, and thus how it could be affected in the future. However, climate projections and scenarios imply a significant level of uncertainty. Thus, taking into account this uncertainty is essential. A climate scenario that limits global warming to well below +2°C compared to the pre-industrial period is taken as a reference point since it is aligned with the Paris Agreement goal and the level of ambition of ACT Mitigation methodologies. A worst-case scenario should also be considered since it allows the company to better take into account physical risks that could dramatically affect the company. Analysing physical risks and adaptation thanks to various climate scenarios allows the company to take into account various uncertainties, and helps the company to adapt adequately and proportionally to climate impacts. Many standards (ISO, TCFD, EBRD, IPCC, etc.) recommend the analysis of climate projections and scenarios to analyse physical climate risks.

4.2 INCLUSION OF ALL CRITICAL COMPONENTS OF THE VALUE CHAIN

DESCRIPTION & REQUIREMENTS	**4.2 INCLUSION OF ALL CRITICAL COMPONENTS OF THE VALUE CHAIN**
SHORT DESCRIPTION OF INDICATOR	This indicator evaluates the company's ability to analyse the consequences of climate change along the entirety of its value chain, across a range of future climate scenarios chosen by the company (indicator 4.1), including scenarios of the company's possible development. This is based on the three scopes introduced in Figure 1. A high score for this indicator means that the company has a comprehensive understanding of the risks climate change poses along all components of the value chain and can prioritise the risks identified in indicators 5.1 to 5.5.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not identified all relevant activities of the value chain (see Figure 1) that are impacted by climate change.		The company has identified all relevant activities within scopes A and B of the value chain (see Figure 1) that are impacted by climate change across a range of future climate scenarios and the company's possible development scenarios. The analysis includes all activities that would critically affect the company if they are severely impacted by climate change.		The company has identified all relevant activities within scopes A, B, and C of the value chain (see Figure 1) that are impacted by climate change across a range of future climate scenarios and the company's possible development scenarios. The analysis includes all activities that would critically affect the company if they are severely impacted by climate change.

DATA REQUIREMENTS

The company can rely on any methodology to determine the activities of the value chain that could be most affected by climate change and critical for the company, as long as it specifies the methodology used. For instance, a dynamic mapping of the key processes and value chain is a simple model to work with. Other data include: the minimum level of activity accepted, the maximum interruption time allowable, potential redundancy, supplier evolution, or how much a given segment of the value chain contributes to this company activity. The company should provide information regarding the climate scenarios and the company's possible development scenarios used to evaluate the activities along the value chain that could be most affected by climate change and that are critical for the company's functioning.

HOW THE ANALYSIS WILL BE DONE

The analysis checks the consistency of value chain mapping. It assesses how climate scenarios and the company's possible development scenarios are integrated into the analysis of the most critical activities of the value chain. The company should consider the current and possible future effects of climate change on the activities of the value chain. If the company does not provide any development scenario, the analyst takes a business-as-usual scenario. Redundancy and diversity are means to alleviate a strong dependency on resources or suppliers and should be positively evaluated.

The analyst should also examine, as far as possible, changes in the value chain: changes in product specifications, suppliers, transport infrastructure, etc.

RATIONALE OF THE INDICATOR

Considering the complete value chain to analyse the hazards that could affect it is essential to tackling all the possible negative effects and cascading impacts on the company. However, to do an in-depth and precise analysis, it is better to focus on the activities and the parts of the value chain that are either essential to the company or the ones that will critically impact the company's functioning if affected. It should be done considering a range of climate scenarios and scenarios of the company's possible development.

5. PHYSICAL CLIMATE RISK ANALYSIS

5.0 GENERAL

Physical climate risks arise from the interaction between hazards (triggered by an event or trend related to climate change), vulnerability (susceptibility to harm) and exposure (people, assets or ecosystems at risk). The cross-assessment of each element leads to the characterization of physical risks (see Appendix 2). The related definitions and terms used in the following can be found in the glossary of this document (Section 8).

5.1 RAW MATERIALS

DESCRIPTION & REQUIREMENTS 5.1.1 RAW MATERIALS: EXPOSURE

SHORT DESCRIPTION OF INDICATOR

This indicator aims to reflect how the company has screened the climate hazards that could interact with direct or indirect raw material supply (including time frame and geographical considerations) and the extent to which it is exposed to these hazards.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not considered any hazards and how these could affect its activities through the exposure of its raw materials.	The company is aware of the notion of exposure. The most important hazards that can affect the raw materials processed by the company have been identified.	The company has started to evaluate qualitatively the exposure of some of its raw materials, for the most important hazards identified.	The company has evaluated qualitatively the exposure of its raw materials throughout the value chain for the most important hazards identified. The qualitative assessment takes into account the major hazard parameters: likelihood, magnitude and duration, variability, etc.	The company has evaluated quantitatively the exposure of its raw materials throughout the complete value chain, for the most important hazards identified (Scope A, B and C in Figure 1). The quantitative assessment takes into account the major hazard parameters: likelihood, magnitude, duration, variability, etc

DATA REQUIREMENTS

The company shall provide its physical risk analysis, especially regarding its exposure to hazards. Any information, sources and justification about how the company is conducting its exposure analysis can be used. Thus, the company shall mention which hazards are considered for this part of the value chain.

HOW THE ANALYSIS WILL BE DONE

The analysis should check which hazards have been considered for the exposure analysis and their link with raw material supply.

The company should mention which part of the value chain is considered. If only a certain part is considered, rank 1 raw material suppliers (scope B in Figure 1) are the priority. If the complete value chain is considered (scope A, B and C in Figure 1), the exposure of raw material suppliers from all ranks is analysed.

The analysis does evaluate stranded assets and financial costs related to climate change.

The analysis should evaluate the degree of comprehensiveness: the highest score would mean that hazards, statistical occurrence, climatic projections, value chain, and geographic and temporal features are thoroughly covered.

RATIONALE OF THE INDICATOR

Raw materials are crucial, especially in the primary and secondary sectors of the economy. Climate hazards leading to potential disruptions in raw material supply (indicator 5.1.3) should be carefully examined. Analysing the exposure of a company's facilities along the value chain is a key step to analysing the potential climate risks from which it can suffer before adapting. Because of cascading effects of hazards on the company's activities, it is important to consider all raw material suppliers, from all ranks.

DESCRIPTION & REQUIREMENTS

5.1.2 RAW MATERIALS: VULNERABILITY

SHORT DESCRIPTION OF INDICATOR

This indicator aims to evaluate the extent to which the raw materials that are processed by the company are vulnerable to climate hazards. For example, if raw material suppliers are all located in the same area, their availability may be vulnerable to climate hazards affecting that area, such as floods.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not conducted any in-depth physical climate risk analysis or assessment regarding its vulnerability.	The company is aware of the notions of vulnerability.	The company has started to evaluate the vulnerability of some of its raw materials, for the most important hazards identified.	The company has evaluated the vulnerability of its raw materials throughout the value chain for the most important hazards identified.	The company has evaluated the vulnerability of its raw materials throughout the complete value chain, for the most important hazards identified (Scope A, B and C in Figure 1). The assessment is based on a quantitative approach (for instance: criticality score, thresholds).

DATA REQUIREMENTS

The company shall provide its physical risk analysis, especially concerning its vulnerability to climate change. Any information, sources and justification about how the company is conducting its vulnerability analysis can be used, as well as the facilities considered.

HOW THE ANALYSIS WILL BE DONE	The company should mention which part of the value chain is considered. If only a certain part is considered, rank 1 raw material suppliers (scope B in Figure 1) are the priority. If the complete value chain is considered (scope A, B and C in Figure 1), the vulnerability of raw material suppliers from all ranks is analysed.
RATIONALE OF THE INDICATOR	Analysing the vulnerability of a company's facilities along the value chain is a key step to analysing the potential climate impacts from which it can suffer before adapting. Because of cascading effects of hazards on the company's activities, it is important to consider all raw material suppliers, from all ranks.

DESCRIPTION & REQUIREMENTS 5.1.3 RAW MATERIALS: RISKS AND OPPORTUNITIES

SHORT DESCRIPTION OF INDICATOR

This indicator aims to assess the potential climate risks and opportunities related to raw materials. Climate-related opportunities correspond to potential positive impacts related to climate change on an organisation. These opportunities will vary depending on the region, market and industry in which an organisation operates.

This indicator also takes into account the stranded assets identified and the financial costs related to physical risks quantified by the company. These risks can be, for example:

- disruptions
- shortages
- increased costs of supplies due to scarcity
- changes in input and resource prices

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
Neither climate-related risks nor opportunities for raw materials are considered.	The most relevant risks and opportunities are considered and qualitatively evaluated, for some hazards.	The most relevant risks and opportunities are considered and analysed for the most important hazards identified for the raw materials. These risks are expressed in terms of company performance and value. The company has thus started to assess its stranded assets and financial costs related to climate change. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.	The most relevant risks due to the most important hazards identified for the raw materials are considered, analysed and quantified: likelihood, percentage of loss, and duration. These risks are expressed in terms of company performance and value. The company has thus started to assess its stranded assets related to climate change. Financial costs from climate change are also defined and quantified. Physical climate risks are integrated into financial planning tools thanks to, for example, critical financial thresholds. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.	The most relevant risks due to the most important hazards identified for the raw materials are considered, analysed, quantified and regularly updated. The complete value chain is considered (Scope A, B and C in Figure 1). These risks are expressed in terms of company performance and value: likelihood, percentage of loss, and duration. The company has thus assessed its stranded assets related to climate change. Financial costs from climate change are also defined, quantified, and regularly updated. Physical climate risks are integrated into financial planning tools thanks to, for example, critical financial thresholds regularly revised. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.

DATA REQUIREMENTS	The company shall provide its physical risks and opportunities analysis. The company shall provide any relevant reporting or documentation. Otherwise, a description of the company's assessment is acceptable. For the financial costs (e.g., value-at-risk) and thresholds (e.g., the maximum change in production due to climate change that the company can handle), the company can rely on stress testing or adaptation methodologies such as **flexible adaptation pathways.** It combines immediate actions and more ambitious ones that should be implemented when the former is no longer sufficient (ADEME, 2021). The company may also provide a list of examples of financial costs presented in the maturity matrix of this ACT Adaptation methodology.
HOW THE ANALYSIS WILL BE DONE	The most relevant risks and opportunities for the company's raw materials should be considered, analysed, quantified and monitored for this indicator. Any risk that is considered relevant to the company's activity should be analysed. The impacts on the company's performance and its value should be analysed. Financial costs and stranded assets related to climate change should be analysed.
RATIONALE OF THE INDICATOR	Raw materials are crucial especially in the primary and secondary sectors of the economy. A risks and opportunities indicator is the most significant on business purpose. It is essential for the company to quantify the potential costs of climate change on its activity, to properly reduce physical climate risks. In this methodology, climate-related opportunity focuses on opportunities to adapt to market shifts driven by physical climate impacts and cater to any resulting new market needs, that is to say, the fundamental shifts in climate over the longer term may affect value chains and drive new consumer needs. For example, technology to keep buildings cool, along with water- and energy-efficient technologies, or crops that are better suited to chronic changes in precipitation and temperature (EBRD, 2018). Climate change creates risks but also opportunities that can benefit the company.

5.2 PRODUCTION, OPERATIONS, PROCESSES AND INFRASTRUCTURE

DESCRIPTION & REQUIREMENTS	**5.2.1 PRODUCTION, OPERATIONS, PROCESSES AND INFRASTRUCTURE: EXPOSURE**
SHORT DESCRIPTION OF INDICATOR	This indicator aims to reflect how the company has screened the climate hazards that could interact with the production, operations, processes and infrastructure of the company (including time frame and geographical considerations) and the extent to which it is exposed to these hazards.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not considered any hazards and how these could affect its activities through the exposure of its production, operations, processes and infrastructure.	The company is aware of the notion of exposure. The most important hazards that can affect the production, operations, processes and infrastructure processed by the company have been identified.	The company has started to evaluate qualitatively the exposure of some of its production, operations, processes and infrastructure, for the most important hazards identified.	The company has qualitatively evaluated the exposure of its production, operations, and processes to the most important hazards identified. The qualitative assessment takes into account the major hazard parameters: likelihood, magnitude and duration, variability, etc.	The company has quantitatively evaluated the exposure of its production, operations, processes and infrastructure to the most important hazards identified. The quantitative assessment takes into account the major hazard parameters: likelihood, magnitude, duration, variability, etc

DATA REQUIREMENTS

The company shall provide its physical risk analysis, especially regarding its exposure to hazards. Any information, sources and justification about how the company is conducting its exposure analysis can be used. Thus, the company shall mention which hazards are considered for this part of the value chain.

HOW THE ANALYSIS WILL BE DONE

The hazards that most affect the company's production, operations, processes and infrastructure shall be assessed. The analysis of the exposure of the company's activity should be done for these most important hazards identified.

The analysis does evaluate stranded assets and financial costs related to climate change.

The company can specify whether the hazards analysis is consistent with the specific location of facilities, as well as if the hazards are assessed based on their likelihood, magnitude and duration. The analysis should evaluate the degree of comprehensiveness: the highest score would mean that hazards, statistical occurrence, climatic projections, value chain, and geographic and temporal features are thoroughly covered.

RATIONALE OF THE INDICATOR

This first level of climate risk analysis focuses on the core business of the company. It is closely related to its facilities' location. Climate hazards leading to potential disruptions in the production, operations, processes and infrastructure of the company (indicator 5.2.3) should be carefully examined. Analysing the exposure of a company's facilities along the value chain is a key step to analysing the potential climate risks from which it can suffer before adapting.

DESCRIPTION & REQUIREMENTS 5.2.2 PRODUCTION, OPERATIONS, PROCESSES AND INFRASTRUCTURE: VULNERABILITY

SHORT DESCRIPTION OF INDICATOR

This indicator aims to study the vulnerability of the production, operations, processes and infrastructure of the company. For example, some processes can be particularly sensitive to weather variations.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not conducted any in-depth physical climate risk analysis or assessment regarding its vulnerability.	The company is aware of the notions of vulnerability.	The company has started to evaluate the vulnerability of part of its core business, for the most important hazards identified.	The company has evaluated the vulnerability of its production, operations, core processes and infrastructure, for the most important hazards identified.	The company has evaluated the vulnerability of its production, operations, core processes and infrastructure, for the most important hazards identified. The assessment is based on a quantitative approach (for instance: criticality score, thresholds).

DATA REQUIREMENTS	The company shall provide its physical risk analysis, concerning the vulnerability. Any information, sources and justification about how the company is conducting its vulnerability analysis can be used, as well as the facilities considered.
HOW THE ANALYSIS WILL BE DONE	The company should mention the extent to which the production, operations and infrastructure are considered. If only a certain part is considered, rank 1 operations and infrastructure are within the scope of analysis. If the complete value chain is considered, the vulnerability of all operations and infrastructure are analysed. The assessor shall analyse vulnerability to the most important hazards.
RATIONALE OF THE INDICATOR	The indicator focuses on the core business of the company (scope A in Figure 1). Because of cascading effects of hazards on the company's activity, it is important to consider all operations, processes, operations and infrastructure.

DESCRIPTION & REQUIREMENTS — 5.2.3 PRODUCTION, OPERATIONS, PROCESSES AND INFRASTRUCTURE INDICATOR: RISKS AND OPPORTUNITIES

SHORT DESCRIPTION OF INDICATOR

This indicator aims to assess the potential climate risks and opportunities related to the company's production, operations, core processes and infrastructure. It also takes into account the stranded assets identified and the financial costs related to physical risks quantified by the company. These risks can be for example:

- Need to thermally regulate (cool or heat) both the processes and workplaces
- Disruptions or reduced productivity of operations or production capacity due to impacts on fixed capital, labour force (stress on human health and productivity) or natural resources
- Permanent loss
- Relocation costs
- Reduced workforce intensity of production
- Physical damage to assets: production facilities, infrastructure, stocks & equipment

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
Neither climate-related risks nor opportunities for the production, operations, core processes and infrastructure are considered.	The most relevant risks and opportunities are considered and qualitatively evaluated, for some hazards.	The most relevant risks and opportunities are considered and analysed for the most important hazards identified. These risks are expressed in terms of the company's performance and value and working conditions. The company has thus started to assess its stranded assets and financial costs related to climate change. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.	The most relevant risks due to the most important hazards on core business are considered, analysed and quantified: likelihood, percentage of damage, duration, etc. These risks are expressed in terms of the company's performance, value and working conditions. The company has thus started to assess its stranded assets related to climate change. Financial costs from climate change are also defined and quantified. Physical climate risks are integrated into financial planning tools thanks to, for example, critical financial thresholds. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.	The most relevant risks due to the most important hazards identified for core business are considered, analysed, quantified and regularly updated. These risks are expressed in terms of the company's working conditions, performance and value, depending on the location of facilities. The company has thus assessed its stranded assets related to climate change. Financial costs from climate change are also defined, quantified, and regularly updated. Physical climate risks are integrated into financial planning tools thanks to, for example, critical financial thresholds regularly revised. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.

DATA REQUIREMENTS

The company shall provide its physical risks and opportunities analysis. The company shall provide any relevant reporting or documentation. Otherwise, a description of the company's assessment is acceptable.

For the financial costs (e.g., value-at-risk) and thresholds (e.g., the maximum change in production due to climate change that the company can handle), the company can rely on stress testing or adaptation methodologies such as **flexible adaptation pathways.** It combines immediate actions and more ambitious ones that should be implemented when the former is no longer sufficient (ADEME, 2021). The company may also provide a list of examples of financial costs presented in the maturity matrix of this ACT Adaptation methodology.

HOW THE ANALYSIS WILL BE DONE

The most relevant risks and opportunities for the company's production, operations, processes and infrastructure should be considered, analysed, quantified and monitored for this indicator. Any risk that is considered relevant to the company's activity should be analysed.

Because of cascading effects of hazards on the company's activity, it is important to consider all operations, processes, operations and infrastructure. Therefore, this indicator is highly significant to business purpose. Financial costs and stranded assets related to climate change should be analysed.

RATIONALE OF THE INDICATOR

Risks to production, operations, core processes and infrastructure may jeopardise the company itself. A risks and opportunities indicator is the most significant on business purpose. It is essential for the company to quantify the potential costs of climate change on its activity, to properly reduce physical climate risks.

5.3 NETWORKS AND SYSTEMS (WATER, ENERGY AND TELECOMMUNICATION)

DESCRIPTION & REQUIREMENTS

5.3.1 NETWORKS AND SYSTEMS (WATER, ENERGY AND TELECOMMUNICATION): EXPOSURE

SHORT DESCRIPTION OF INDICATOR

This indicator aims to reflect how the company has screened the climate hazards that could interact with the networks and systems of the company (systems of engineered components that provide water, energy or telecommunication), including time frame and geographical considerations. It also aims to reflect the extent to which networks and systems are exposed to these hazards.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not considered any hazards and how these could affect its activities through the exposure of its networks and systems.	The company is aware of the notion of exposure. The most important hazards that can affect the networks and systems of the company have been identified.	The company has started to evaluate qualitatively the exposure of some of its raw materials, for the most important hazards identified.	The company has evaluated qualitatively the exposure of its networks and systems throughout the value chain for the most important hazards identified. The qualitative assessment takes into account the major hazard parameters: likelihood, magnitude and duration, variability, etc.	The company has evaluated quantitatively the exposure of its networks and systems throughout the complete value chain, for the most important hazards identified (Scope A, B and C in Figure 1). The quantitative assessment takes into account the major hazard parameters: likelihood, magnitude, duration, variability, etc

DATA REQUIREMENTS

The company shall provide its physical risk analysis, especially regarding its exposure to hazards. Any information, sources and justification about how the company is conducting its exposure analysis can be used. Thus, the company shall mention which hazards are considered for this part of the value chain.

HOW THE ANALYSIS WILL BE DONE

The analysis should check which hazards have been considered for the exposure analysis, and their link with networks and systems.

A meshed grid can be difficult to analyse. In this case, the network operator (electricity, gas, internet, water) may have produced a risk assessment document. The company should mention which part of the value chain is considered. If only a certain part is considered, rank 1 raw material suppliers (scope B in Figure 1) are the priority. If the complete value chain is considered (scope A, B and C in Figure 1), the exposure of raw material suppliers from all ranks is analysed.

The analysis does evaluate stranded assets and financial costs related to climate change.

The analysis should evaluate the degree of comprehensiveness: the highest score would mean that hazards, statistical occurrence, climatic projections, value chain, and geographic and temporal features are thoroughly covered.

RATIONALE OF THE INDICATOR

In networks and systems, temporal variability is a key characteristic. For instance, depending on the activity, a one-hour disruption may be easily covered while a one-week disruption is critical. Therefore, the maturity matrix reflects a progression towards a temporal characterisation of exposure to hazards. Analysing the exposure of a company's facilities along the value chain is a key step to analysing the potential climate risks from which it can suffer before adapting. Because of cascading effects of hazards on the company's activities, it is important to consider all networks and systems suppliers, from all ranks.

DESCRIPTION & REQUIREMENTS

5.3.2 NETWORKS AND SYSTEMS (WATER, ENERGY AND TELECOMMUNICATION): VULNERABILITY

SHORT DESCRIPTION OF INDICATOR

This indicator aims to evaluate the extent to which the network and systems are exposed and sensitive to climate hazards.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not conducted any in-depth physical climate risk analysis or assessment regarding its vulnerability.	The company is aware of the notions of vulnerability.	The company has started to evaluate the vulnerability of some of its networks and systems, for the most important hazards identified.	Throughout the whole value chain, the company has evaluated the vulnerability of its networks and systems to the major hazards.	The company has evaluated the vulnerability of its networks and systems on the complete value chain, for the most important hazards identified (Scope A, B and C in Figure 1). The assessment is based on a quantitative approach (for instance: criticality score, thresholds).

DATA REQUIREMENTS

The company shall provide its complete physical risk analysis, concerning vulnerability. Any information, sources and justification about how the company is conducting its vulnerability analysis can be used, as well as the facilities considered.

HOW THE ANALYSIS WILL BE DONE	The company should mention which part of the value chain of networks and systems is considered. If only a certain part is considered, rank 1 networks and systems suppliers are within the scope of analysis. If the complete value chain is considered, the vulnerability of all networks and systems suppliers from all ranks are analysed. The company shall analyse vulnerability to the most important hazards.
RATIONALE OF THE INDICATOR	Analysing the vulnerability of networks and systems allows the company to identify the need for adaptation actions. This indicator may be used to implement redundancy measures, for instance.

DESCRIPTION & REQUIREMENTS — 5.3.3 NETWORKS AND SYSTEMS (WATER, ENERGY AND TELECOMMUNICATION): RISKS AND OPPORTUNITIES

SHORT DESCRIPTION OF INDICATOR

This indicator aims to assess the potential climate risks and opportunities related to networks and systems. It also takes into account the stranded assets identified and the financial costs related to physical risks quantified by the company These risks can be, for example:

- Variations in energy costs and needs
- Variations in energy and water availabilities
- Internet availability and quality

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
Neither climate-related risks nor opportunities on networks and systems are considered	The most relevant risks and opportunities are considered and qualitatively evaluated, for some hazards.	The most relevant risks and opportunities are considered and analysed for the most important hazards identified for the networks and systems. These risks are expressed, among others, in terms of company performance and value. The company has thus started to assess its stranded assets and financial costs related to climate change. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.	The most relevant risks due to the most important hazards identified for the networks and systems are considered, analysed and quantified: likelihood, percentage of loss, duration. These risks are expressed, among others, in terms of company's performance and value. The company has thus started to assess its stranded assets related to climate change. Financial costs from climate change are also defined and quantified. Physical climate risks are integrated into financial planning tools thanks to, for example, critical financial thresholds. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.	The most relevant risks due to the most important hazards identified on the networks and systems are considered, analysed, quantified and regularly updated. The complete value chain is considered (Scope A, B and C in Figure 1). These risks are expressed, among others, in terms of company's performance and value: likelihood, percentage of loss, duration. The company has thus assessed its stranded assets related to climate change. Financial costs from climate change are also defined, quantified, and regularly updated. Physical climate risks are integrated into financial planning tools thanks to, for example, critical financial thresholds regularly revised. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.

DATA REQUIREMENTS	The company shall provide its physical risks and opportunities analysis. The company shall provide any relevant reporting or documentation. Otherwise, a description of the company's assessment is acceptable. For the financial costs (e.g., value-at-risk) and thresholds (e.g., the maximum change in production due to climate change that the company can handle), the company can rely on stress testing or adaptation methodologies such as **flexible adaptation pathways.** It combines immediate actions and more ambitious ones that should be implemented when the former is no longer sufficient (ADEME, 2021). The company may also provide a list of examples of financial costs presented in the maturity matrix of this ACT Adaptation methodology.
HOW THE ANALYSIS WILL BE DONE	The most relevant risks and opportunities on the networks and systems of the company should be considered, analysed, quantified and monitor for this indicator. Any risk that is considered relevant to the company's activity should be analysed. The impacts on the company's performance and its value should be analysed. In particular, water resources are particularly exposed to climate change, and tend to be critical resources. They require risk analysis.
RATIONALE OF THE INDICATOR	Networks and systems are crucial to the company's activity. A risks and opportunities indicator is the most significant on business purpose. It is essential for the company to quantify the potential costs of climate change on its activity, to properly reduce physical climate risks.

5.4 LOGISTICS AND TRANSPORT

DESCRIPTION & REQUIREMENTS **5.4.1 LOGISTICS AND TRANSPORT: EXPOSURE**

SHORT DESCRIPTION OF INDICATOR	This indicator aims to reflect how the company has screened the climate hazards that could interact with the logistics and transport of the company (including time frame and geographical considerations) and the extent to which it is exposed to these hazards.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not considered any hazards and how these could affect its activities through the exposure of its logistics and transport.	The company is aware of the notion of exposure. The most important hazards that can affect the logistics and transport processed by the company have been identified.	The company has started to evaluate qualitatively the exposure of some of its logistics and transport, for the most important hazards identified.	The company has evaluated qualitatively the exposure of its logistics and transport throughout the value chain for the most important hazards identified. The qualitative assessment takes into account the major hazard parameters: likelihood, magnitude and duration, variability, etc.	The company has evaluated quantitatively the exposure of its logistics and transport throughout the complete value chain, for the most important hazards identified (Scope A, B and C in Figure 1). The quantitative assessment takes into account the major hazard parameters: likelihood, magnitude, duration, variability, etc

DATA REQUIREMENTS	The company shall provide its physical risk analysis, especially regarding its exposure to hazards. Any information, sources and justification about how the company is conducting its exposure analysis can be used. Thus, the company shall mention which hazards are considered for this part of the value chain.
HOW THE ANALYSIS WILL BE DONE	The analysis should check which hazards have been considered by the company for the exposure analysis, and their link with logistics and transport. The company should mention which part of the value chain is considered. If only a certain part is considered, rank 1 raw material suppliers (scope B in Figure 1) are the priority. If the complete value chain is considered (scope A, B and C in Figure 1), the exposure of raw material suppliers from all ranks is analysed. The analysis does evaluate stranded assets and financial costs related to climate change. The analysis should evaluate the degree of comprehensiveness: the highest score would mean that hazards, statistical occurrence, climatic projections, value chain, and geographic and temporal features are thoroughly covered.
RATIONALE OF THE INDICATOR	Logistics and transport are crucial to the operation of the company, especially in the primary and secondary sectors of the economy. Climate hazards leading to potential disruptions in logistics and transport (indicator 5.4.3) should be carefully examined, especially regarding the duration and the location. Analysing the exposure of a company's facilities along the value chain is a key step to analysing the potential climate risks from which it can suffer before adapting. Because of cascading effects of hazards on the company's activities, it is important to consider all logistics and transport, from all ranks.

DESCRIPTION & REQUIREMENTS 5.4.2 LOGISTICS AND TRANSPORT: VULNERABILITY

SHORT DESCRIPTION OF INDICATOR	This indicator aims to study vulnerability for logistics and transport. For example, a company that is highly dependent on port facilities, fluvial transport and operations is more vulnerable to floods, coastal erosion or droughts.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not conducted any in-depth physical climate risk analysis or assessment regarding its vulnerability.	The company is aware of the notions of vulnerability.	The company has started to evaluate the vulnerability of some of its logistics and transport, for the most important hazards identified.	Throughout the whole value chain, the company has evaluated the vulnerability of its logistics and transport to the major hazards.	The company has evaluated the vulnerability of its logistics and transport on the complete value chain, for the most important hazards identified (Scope A, B and C in Figure 1). The assessment is based on a quantitative approach (for instance: criticality score, thresholds).

DATA REQUIREMENTS	The company shall provide its physical risk analysis, concerning the vulnerability. Any information, sources and justification about how the company is conducting its vulnerability analysis can be used, as well as the facilities considered.
HOW THE ANALYSIS WILL BE DONE	The company should mention which part of the value chain of logistics and transport is considered. If only a certain part is considered, rank 1 logistics and transport are on the scope of analysis. If the complete value chain is considered, the vulnerability of all logistics and transport from all ranks is analysed. The company shall analyse vulnerability for the most important hazards.
RATIONALE OF THE INDICATOR	Analysing the vulnerability of a company's facilities along the value chain is a key step to analysing the potential climate impacts from which it can suffer before adapting. Because of cascading effects of hazards on the company's activity, it is important to consider all logistics and transport, from all ranks.

DESCRIPTION & REQUIREMENTS 5.4.3 LOGISTICS AND TRANSPORT: RISKS AND OPPORTUNITIES

SHORT DESCRIPTION OF INDICATOR

This indicator aims to assess the potential climate risks and opportunities for this part of the value chain. It also takes into account the stranded assets identified and the financial costs related to physical risks quantified by the company. These risks can be for example:

- Damage to transportation infrastructure (road, water, fluvial and rail) transport
- Permanent loss and relocation costs
- Cost of delays due to degraded transport conditions
- Loss of revenue due to failed delivery or service disruption

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
Neither climate-related risks nor opportunities for logistics and transport are considered.	The most relevant risks and opportunities are considered and qualitatively evaluated, for some hazards.	The most relevant risks and opportunities are considered and analysed for the most important hazards identified for logistics and transport. These risks are expressed, among others, in terms of company's performance and value. The company has thus started to assess its stranded assets and financial costs related to climate change. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.	The most relevant risks due to the most important hazards identified for logistics and transport are considered, analysed and quantified: likelihood, percentage of loss, duration. These risks are expressed, among others, in terms of company's performance and value. The company has thus started to assess its stranded assets related to climate change. Financial costs from climate change are also defined and quantified. Physical climate risks are integrated into financial planning tools thanks to, for example, critical financial thresholds. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development	The most relevant risks due to the most important hazards identified for logistics and transport are considered, analysed, quantified and regularly updated. The complete value chain is considered (Scope A, B and C in Figure 1). These risks are expressed, among others, in terms of company's performance and value: likelihood, percentage of loss, duration. The company has thus assessed its stranded assets related to climate change. Financial costs from climate change are also defined, quantified, and regularly updated. Physical climate risks are integrated into financial planning tools thanks to, for example, critical financial thresholds regularly revised. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.

DATA REQUIREMENTS	The company shall provide its physical risks and opportunities analysis. The company shall provide any relevant reporting or documentation. Otherwise, a description of the company's assessment is acceptable. For the financial costs (e.g., value-at-risk) and thresholds (e.g., the maximum change in production due to climate change that the company can handle), the company can rely on stress testing or adaptation methodologies such as **flexible adaptation pathways.** It combines immediate actions and more ambitious ones that should be implemented when the former is no longer sufficient (ADEME, 2021). The company may also provide a list of examples of financial costs presented in the maturity matrix of this ACT Adaptation methodology.
HOW THE ANALYSIS WILL BE DONE	The most relevant risks and opportunities for logistics and transport of the company should be considered, analysed, quantified and monitor for this indicator. Any risk that is considered relevant to the company's activity should be analysed. The impacts on the company's performance and its value should be analysed. Financial costs and stranded assets related to climate change should be analysed.
RATIONALE OF THE INDICATOR	Logistics and transport are crucial to the company's activity. A risks and opportunities indicator is the most significant on business purpose. It is essential for the company to quantify the potential costs of climate change on its activity, to properly reduce physical climate risks.

5.5 DEMAND AND SALES

DESCRIPTION & REQUIREMENTS — 5.5.1 DEMAND AND SALES: EXPOSURE

SHORT DESCRIPTION OF INDICATOR	This indicator aims to reflect how the company has screened the climate hazards that could interact with demand and sales of the company (including time frame and geographical considerations) and the extent to which it is exposed to these hazards

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not considered any hazards and how these could affect its activities through the exposure of its demand and sales.	The company is aware of the notion of exposure. The most important hazards that can affect the demand and sales processed by the company have been identified.	The company has started to qualitatively evaluate the exposure of some of its demand and sales, for the most important hazards identified.	The company has qualitatively evaluated the exposure of its demand and sales throughout the value chain for the most important hazards identified. The qualitative assessment takes into account the major hazard parameters: likelihood, magnitude and duration, variability, etc.	The company has quantitatively evaluated the exposure of its demand and sales throughout the complete value chain, for the most important hazards identified (Scope A, B and C in Figure 1). The quantitative assessment takes into account the major hazard parameters: likelihood, magnitude, duration, variability, etc.

DATA REQUIREMENTS	The company shall provide its physical risk analysis, especially regarding its exposure to hazards. Any information, sources and justification about how the company is conducting its exposure analysis can be used. Thus, the company shall mention which hazards are considered for this part of the value chain.
HOW THE ANALYSIS WILL BE DONE	The analysis should check which hazards and climate trends have been considered for the exposure analysis, and their link with market demand and sales. The company should mention which part of the value chain is considered. If only a certain part is considered, rank 1 raw material suppliers (scope B in Figure 1) are the priority. If the complete value chain is considered (scope A, B and C in Figure 1), the exposure of raw material suppliers from all ranks is analysed. The analysis does evaluate stranded assets and financial costs related to climate change.
RATIONALE OF THE INDICATOR	Sales may be influenced by both punctual hazards and long-term climate trends. Analysing the exposure of a company's facilities along the value chain is a key step to analysing the potential climate risks from which it can suffer before adapting. Because of cascading effects of hazards on the company's activities, it is important to consider all raw material suppliers, from all ranks.

DESCRIPTION & REQUIREMENTS 5.5.2 DEMAND AND SALES: VULNERABILITY

SHORT DESCRIPTION OF INDICATOR	This indicator aims to study the vulnerability of demand and sales.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not conducted any in-depth physical climate risk analysis or assessment regarding its vulnerability.	The company is aware of the notions of vulnerability.	The company has started to evaluate the vulnerability of some of its demand and sales, for the most important hazards identified.	Throughout the whole value chain, the company has evaluated the vulnerability of its demand and sales to the major hazards.	The company has evaluated the vulnerability of its demand and sales on the complete value chain, for the most important hazards identified (Scope A, B and C in Figure 1). The assessment is based on a quantitative approach (for instance: criticality score, thresholds).

DATA REQUIREMENTS	The company shall provide its physical risk analysis, concerning the vulnerability. Any information, sources and justification about how the company is conducting its vulnerability analysis can be used, as well as the facilities considered.

HOW THE ANALYSIS WILL BE DONE	The company should mention which part of demand and sales is considered. If only a certain part is considered, rank 1 demand and sales are on the scope of analysis. If the complete value chain is considered, the vulnerability of all demand and sales from all ranks is analysed. The company shall analyse vulnerability for the most important hazards.
RATIONALE OF THE INDICATOR	Analysing the vulnerability of a company's facilities along the value chain is a key step to analysing the potential climate impacts from which it can suffer before adapting. Because of cascading effects of hazards on the company's activity, it is important to consider all demand and sales, from all ranks.

DESCRIPTION & REQUIREMENTS

5.5.3 DEMAND AND SALES: RISKS AND OPPORTUNITIES

SHORT DESCRIPTION OF INDICATOR

The indicator aims to assess the potential climate risks on demand and sales. It also takes into account the stranded assets identified and the financial costs related to physical risks quantified by the company. These risks can be:

- Customer access to delivery
- Variation of gross revenue
- Demand for new features

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
Neither climate-related risks nor opportunities for demand and sales are considered.	The most relevant risks and opportunities are considered and qualitatively evaluated, for some hazards.	The most relevant risks and opportunities are considered and analysed for the most important hazards identified on demand and sales. These risks are expressed in terms of the company's performance and its value, depending on the location of facilities. The company has thus started to assess its stranded assets and financial costs related to climate change. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.	The most relevant risks and opportunities for the most important hazards identified are considered, analysed and quantified: likelihood, percentage of loss and duration. These risks are expressed in terms of the company's performance and its value, depending on the location of facilities. The company has thus started to assess its stranded assets related to climate change. Financial costs from climate change are also defined and quantified. Physical climate risks are integrated into financial planning tools thanks to, for example, critical financial thresholds. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.	The most relevant risks due to the most important hazards identified on demand and sales are considered, analysed, quantified and monitored (regularly updated). The complete value chain is considered (Scope A, B and C in Figure 1). These risks are expressed in terms of the company's performance and its value, depending on the location of facilities. The company has thus assessed its stranded assets related to climate change. Financial costs from climate change are also defined, quantified, and regularly updated. Physical climate risks are integrated into financial planning tools thanks to, for example, critical financial thresholds regularly revised. Climate-related opportunities are clearly identified and regularly updated based on adapting to market shifts driven by a changing climate and development.

DATA REQUIREMENTS	The company shall provide its physical risks and opportunities analysis. The company shall provide any relevant reporting or documentation. Otherwise, a description of the company's assessment is acceptable. For the financial costs (e.g., value-at-risk) and thresholds (e.g., the maximum change in production due to climate change that the company can handle), the company can rely on stress testing or adaptation methodologies such as **flexible adaptation pathways.** It combines immediate actions and more ambitious ones that should be implemented when the former is no longer sufficient (ADEME, 2021). The company may also provide a list of examples of financial costs presented in the maturity matrix of this ACT Adaptation methodology.
HOW THE ANALYSIS WILL BE DONE	The most relevant risks and opportunities on demand and sales should be considered, analysed, quantified and monitor for this indicator. Any risk that is considered relevant for the company's activity should be analysed. The impacts on the company's performance and its value should be analysed. Financials costs and stranded assets related to climate change should be analysed.
RATIONALE OF THE INDICATOR	Demand and sales are crucial to the company's activity. A risks and opportunities indicator is the most significant on business purpose. It is essential for the company to quantify the potential costs of climate change on its activity, to properly reduce physical climate risks.

Adaptive capacity and adaptation activities dimension

A well-designed and comprehensive adaptation strategy should have considered the company's existing adaptive capacities. It should include measures to increase the capacities to enable adaptation. It should also include specific adaptation activities that have been developed based on the results of the physical risk analysis and specifically address the risks identified therein. Measures should be estimated as being effective and aligned with the risk analysis results.

Adaptive capacity is the ability of systems, institutions, humans and other organisms to adjust to potential damage, take advantage of opportunities, or respond to consequences. Adaptation is the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected the climate and its effects. (IPCC, 2014)

6. ORGANIZATION

6.1 ORGANIZATIONAL CAPACITY FOR ADAPTATION

DESCRIPTION & REQUIREMENTS — **6.1.1 DECISION-MAKING PROCESSES**

SHORT DESCRIPTION OF INDICATOR

This indicator aims to assess how the company makes business decisions through methods and indicators. It assesses the extent to which an organization can factor adaptation to climate change into their decision-making processes, identify and deliver meaningful responses, and monitor, update and improve responses over time. It also assesses that adaptation decisions are robust, flexible and avoid maladaptation.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not engaged in setting up any methods, indicators and tools.	The need for methods and indicators for decision-making related to physical risks, adaptation, opportunities and strategic retreat (e.g., due to coastal floods) have been recognised and formalized.	The company is investigating which methods, indicators and tools are best suited to its size and business to enable decision-making with regard to the analysis of physical risks, adaptation, opportunities and strategic retreat (e.g., due to coastal floods).	The company is putting in place the methods, indicators and tools enabling decision-making with regard to the analysis of physical risks, adaptation, opportunities and strategic retreat (e.g., due to coastal floods).	The company has set up methods, indicators and tools enabling decision-making with regard to the analysis of physical risks, adaptation, opportunities and strategic retreat (e.g., due to coastal floods). The methods, indicators and tools are operational, regularly updated and have already produced results. The method is recognised as robust and flexible. It seeks to avoid maladaptation. It is suitable for the company size and business.

DATA REQUIREMENTS	If the company uses the Flexible Adaptation Pathways method, it should disclose it, with reference to long-term objectives, decision points, thresholds and monitoring system. Otherwise, the company should provide the methods, indicators and information system it has developed to integrate physical climate risks and adaptation capacities into its governance and decision-making processes. They should be robust and flexible. The company shall also provide data and documentation to demonstrate that their adaptation decisions avoid maladaptation.
HOW THE ANALYSIS WILL BE DONE	**The Flexible Adaptation Pathways method** can help the company to set up and improve methods, indicators and tools. This method combines immediate actions with more ambitious ones to be implemented when the former is no longer sufficient. A long-term objective is defined, as well as a list of adaptation actions of different types and scopes. The company shall determine thresholds or decision points beyond which it will be appropriate to activate the next action of the trajectory (ADEME, 2021). Other methods exist (in particular robust decision-making and scenario planning) and can be used for this indicator to ensure that decision-making processes are robust and flexible The analyst shall refer to the climate risk analysis (indicators 5.1 to 5.5), internal procedures, projects and partnerships. It shall also evaluate potential maladaptation or evidence that the company's decision-making processes avoid maladaptation. In particular, water and biomass resources are particularly exposed to climate change, and tend to be critical resources. They require risk analysis, adaptation capacity and (for water resources) coordination at the basin scale. If applicable, decision-making should have a specific focus on these resources.
RATIONALE OF THE INDICATOR	Most economic sectors will face important challenges in the coming years, due to climate change effects combined with the ecological transition. Companies must improve their decision-making and adaptation action plans. This indicator reflects how the systemic concept of climate change adaptation is made operational and it relies on several other indicators. The adaptation strategy of a company must avoid maladaptation practices. According to the IPCC, maladaptation corresponds to "any changes in natural or human systems that inadvertently increase vulnerability to climatic stimuli; an adaptation that does not succeed in reducing vulnerability but increases it instead".

DESCRIPTION & REQUIREMENTS

6.1.2 ADAPTATION LEADERSHIP AND RESPONSIBILITIES

SHORT DESCRIPTION OF INDICATOR	This indicator assesses how well the organization has formalized an organizational structure that defines roles and responsibilities clearly and permits effective delivery of actions, and can remain flexible to new opportunities for improved actions. This indicator also considers how well the organization can embed actions on climate change into its existing (or develop new) operational management systems and into its work programmes. It takes into account that decision-making is organised within the company, and whether this is consistent with the company's long-term vision. The adaptation leader manages and supervises, among others, actions described in indicator 1.1.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
No one is in charge of or supervising climate change issues. Departments are not involved in risk decisions or operational measures. There is no aggregation of processes.	The adaptation measures and the long-term vision are mostly managed or supervised by the individual/committee with the highest responsibility for climate change (manager/officer level). Departments are not involved in the risk decisions or operational measures. There is no aggregation of processes.	The adaptation measures and the long-term vision are mostly managed or supervised by the individual/committee with the highest responsibility for climate change that is (senior manager/officer level). Some relevant departments are involved in the risk decisions or operational measures. There is no significant aggregation of processes.	The adaptation measures and the long-term vision are mostly managed or supervised by the individual/committee with the highest responsibility for climate change (senior manager/officer level) closely related to the decision-making structure within the company. Some relevant departments are involved in the risk decisions or operational measures. There is no significant aggregation of processes.	The adaptation measures and the long-term vision are mostly managed or supervised by the individual/committee with the highest responsibility for climate change (Board or individual/sub-set of the board or other committee appointed by the board). All relevant departments are involved in the risk decisions or operational measures. There is a systemic vision thanks to an aggregation of processes.

DATA REQUIREMENTS	The company shall communicate, as a justification, any document that describes the position and the missions of the persons in charge of the physical risks and adaptation such as: the job title, the job description, contract or resume.
HOW THE ANALYSIS WILL BE DONE	The analyst looks at the position of the individual(s) or board in charge of the company's adaptation strategy. It should also consider whether different departments make risk decisions or take operational measures for which they are responsible. The analyst also evaluates whether there is an aggregation of processes within a team at a transverse level.
RATIONALE OF THE INDICATOR	Among other aspects, the business model of the company should be profitable and integrate physical climate risks and a climate adaptation strategy. The higher the position of the climate head within the organisation, the better physical risks and adaptation are expected to be integrated into the company strategy, ensuring that actions are implemented, supervised and monitored. This information is requested in various standards and guidance (ISO, TCFD, etc.).

6.2 CONSIDERATION OF THE COMPANY'S CONTEXT AND REGULAR UPDATES

DESCRIPTION & REQUIREMENTS	**6.2 CONSIDERATION OF THE COMPANY'S CONTEXT AND REGULAR UPDATES**
SHORT DESCRIPTION OF INDICATOR	This indicator evaluates whether the company's adaptation measures and strategy consider the context and specificities of its location. It also takes into consideration the regular update of adaptation measures.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company's adaptation measures are not context-specific, and are not regularly updated.		The company's adaptation measures are context- and location-specific.		The company's adaptation measures are context- and location-specific, and are regularly updated and improved, for example, based on shared experiences.

DATA REQUIREMENTS	Any relevant information and documentation can be used to justify the location-specificity of adaptation measures in terms of context and location. The company shall explain how often they are updated and how they are improved.
HOW THE ANALYSIS WILL BE DONE	The analyst should ensure that the company's adaptation measures are specific to their context, situation and their sector of activity. These measures should also be appropriate to the specific location of the company and related hazards. These measures should be regularly updated and improved. Shared experiences can be relevant for these purposes.
RATIONALE OF THE INDICATOR	As climate change will impact companies very differently depending on the location and characteristics of the system (infrastructure, transport, etc.), it is important to make sure that adaptation measures take location into account. Regular updates and improvements are essential to guarantee the effectiveness of measures over time.

6.3 DIVERSIFICATION OF ACTIVITIES

DESCRIPTION & REQUIREMENTS	**6.3 DIVERSIFICATION OF ACTIVITIES**
SHORT DESCRIPTION OF INDICATOR	This indicator considers the diversification of activities by the company to counterbalance physical climate risks. For example, a farm can diversify the crops used or can initiate non-farming activities to secure some revenue in case of climate hazards.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not considered any diversification of activities.		The company has started to diversify its activities, based on a climate risk analysis and a business plan.		The company has reinforced synergies and avoided potential antagonisms. Diversification is consistent with the climate risk analysis. The company demonstrates higher revenues or lower interannual variability.

DATA REQUIREMENTS	The company shall declare the activities that have been diversified, based on the share of revenues, the seasonality of the various activities and their projected growth.

HOW THE ANALYSIS WILL BE DONE	The analysis may be based on the business plan and/or balance sheet, and take into account the complementarity, synergies and overlaps of the various activities.
RATIONALE OF THE INDICATOR	The diversification of activities is a basic principle of resilience.

7. FINANCE

7.1 FINANCIAL CAPACITY

DESCRIPTION & REQUIREMENTS **7.1 FINANCIAL CAPACITY**

SHORT DESCRIPTION OF INDICATOR	This indicator assesses the financial resources available for adaptation measures and coping with losses. It also considers the share of R&D dedicated to adaptation.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has dedicated any financial resources for adaptation measures and coping with losses.		The company has started to dedicate financial resources to adaptation measures and coping with losses. The R&D investments should integrate a share dedicated to adaptation of at least 5%.		The company dedicates a relevant and sufficient amount of financial resources for adaptation measures and coping with losses. The share of adaptation R&D is at least 15% of total R&D investments.

DATA REQUIREMENTS	The company shall provide the amount of R&D investment dedicated to adaptation, with documents supporting it.
HOW THE ANALYSIS WILL BE DONE	The analysis should ensure that the effects of climate change become routinely considered in business and investment decisions. Mainstreaming of climate change adaptation is assessed in indicator 7.2. Indicator 7.1 specifically addresses financial resources available for adaptation measures and coping with losses, i.e. over-costs due to physical risk management or supplementary adaptation measures. The company should have a share of R&D investments dedicated to adaptation that is above 15% of the total R&D investments to reach the last level of maturity.

RATIONALE OF THE INDICATOR	Investment decisions should take into account future climate-related physical risks to ensure their relevance and perennity. As an example of over-cost due to climate change: a company may implement nature-based solutions to reduce its vulnerability to heavy rains and heat waves. Such solutions requires additional investments with respect to normal maintenance of buildings and surroundings. When a company carries R&D activities, it should take climate change into consideration. The proxy here used to measure climate projections in R&D is the budget lines flagged on adaptation. The company may propose other means to justify that its R&D projects are climate-compatible.

7.2 MAINSTREAMING OF CLIMATE ADAPTATION INTO INVESTMENT DECISIONS

DESCRIPTION & REQUIREMENTS	**7.2 MAINSTREAMING OF CLIMATE ADAPTATION INTO INVESTMENT DECISIONS**
SHORT DESCRIPTION OF INDICATOR	This indicator assesses the integration of climate adaptation into investment decisions. That is to say that it considers whether investment decisions are compatible with increasing physical climate risks.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not integrated climate adaptation into investment decisions.		The company has started to consider whether investment decisions are compatible with increasing physical climate risks.		The company has considered whether investment decisions are compatible with increasing physical climate risks. Decisions are taken accordingly and regularly revised.

DATA REQUIREMENTS	The company shall provide any relevant reporting or documentation. Otherwise, a description of the company's assessment and the decisions taken is acceptable. The company can also provide the results of stress testing.
HOW THE ANALYSIS WILL BE DONE	The analysis evaluates the mainstreaming of climate adaptation into investment decisions. It checks whether the company has taken investment decisions that are consistent with increasing physical climate risks. It also verifies whether a specific management plan has been developed.
RATIONALE OF THE INDICATOR	These financial aspects are crucial to the adaptation of the company. They can help ensure the company's financial stability and the viability of its projects with regard to increasing physical climate risks. Decisions can imply selling the asset, decommissioning it or reducing its risks for example. As an example: if a company plans thermal insulation of its building, it should consider resilience to future heat waves when dimensioning the building renovation.

8. TECHNOLOGIES AND NATURE-BASED SOLUTIONS

8.1 TECHNOLOGIES AND NATURE-BASED SOLUTIONS FOR ADAPTIVE CAPACITY

DESCRIPTION & REQUIREMENTS	8.1 TECHNOLOGIES AND NATURE-BASED SOLUTIONS FOR ADAPTIVE CAPACITY
SHORT DESCRIPTION OF INDICATOR	This indicator assesses whether the necessary technology or nature-based solutions (see Section 8 – Glossary) are available today for the adaptive capacity of the company (with respect to identified physical risks), or if there is no current technology or nature-based solution. The indicator also takes into account the implementation of such technologies and nature-based solutions, if they exist, to improve the adaptive capacity of the company.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not identified if relevant technologies or nature-based solutions for adaptive capacity exist.		The company has analysed whether technologies or nature-based solutions exist to improve its adaptive capacity. They have identified the relevant ones for their activities.		The company has analysed whether technologies or nature-based solutions exist to improve its adaptive capacity. They have identified the relevant ones for their activities. The company has implemented such technologies or nature-based solutions.

DATA REQUIREMENTS	The company should describe, by referring to public or private documents and reports, the assessment of the available technologies and nature-based solutions to improve their adaptive capacity, as well as the ones that have been implemented by the company for its activities.
HOW THE ANALYSIS WILL BE DONE	The company should have identified if relevant technologies or nature-based solutions exist to improve its adaptive capacity. The identified ones should be implemented by the company to contribute to its adaptive capacity. When possible, nature-based solutions should always be favoured over other technologies.
RATIONALE OF THE INDICATOR	Technologies and nature-based solutions allow companies to improve their adaptive capacity. They should be developed specifically to address the company's physical risks and adaptation needs. When possible, nature-based solutions should always be favoured over other technologies. Indeed, they address various challenges simultaneously, while providing human well-being, ecosystem services and resilience and biodiversity benefits.

9. HUMAN

9.1 COMPETENCES AND SKILLS

DESCRIPTION & REQUIREMENTS **9.1 COMPETENCES AND SKILLS**

SHORT DESCRIPTION OF INDICATOR

This indicator assesses the skills, knowledge and expertise, be they internal or external, regarding physical risks and adaptation to climate change that the company has access to, in order to develop and implement adaptation measures. Collaborations or partnerships on climate adaptation are taken into account.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not developed specific expertise in climate adaptation.	The company has developed partnerships for external expertise regarding physical risks and adaptation to climate change to contribute to the implementation of measures.	The company has developed partnerships for external expertise regarding physical risks and adaptation to climate change to contribute to the implementation of measures. At least one key employee has this expertise within the company to implement adaptation measures.	The company has developed partnerships for external expertise regarding physical risks and adaptation to climate change to contribute to the implementation of measures. Enough relevant and key employees have this expertise within the company to implement adaptation measures	Internal expertise is completely developed and mobilised to routinely conduct and implement adaptation measures. The company can mobilise external partnerships when necessary to complement its expertise.

DATA REQUIREMENTS

The Human Resource Department may have established a mapping of internal competencies. The individual with the 'Adaptation leadership and responsibilities' (see indicator 6.1.2) may also deliver information on external skills and adaptation maturity.

HOW THE ANALYSIS WILL BE DONE

The maturity analysis will be essentially based on interviews with the Human Resource Department and the individual with the 'Adaptation leadership and responsibilities' (see indicator 6.1.2).

RATIONALE OF THE INDICATOR

Knowledge and expertise in adaptation to climate change allow the company to work on the adaptive capacity, implement adaptation measures and keep them up to date.

9.2 TRAINING AND CAPACITY BUILDING

DESCRIPTION & REQUIREMENTS 9.2 TRAINING AND CAPACITY BUILDING

SHORT DESCRIPTION OF INDICATOR

This indicator takes into account employee training regarding physical risks and adaptation. It also reflects the implementation of information and mediation systems inside the company, dedicated to increasing the adaptive capacity of the company's employees.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company does not have any adaptation strategy regarding the training of its employees and its key decision-makers.	The company has assessed the physical climate risks and adaptation training gaps and needs for its relevant employees and key decision-makers.	The company raises the awareness and has started to inform its relevant employees and key decision-makers regarding physical climate risks and adaptation, especially the individual/committee with the highest responsibility for climate change (i.e., indicator 6.1.2).	Training of and provision of information to relevant employees and key decision-makers on physical climate risks and adaptation is in progress and almost completed, especially for the individual/committee with the highest responsibility for climate change (i.e., indicator 6.1.2). Training applies to between 60% and 80% of employees.	The company carries out in-depth training for all relevant employees and key decision-makers about issues related to physical climate risks, adaptation, and its consequences on business and operational decisions. Information is regularly shared, with updated content. More specifically, the individual/committee with the highest responsibility for climate change should be trained (i.e., indicator 6.1.2). Training applies to over 80% of employees.

DATA REQUIREMENTS

The company shall provide the percentage of employees trained and the content of the training, as well as relevant Human Resource documentation. It should demonstrate how physical climate risks and adaptation issues are integrated into employees' missions, projects and objectives by providing internal documentation. The company should declare if the individual with the "Adaptation leadership" for climate change has received training (see indicator 1.2). Moreover, the company shall describe the information and mediation system that is implemented internally, and how often the content is updated.

HOW THE ANALYSIS WILL BE DONE

The analysis is based on training and Human Resource documentation. Moreover, the information and mediation system is intended to be accessible to all relevant employees. The analysis should check whether the system is effective and up-to-date.

RATIONALE OF THE INDICATOR

The training of employees regarding physical risks and adaptation is essential to integrate these aspects into employees' missions and corporate projects and policies. Information-sharing between employees within the company, together with training, increases the adaptive capacity of the company. Indeed, it enables the sustainable integration of physical risks and adaptation issues and subjects in employees' missions.

9.3 ADAPTATION MEASURES TO WORKING CONDITIONS

DESCRIPTION & REQUIREMENTS 9.3 ADAPTATION MEASURES TO WORKING CONDITIONS

SHORT DESCRIPTION OF INDICATOR

This indicator takes into account whether or not the company has a plan or adaptation measures in order to reduce the potential negative consequences of climate change on its employees' health and working conditions (mainly those assessed in the physical risk analysis, in module 5). This indicator also assesses if these adaptation measures are implemented and effective.

Basic	Standard	Advanced	Next practice	Best Adaptive Practice
The company has not done anything to adapt working conditions to climate change consequences.		The company has started to consider a plan or adaptation measures in order to reduce the potential negative consequences of climate change identified on its employees' health and working conditions.		The company has a plan or adaptation measures in order to reduce the potential negative consequences of climate change identified on its employees' health and working conditions. They are implemented, effective and regularly updated.

DATA REQUIREMENTS

The company shall provide its adaptation plan for working conditions regarding the potential consequences of climate change on workers, as well as the related methodology.

HOW THE ANALYSIS WILL BE DONE

The analysis should assess how the adaptation measures and plan reduce the potential negative consequences of climate change identified in employees' health and working conditions. It should also assess if these adaptation measures are implemented and effective.

RATIONALE OF THE INDICATOR

Climate change impacts can affect their health and working conditions through droughts, heatwaves or storms, for example. Thus, it is important for the company to implement effective and regularly updated adaptation measures for working conditions.

6. Rating

6.1. Score

The ACT Adaptation rating is a number score from 0 (worst) to 20 (best). It is calculated using the score attributed to each indicator (see Section 5.3 and 5.4), based on the maturity matrices and their respective weightings.

The rating can be broken down into three sub-scores, Governance; Physical climate risks; Adaptive capacity and adaptation activities, as a percentage, and while respecting the weightings attributed to each dimension.

Score out of 20		
Sub-score Governance	Sub-score Physical climate risks	Sub-score Adaptive capacity and adaptation activities
13		
Governance 75%	Physical climate risks 75%	Adaptive capacity and adaptation activities 50%

TABLE 4: ACT ADAPTATION SCORING AND AN EXAMPLE

6.2. Weightings

The indicator weights are shown in Table 5.

DIMENSION	MODULE	INDICATOR	SUB-INDICATORS (IF EXISTING)	WEIGHTINGS		
				INDICATOR	MODULE	DIMENSION
GOVERNANCE	1. INTERNAL GOVERNANCE	1.1 Long-term vision and corporate projects		6%	6%	20%
	2. COHERENCE WITH EXTERNAL POLICIES AND STRATEGIES	2.1 Coherence with public policy		4%	8%	
		2.2 Interested parties		4%		
	3. ENVIRONMENTAL SAFEGUARDS	3.1 Do No Significant Harm Principle		6%	6%	
PHYSICAL CLIMATE RISKS	4. ANALYSIS	4.1 Data and scenarios		5%	10%	40%
		4.2 Inclusion of all critical components of the value chain		5%		
	5. PHYSICAL CLIMATE RISK ANALYSIS	5.1 Raw materials	5.1.1 Exposure (2%)	6%	30%	
			5.1.2 Vulnerability (2%)			
			5.1.3 Risks and opportunities (2%)			
		5.2 Production, operations, processes and infrastructure	5.2.1 Exposure (2%)	6%		
			5.2.2 Vulnerability (2%)			
			5.2.3 Risks and opportunities (2%)			
		5.3 Networks and systems (water, energy and telecommunication)	5.3.1 Exposure (2%)	6%		
			5.3.2 Vulnerability (2%)			
			5.3.3 Risks and opportunities (2%)			
		5.4 Logistics and transport	5.4.1 Exposure (2%)	6%		
			5.4.2 Vulnerability (2%)			
			5.4.3 Risks and opportunities (2%)			
		5.5 Demand and sales	5.5.1 Exposure (2%)	6%		
			5.5.2 Vulnerability (2%)			
			5.5.3 Risks and opportunities (2%)			
ADAPTIVE CAPACITY AND ADAPTATION ACTIVITIES	6. ORGANIZATION	6.1 Organizational capacity for adaptation	6.1.1 Decision-making processes	4%	16%	40%
			6.1.2 Adaptation leadership and responsibilities	4%		
		6.2 Consideration of the company's context and regular updates		4%		
		6.3 Diversification of activities		4%		
	7. FINANCE	7.1 Financial capacity		4%	8%	
		7.2 Mainstreaming of climate adaptation into investment decisions		4%		
	8. TECHNOLOGIES AND NATURE-	8.1 Technologies and nature-based solutions for adaptive capacity		4%	4%	

DIMENSION	MODULE	INDICATOR	SUB-INDICATORS (IF EXISTING)	WEIGHTINGS		
				INDICATOR	MODULE	DIMENSION
	BASED SOLUTIONS					
	9. HUMAN	9.1 Competences and skills		4%	12%	
		9.2 Trainings and capacity building		4%		
		9.3 Adaptation measures to working conditions		4%		

TABLE 5: ACT ADAPTATION WEIGHTINGS

Rationale

The ACT Adaptation methodology is composed of three dimensions.

Governance dimension – 20%

This dimension has its weightings distributed fairly equally among the indicators. Indicators 1.1 Long-term vision and corporate projects, and 3.1 Do No Significant Harm Principle have a slightly higher weighting of 6%, compared to 4% for the other indicators of this dimension. This is because they are more related to the internal climate governance of the company, thus they play a more important part in the company's adaptation strategy.

Physical climate risks dimension – 40%

The Analysis module has a weighting of 10%. Data and scenario analysis (indicator 4.1), as well as the part of the value chain the most critical for the company (indicator 4.2) are first steps. The analysis of exposure, vulnerability, and risks and opportunities for each part of the value chain are attributed an equal weighting of 2%. Thus, each part of the value chain is weighted at 6%. The analyst can decide to change the weightings from indicators 5.1 to 5.5 (see the Calculation rule below).

Adaptive capacity and adaptation activities dimension – 40%

Each indicator of this dimension has an equal weighting of 4%. Indeed, each contributes equally to increasing and improving the adaptive capacity and adaptation activities of the company. Thus, each indicator of this dimension assesses how the company minimizes negative consequences of climate change and takes advantage of opportunities. As a consequence, organizational and human capacity have higher weighting. It is essential for a company to have a robust organization and human resources to rely on to develop and improve its financial and technological capacities.

Guidelines for the analyst

When relevant, the five levels of maturity are described in the matrix of the indicators to frame and describe different shades of practices. In any case, even when only three levels of maturity are described, the analyst shall assess and position the company's practice somewhere on the five possible levels of maturity.

The assessor should supply a short narrative supporting their judgment with respect to each indicator for the level of maturity achieved and listing the specific data provided by the company from which they draw their conclusions.

Calculation rule

Indicator 4.2 "Inclusion of all critical components of the value chain" is linked to the company's ability to determine which activities and parts of the value chain (between the ones presented in the indicators 5.1 to 5.5) are essential to the company and its operations. These activities cannot be affected by physical risks without critically impacting the company. The company can thus do an in-depth and precise analysis of these specific activities and value chain parts.

As a consequence, if one or several indicators from 5.1 to 5.5 are not relevant to the company, the analyst can decide to attribute a weighting of 0% to the corresponding indicator. A maximum of three indicators can be removed from the analysis. This decision should be done according to the analysis in indicator 4.2. The weightings of the removed indicators should be redistributed proportionally among the remaining indicators from 5.1 to 5.5. Once the analyst has decided to keep a part of the value chain in the assessment through the related indicator, they should analyse the three sub-indicators (Exposure, Vulnerability and Risks and opportunities). The weightings of the module and the dimension remain unchanged.

For example, if the analyst has determined in indicator 4.2 that Production (indicator 5.2) and Raw materials (indicator 5.1) are the most critical parts of the value chain, the indicators 5.3, 5.4 and 5.5 may be removed from the analysis. Thus, 18% (3 indicators x 6%) weightings have to be redistributed among the two remaining indicators. Indicators 5.1 and 5.2 get an addition of 9% weighting each, to reach 15% (6% + 9% added) each.

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8. Glossary

ACT	The Assessing low-Carbon Transition (ACT) initiative was jointly developed by ADEME and CDP. ACT assesses how ready an organization is to transition to a low-carbon world using a set of future-oriented, sector-specific methodologies (ACT website). It also now aims to assess companies' adaptation strategies.
ACTIONS THAT DO NOT (SIGNIFICANTLY) HARM MITIGATION, BIODIVERSITY, HEALTH AND POLLUTION	According to the European Taxonomy proposed by the Technical Expert Group, economic activities making a substantial contribution to climate change mitigation or adaptation must be assessed to ensure they do not cause significant harm to all remaining environmental objectives. An activity contributing to climate change adaptation must avoid significant harm to climate change mitigation and the other four environmental objectives (and vice versa): - Sustainable use and protection of water and marine resources - Transition to a circular economy, waste prevention and recycling - Pollution prevention and control - Protection of healthy ecosystems This assessment ensures that progress against some objectives is not made at the expense of others and recognises the reinforcing relationships between different environmental objectives. (TEG, 2020)
ADAPTATION	The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects. Adaptation options exist in all sectors, but their context for implementation and potential to reduce climate-related risks differs across sectors and regions. Some adaptation responses involve significant co-benefits, synergies and trade-offs. Increasing climate change will increase challenges for many adaptation options. Adaptation and mitigation responses are underpinned by common enabling factors. These include effective institutions and governance, innovation and investments in environmentally sound technologies and infrastructure, sustainable livelihoods and behavioural and lifestyle choices. (IPCC, 2014)
ADAPTATION NEEDS	The circumstances requiring action to ensure the safety of populations and security of assets in response to climate impacts (IPCC, AR6 WGII Assessment Report Final Draft, 2022).
ADAPTATION PATHWAYS	A series of adaptation choices involving trade-offs between short-term and long-term goals and values. These are processes of deliberation to identify solutions that are meaningful to people in the context of their daily lives and to avoid potential maladaptation (IPCC, AR6 WGII Assessment Report Final Draft).
ADAPTIVE CAPACITY	The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or respond to consequences. (IPCC, 2014)

ADEME	Agence de la Transition Ecologique; The French Ecological Transition Agency (ADEME webpage)
ANALYST	Person in charge of the ACT assessment (ACT Framework).
ASSESS	Under the ACT Adaptation methodology, to evaluate the quality and the comprehensiveness of the adaptation strategy of a company. The ACT assessment and rating will be based on consideration of a range of indicators. Indicators may be reported directly from companies. Indicators may also be calculated from different data sources supplied by the company (ACT Framework).
CASCADING IMPACTS	Cascading impacts from extreme weather/climate events occur when an extreme hazard generates a sequence of secondary events in natural and human systems that result in physical, natural, social or economic disruption, whereby the resulting impact is significantly larger than the initial impact. Cascading impacts are complex and multi-dimensional, and are associated more with the magnitude of vulnerability than with that of the hazard (modified from Pescaroli & Alexander, 2015) (IPCC, AR6 WGII Assessment Report Final Draft, 2022).
CLIMATE CHANGE	A change in climate, attributed directly or indirectly to human activity, that alters the composition of the global atmosphere and that is, in addition to natural climate variability, observed over comparable time periods (UNFCCC).
CLIMATE GOVERNANCE	The structures, processes, and actions through which private and public actors seek to mitigate and adapt to climate change (IPCC, AR6 WGII Assessment Report Final Draft, 2022).
COMPANY	A commercial business (ACT Framework).
CLIMATE PROJECTION	A climate projection is the simulated response of the climate system to a scenario of future emission or concentration of greenhouse gases (GHGs) and aerosols, generally derived using climate models. Climate projections are distinguished from climate predictions by their dependence on the emission/concentration/radiative forcing scenario used, which is in turn based on assumptions concerning, for example, future socioeconomic and technological developments that may or may not be realized. (IPCC, 2014)
CLIMATE-RELATED OPPORTUNITY	The potential positive impacts related to climate change on an organisation. It will vary depending on the region, market and industry in which an organisation operates. In the ACT framework, climate-related opportunity focuses on opportunities to adapt to market shifts driven by physical climate impacts and cater to any resulting new market needs, that is to say, the fundamental shifts in climate over the longer term may affect value chains and drive new consumer needs. For example, technology to keep buildings cool, along with water- and energy-efficient technologies, or crops that are better suited to chronic changes in precipitation and temperature. (EBRD, 2018)

DATA	Facts and statistics collected for reference and analysis (e.g. the data requested from companies for assessment under the ACT project indicators) (ACT Framework).
EMISSION SCENARIO	A plausible representation of the future development of emissions of substances that are potentially radiatively active (e.g., greenhouse gases (GHGs), aerosols) based on a coherent and internally consistent set of assumptions about driving forces (such as demographic and socio-economic development, technological change, energy and land use) and their key relationships. Concentration scenarios, derived from emission scenarios, are used as input to a climate model to compute climate projections. (IPCC, 2014)
EXPOSURE / EXPOSURE	The presence of people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places and settings that could be adversely affected. (IPCC, 2014)
EXPOSURE METRICS	Metrics designed to assess the degree to which a company's value chain (e.g., assets, operations, supply chain, customers) has the potential to be impacted by physical climate hazards due to its geographic location. These metrics should link part of a company's value chain (e.g., physical assets) with specific physical climate hazards (e.g., tropical cyclones). (IPCC, 2014)
FINANCIAL RESOURCES	It is the funds available to implement its adaptive capacity. (ADEME, 2019)
FLEXIBLE ADAPTATION PATHWAYS METHOD	It is a method which consists of elaborating adaptation trajectories combining and ordering immediate actions and more ambitious actions, to be implemented when the former are no longer sufficient, by setting up a monitoring system throughout the implementation to anticipate the crossing of thresholds and a possible change of trajectory (Alexandre Magnan) (ADEME, 2021).
HAZARDS	The potential occurrence of a natural or human-induced physical event or trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources. In this report, the term hazard usually refers to climate-related physical events or trends or their physical impacts. Thus, it includes processes that range from brief events, such as severe storms, to slow trends, such as multi-decade droughts or multi-century sea level rise. (IPCC, 2014) A climate hazard should be appreciated by of its likelihood, magnitude and duration.
HUMAN RESOURCE	It is the internal skills and working time that the company uses to improve its adaptive capacity. (ADEME, 2019)
IMPACTS	The consequences of realised risks on natural and human systems, where risks result from the interactions of climate-related hazards (including extreme weather/climate events), exposure, and vulnerability. Impacts generally refer to effects on lives, livelihoods, health and wellbeing, ecosystems and species, economic, social and cultural assets, services (including ecosystem services), and infrastructure. Impacts may be referred to as

	consequences or outcomes, and can be adverse or beneficial (IPCC, AR6 WGII Assessment Report Final Draft, 2022).
INDICATOR	An indicator is a quantitative or qualitative piece of information that, in the context of the ACT project, can provide insight into a company's adaptation strategy quality and comprehensiveness (ACT Framework).
INTERESTED PARTIES	Person or organization that can affect, be affected by, or perceive itself to be affected by a decision or activity (ISO14090:2019)
MALADAPTATION (MALADAPTIVE ACTIONS)	Actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas (GHG) emissions, increased or shifted vulnerability to climate change, more inequitable outcomes, or diminished welfare, now or in the future. Most often, maladaptation is an unintended consequence (IPCC, AR6 WGII Assessment Report Final Draft, 2022).
MITIGATION (OF CLIMATE CHANGE)	Human intervention to reduce emissions or enhance the sinks of greenhouse gases (IPCC, AR6 WGII Assessment Report Final Draft, 2022).
NATURE-BASED SOLUTIONS (NBS)	Actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits (5th UN Environment Assembly, Nairobi).
ORGANIZATIONAL CAPACITY	It is the governance bodies, exchanges, decision-making processes and the management mode that contribute to its adaptive capacity. (ADEME, 2019)
PHYSICAL CLIMATE RISKS	The potential for negative consequences from physical climate events or trends. Acute physical risks refer to those that are event-driven, including increased severity of extreme weather events, such as tropical cyclones or floods. Chronic physical risks are longer-term shifts in climate patterns (e.g., sustained higher temperatures) that may cause sea-level change or chronic heat waves. Risks from climate change impacts arise from the interaction between hazard (triggered by an event or trend related to climate change), vulnerability (susceptibility to harm) and exposure (people, assets or ecosystems at risk). (IPCC, 2014)

The classification of physical hazards is the following:

CHRONIC PHYSICAL HAZARDS	Includes	Definition
Sustained temperature rise	Urban heat island	A gradual increase in overall temperature.

Change in precipitation patterns		Increase or decrease in precipitation annually and seasonally.
Water Stress	Degraded water quality	High ratio of total water withdrawals to available renewable surface and groundwater supplies.
Sea level change	Costal erosion	Change to the height of sea level, both globally and locally (relative sea-level change) at seasonal, annual, or longer time scales due to (1) a change in ocean volume as a result of a change in the mass of water in the ocean (e.g., due to melt of glaciers and ice sheets), (2) changes in ocean volume as a result of changes in ocean water density (e.g., expansion under warmer conditions), (3) changes in the shape of the ocean basins and changes in Earth's gravitational and rotational fields, and (4) local subsidence or uplift of the land.
Ocean acidification		Ocean acidification refers to a reduction in the pH of the ocean over an extended period, typically decades or longer, which is caused primarily by uptake of carbon dioxide (CO_2) from the atmosphere, but can also be caused by other chemical additions or subtractions from the ocean. Anthropogenic ocean acidification refers to the component of pH reduction that is caused by human activity.
Ice melt/permafrost melt		Progressive loss of sea ice, glacier, or ground (soil or rock and included ice and organic material) that remains at or below 0°C for at least two consecutive years.

ACUTE/EXTREME PHYSICAL HAZARDS	Includes	Definition
Extreme temperatures	Freeze Heatwave	Temperature that is rare (unusually low or high) in a particular place and at a particular time of year. An extreme event would normally be as rare as or rarer than the 10th or 90th percentile of a probability density function estimated from observations.
Drought	Severe low-water levels	A period of abnormally dry weather long enough to cause a serious hydrological imbalance. Drought is a relative term; therefore any discussion in terms of precipitation deficit must refer to the particular precipitation-related activity that is under discussion. A period with an abnormal precipitation deficit is defined as a meteorological drought. A megadrought is a very lengthy and pervasive drought, lasting much longer than normal, usually a decade or more.
Wildfires		Uncontrolled fires that burn in wildland vegetation, often in rural areas.
Extreme precipitation		Precipitation that is rare (unusually low or high) in a particular place and at a particular time of year. An extreme event would normally be as rare as or rarer than the 10th or 90th percentile of a probability density function estimated from observations.
Hail		A form of precipitation consisting of solid ice.

	**Extreme sea level (storm surge)**		The temporary increase, at a particular locality, in the height of the sea due to extreme meteorological conditions (low atmospheric pressure and/or strong winds).
	**Flood**	River Flood Pluvial Flood Groundwater Flood Coastal Flood	The overflowing of the normal confines of a stream or other body of water, or the accumulation of water over areas not normally submerged. Floods include river (fluvial) floods, flash floods, urban floods, pluvial floods, sewer floods, coastal floods and glacial lake outburst floods.
		Mass movements	A mass of material that has moved downhill because of gravity, often assisted by water when the material is saturated.
	Landslides	Shrinkage-swelling of clay soils (SSCS)	Clay soils can have their consistency change according to their water content. In a humid context, clayey soil appears supple and malleable, while the same soil dried out will be hard and brittle. Variations of volume more or less consequent according to the structure of the soil and the minerals in presence, accompany these modifications of consistency.
	**Extreme winds**	Storm	Wind speed that is rare (unusually low or high) in a particular place and at a particular time of year. An extreme event would normally be as rare as or rarer than the 10th or 90th percentile of a probability density function estimated from observations.
	**Tornadoes**		A violently rotating column of air touching the ground; usually attached to the base of a thunderstorm.
	**Tropical cyclones**		The general term for a strong, cyclonic-scale disturbance that originates over tropical oceans. Distinguished from weaker systems (often named tropical disturbances or depressions) by exceeding a threshold wind speed. A tropical storm is a tropical cyclone with 1-minute average surface winds between 18 and 32 m s–1. Beyond 32 m s–1, a tropical cyclone is called a hurricane, typhoon, or cyclone, depending on geographic location.
	**Dust Storm**		The result of terminal winds raising large quantities of dust into the air and reducing visibility at eye level (1.8 meters) to less than 1,000 meters.

Note: The definitions of these hazards from the WRI and the IPCC are examples, any other relevant definition and corresponding indicator will be appropriate.

Sources : WRI based on a review of reports from the IPCC (2014a, 2021, 2018, 2019a, 2019b), Géorisques, and adapted from I4CE

PLAN	A detailed proposal for doing or achieving something (ACT Framework).
REPRESENTATIVE CONCENTRATION PATHWAYS (RCP)	Scenarios that include time series of emissions and concentrations of the full suite of greenhouse gases (GHGs) and aerosols and chemically active gases, as well as land use/land cover (Moss et al., 2008). The word representative signifies that each RCP provides only one of many possible scenarios that would lead to the specific radiative forcing characteristics. The term pathway emphasizes that not only the long-term

concentration levels are of interest, but also the trajectory taken over time to reach that outcome (Moss et al., 2010).

RCPs usually refer to the portion of the concentration pathway extending up to 2100, for which Integrated Assessment Models produced corresponding emission scenarios. Extended Concentration Pathways (ECPs) describe extensions of the RCPs from 2100 to 2500 that were calculated using simple rules generated by stakeholder consultations and do not represent fully consistent scenarios.

Four RCPs produced from Integrated Assessment Models were selected from the published literature and are used in the present IPCC Assessment as a basis for the climate predictions and projections presented in WGI AR5 Chapters 11 to 14 (IPCC, 2013b):

RCP2.6

One pathway where radiative forcing peaks at approximately 3 W/m2 before 2100 and then declines (the corresponding ECP assuming constant emissions after 2100). RCP2.6 is representative of a scenario that aims to keep global warming likely below 2°C above pre-industrial temperatures. The increase of global mean surface temperature by the end of the 21st century (2081–2100) relative to 1986–2005 is likely to be 0.3°C to 1.7°C under RCP2.6.

RCP4.5 and RCP6.0

Two intermediate stabilization pathways and scenarios in which radiative forcing is stabilized at approximately 4.5 W/m2 and 6.0 W/m2 after 2100 (the corresponding ECPs assuming constant concentrations after 2150). The increase of global mean surface temperature by the end of the 21st century (2081–2100) relative to 1986–2005 is likely to be 1.1°C to 2.6°C under RCP4.5, 1.4°C to 3.1°C under RCP6.0.

RCP8.5

It is the scenario with very high GHG emissions. One high pathway for which radiative forcing reaches >8.5 W/m2 by 2100 and continues to rise for some amount of time (the corresponding ECP assuming constant emissions after 2100 and constant concentrations after 2250). Scenarios without additional efforts to constrain emissions ('baseline scenarios') lead to pathways ranging between RCP6.0 and RCP8.5. The increase of global mean surface temperature by the end of the 21st century (2081–2100) relative to 1986–2005 is likely to be 2.6°C to 4.8°C under RCP8.5.

Relative to 1850–1900, global surface temperature change for the end of the 21st century (2081–2100) is projected to likely exceed 1.5°C for RCP4.5, RCP6.0 and RCP8.5 (high confidence). Warming is likely to exceed 2°C for RCP6.0 and RCP8.5 (high confidence), more likely than not to exceed 2°C for RCP4.5 (medium confidence), but unlikely to exceed 2°C for RCP2.6 (medium confidence).

(IPCC, 2014)

SENSITIVITY

The degree to which a system or species is affected, either adversely or beneficially, by climate variability or change. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range, or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea-level rise) (IPCC, AR6 WGII Assessment Report Final Draft).

SCENARIO ANALYSIS

A process of analyzing possible future events by considering alternative possible outcomes (ACT Framework).

SCOPE A	The direct scope of the company, meaning the assets controlled or operated directly by the company (e.g., buildings, facilities, vehicles, natural assets) (OCARA, 2021).
SCOPE B	The stakeholders with which the company is in direct contact, including network infrastructures (e.g., water, electricity, waste removal, rank 1 suppliers) (OCARA, 2021).
SCOPE C	The stakeholders with which the company is in indirect contact upstream or downstream of the value chain, for example, rank 2 suppliers on which the company's direct suppliers depend (OCARA, 2021).
SECTOR	Classification of companies with similar business activities, (e.g. automotive manufacturers, power producers, retailers, etc.) (ACT Framework).
STRATEGY	A plan of action designed to achieve a long-term or overall aim. In business, this is the means by which a company sets out to achieve its desired objectives; long-term business planning (ACT Framework).
SUPPLIER	A person or entity that is the source for goods or services (e.g. a company that provides engine components to an automotive manufacturing company) (ACT Framework).
STRANDED ASSETS	Investments already made but which, before the end of their economic life (assumed at the time of the investment decision), are no longer able to provide an economic return, as a result of climate change impacts and related physical risks to the assets in question. For example, a hydraulic dam for which the future decline in rainfall and the increase in droughts will not have been considered (IEA).
TECHNICAL RESOURCES	The technologies, techniques and new solutions that contribute to improving its adaptive capacity. (ADEME, 2019)
THRESHOLD	Identifying the stages beyond which the operation of a system is significantly or irreversibly compromised, and understanding how climate change interacts with these functional thresholds, threshold analysis allows us to identify different levels of risk. The identification of these different risk thresholds in space and time then allows us to prioritize and sequence incremental adaptation solutions. (ADEME, 2020)
TRANSFORMATION	A change in the fundamental attributes of natural and human systems. (IPCC, 2014)
UNCERTAINTY	A state of incomplete knowledge that can result from a lack of information or from disagreement about what is known or even knowable. It may have many types of sources, from imprecision in the data to ambiguously defined concepts or terminology, incomplete understanding of critical processes, or uncertain projections of human behaviour. Uncertainty can therefore be represented by quantitative measures (e.g., a probability density function) or by qualitative statements (e.g., reflecting the judgment of a team of experts) (see Moss and Schneider, 2000; IPCC, 2004; Mastrandrea et al., 2010) (IPCC, AR6 WGII Assessment Report Final Draft).
VULNERABILITY	The propensity or predisposition to be adversely affected – encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt. (IPCC, AR6 WGII Assessment Report Final Draft).

VULNERABILITY METRICS	Metrics designed to assess the propensity of different parts of a company's value chain to suffer negative impacts when exposed to and then impacted by physical climate hazards. These metrics should assess specific characteristics of a company's value chain (e.g., water intensity) that may make that part of the value chain more or less likely to suffer negative impacts from physical climate hazards. (WRI, 2021)
WEIGHTING	The allowance or adjustment made to take account of special circumstances or compensate for a distorting factor. In ACT Adaptation each indicator is assigned a weighting to obtain the different sub-score and general score (ACT Framework).

Appendix 1: the 3 scopes of analysis (from OCARA, Carbone 4)

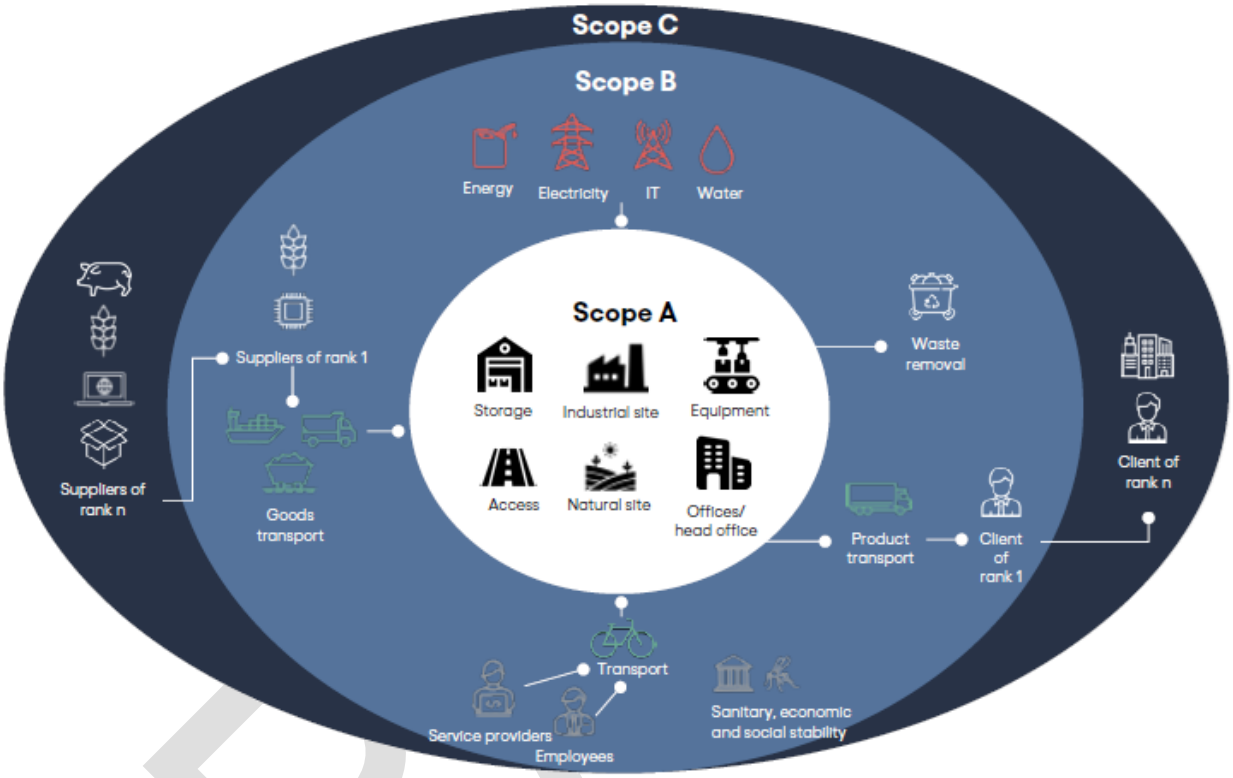

FIGURE 3: BREAKDOWN OF THE COMPANY AND ITS LINKS OF DEPENDENCE INTO 3 SCOPES (FROM OCARA, CARBONE 4, 2021)

ACTIVITIES INCLUDED IN EACH SCOPE

Scope A	Scope B	Scope C
1. Integrity of buildings and constructions	7. Availability and quality of supplies – Direct perimeter (scope A) of main suppliers of rank 1	17. Relevance of the offer to the market
2. Maintaining storage conditions of raw materials, products and waste	8. Outlets of products and services – Direct scope (scope A) or main clients of rank 1	18. Value chain of suppliers of rank 1
3. Maintaining working and production conditions	9. Supply and distribution of goods – Availability and quality of transport networks	19. Value chain of clients of rank 1
4. Integrity and proper functioning of equipment	10. Worker mobility (employees and service providers) – Availability and quality of transport networks	20. Value chain of infrastructures and networks supplying the company
5. Services rendered by natural assets exploited by the company	11. Availability and quality of electricity supply to sites	
6. Other physical goods exploited by the company and necessary for its operation	12. Availability and quality of supply of gas, steam, heating and cooling	
	13. Availability and quality of water supply to sites	
	14. Availability and quality of telecom and internet networks	
	15. Removal of waste and effluents	
	16. Stability of the political, regulatory and socioeconomic environment	

FIGURE 4: ACTIVITIES INCLUDED IN EACH SCOPE THAT ENSURE THE COMPANY RUNS SMOOTHLY (FROM OCARA, CARBONE 4, 2021)

Appendix 2: basic concepts of physical risk assessment

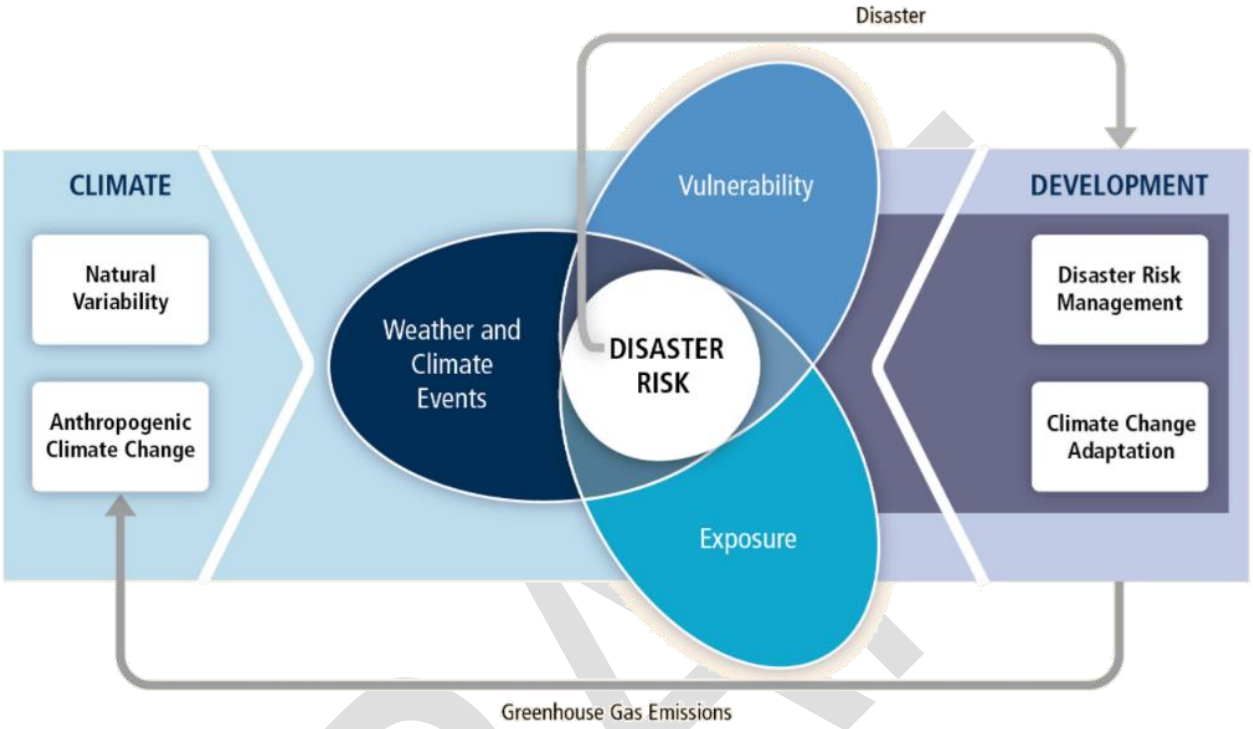

FIGURE 5: THE KEY CONCEPTS INVOLVED IN DISASTER RISK MANAGEMENT AND CLIMATE CHANGE ADAPTATION (FROM IPCC, 2012)

Vulnerability / Exposure	Very high	High	Moderate	Low	Very low
Very high	Very high	Very high	High	High	Moderate
High	Very high	High	Moderate	Moderate	Low
Moderate	High	Moderate	Moderate	Moderate	Low
Low	High	Moderate	Moderate	Low	Very low
Very low	Moderate	Low	Low	Very low	Very low

Vulnerability & Exposure / Hazard	Very high	High	Moderate	Low	Very low
Very high	Severe	Severe	Significant	Significant	Moderate
High	Severe	Significant	Moderate	Moderate	Minor
Moderate	Significant	Moderate	Moderate	Moderate	Minor
Low	Significant	Moderate	Moderate	Minor	Negligible
Very low	Moderate	Minor	Minor	Negligible	Negligible

FIGURE 6: EXAMPLES OF RISK MATRIX FOR PHYSICAL RISKS AND ADAPTATION (CHING-PIN TUNG AND AL., WATER 2019)