ACT

FRAMEWORK

Assessing low-Carbon Transition

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Contents

1. Introduction

Over the past 15 years, carbon accounting has become a must for organizations mindful of the climate impact of their activities. Indeed, many of them voluntarily disclose their GHG emissions and management practices by responding each year to CDP's questionnaire or reporting to other voluntary/mandatory schemes. However, as revealed in CDP's annual reports, accounting and GHG emissions disclosure practices can differ from one company to another, and global emissions are still growing despite companies' commitments.

In parallel, new concepts, needs and tools have emerged that should help reverse this trend: Science-Based Targets, Carbon Management System, carbon pricing, new metrics for investors and so on. It is time to move forward and to enhance reporting practices to see which companies are really moving to a low-carbon pathway and who can be trusted.

In this context, an increasing number of initiatives have been proposed with different purposes, goals and target audiences. The strength of the ACT initiative is that it adopts a holistic approach to assessing how ready a company is to transition to a low-carbon economy: the level of ambition of the climate strategy is analysed against the low-carbon benchmark relevant for the company, as well as the actions that the company effectively takes in response to this strategy.

The degree of early action undertaken now and in the short-term will be a major determining factor in the costs of the transition in the long-term (See Appendix 1: The transition). A key characteristic of short-term change towards a low-carbon economy in business is that in the next couple of years it is going to be largely voluntary, with impactful and globally-aligned government regulations unlikely. The degree of this voluntary commitment also provides insights into the overall commitment of business to the transition. The ACT methodologies will contribute to these insights by assessing the present willingness and ability of companies to dedicate themselves to a low-carbon future. One of the starting points for the ACT project is therefore to assess to what extent companies are willing, and can state publicly that they are willing, to transition to a low-carbon economy.

However, measuring the ability of companies to transition to a low-carbon economy is very complex. In many cases, it requires a complete turnaround of the fossil-fuel based systems that the world and its economy has been built on for centuries. There needs to be a clear determination to take on this daunting task, from all actors in society, among which business is an integral part.

To help businesses set targets compatible with 2°C (or beyond) climate change scenarios, the Sectoral Decarbonization Approach (SDA) [1] was developed. The SDA is based on the principle of convergence of all companies in a sector towards a shared emissions target in 2050 (or beyond). While the SDA gives direction and a target to achieve, the ACT methodologies employ a holistic approach, taking into account all feasible quantitative and qualitative indicators that can provide insight regarding a company's current and future ability to reduce its carbon emissions and maximise its contribution to the low-carbon transition. All information gathered is consolidated into a rating, which provides an overall metric of the low-carbon alignment. The wider goal is to provide companies with specific feedback on their low-carbon alignment in the short and long terms.

2. Principles

The application of principles is fundamental to ensure that low carbon transition-related information is true and fair. The principles are the basis for, and will guide the application of, requirements in the present methodology.

TABLE 1: PRINCIPLES FOR IMPLEMENTATION

RELEVANCE - Select the most relevant information (core business and stakeholders) to assess low carbon transition.
VERIFIABILITY - The data required for the assessment shall be verified or verifiable.
CONSERVATIVENESS - Whenever the use of assumptions is required, the assumption shall err on the side of achieving a 2°C (or beyond) maximum temperature rise.
CONSISTENCY - Whenever time series data is used, it should be comparable over time.
LONG-TERM ORIENTATION - Enable the evaluation of the long-term performance of a company while simultaneously providing insights into short- and medium-term outcomes in alignment with the long-term.

➔ RATIONALE

The indicators, metrics and rating developed and selected by the methodology development team will be evaluated against these principles. If they are not in alignment or are not consistent with these principles, the indicators, metrics or rating may be rejected or adapted to bring them into alignment.

Appendix 2: Quality Assurance Process - Principles presents the complete "landscape analysis" carried out for the selection of the principles.

3. Scope

3.1. SCOPE OF THE DOCUMENT

This document presents the generic ACT framework. It includes requirements, rationales and guidance for assessment and rating for all sectors. It enables a deeper understanding of the underlying architecture and reasoning behind the ACT approach; however, it does not provide the details required to understand how individual sectors will be assessed under ACT. It is intended to be used in conjunction with the ACT sector methodologies to supplement them and give the necessary background to their development.

The ACT sector methodologies[1] describe the sector-specific requirements, rationales and guidance. They are developed in compliance with the ACT guidelines for the development of sector methodologies [2] that describe the governance and process of such development, as well as the required content for such documents.

3.2. SECTOR SCOPE

A sector's scope is defined as the list of activities that are included in the sector. Sectoral business activities may be described based on relevant existing nomenclatures such as ISICS, NACE, etc.

Different activities correspond to different sector emissions that might need to be approached differently. Guidance will be provided separately for cases in which a company has multiple activities in multiple sectors.

[1] Sector methodologies published in parallel of this document: Auto, Electric utilities, Retail (Versions 1.1).
The Building sector methodology is under development and should follow shortly (Version 1.0).

4. Boundaries

The reporting boundaries of the ACT methodologies for a given sector shall be determined by the sector's most significant emissions sources, according to the principle of Relevance. These significant emissions sources can be located all along the value chain of the organization. This means that both direct and indirect (value chain) emissions shall be included when relevant.

The temporal boundaries of the ACT methodologies for a given sector shall be determined by the need for past, present and future related information on the organization. The degree of past information that shall be included is determined by that which is necessary to infer the required trend for appropriate assessment. Future information refers to any materials that relate to the time between the present and 2050. The future boundary of ACT methodologies shall be appropriate to be able to include the vast majority of actions necessary for a transition in the assessed sectors and take into account lifetime of high emitting assets (e.g. coal plants for the electric utilities sector).

➔ RATIONALE

The boundary defines those areas of company activity and influence that the methodology will be applied to. This shall be contrasted with GHG inventories, for which organisational boundaries are based on a control/ownership approach of the GHG sources and sinks (ISO 14064-1 and GHG Protocol). The present methodology will not be strictly following this approach, because GHG inventory taxonomies are focused on quantifying past and current emissions, which is too limited for ACT's scope - namely assessing all aspects that are relevant to align a company with a low carbon economy, across the full extent of an organization, its operations and its future.

The ACT boundary therefore potentially encompasses all operations of a company and its entire value chain. The methodology aims to capture all significant sources of direct and indirect emissions (i.e. Scopes 1, 2 and 3), in order to fit a high share of the company's total emissions into the global emissions budgets on which the scenarios are based.

5. Framework methodology

The ACT methodology is presented in this chapter. The steps for applying the ACT assessment methods to each company and its benefits are also explained.

The ACT methodologies build on the ladder that an organization follows towards reducing GHG emissions: measurement, transparent reporting and making public commitments to mitigate climate change. The ACT initiative has added a new layer of accountability to these already-established steps, and uses them as a foundation whilst also integrating these practices into the ACT methodologies themselves. These practices mark the specific steps a company goes through when setting out to reduce its climate impact.

TABLE 2: STEPS TAKEN BY A COMPANY TOWARDS REDUCING GHG EMISSIONS

MEASUREMENT	**Measurement** is the first step in reducing environmental impacts. A complete inventory of GHG emissions helps organizations understand their emissions profile and identify opportunities for emissions reduction.
TRANSPARENT REPORTING	**Transparent reporting** consistent with climate standards is essential to achieving a low-carbon economy. Stakeholders can hold transparent organizations accountable for their performance, and sharing information brings opportunities to collaborate along the value chain. Both effectively reduce climate impact.
PUBLIC COMMITMENTS	**Public commitments** provide a clear sense of direction to an organization and its stakeholders. Setting science-based targets and defining the appropriate means to achieve them lays out the pathway to meaningful climate action. Once companies have prepared a baseline of GHG emissions data and are reporting it transparently, the next step is to reduce these emissions, or to mitigate climate change in other ways.
ACCOUNTABILITY	**Accountability** is needed to ensure that companies' commitments deliver the low-carbon economy. ACT assessments use climate scenarios to define the specific level of ambition required for each sector. The ACT assessment process checks the organization against this science-based benchmark to produce the ACT rating.

The ACT framework consists of an **assessment framework** to outline a consistent path and a set of common rules for the development of the methodologies and an **indicator framework** to set the basis for identifying the most relevant indicators for assessing a business climate impact. ACT methodologies shall use the ACT framework to ensure consistent application of the ACT principles to the different sectors and fulfil the need for consistent accountability to different stakeholders.

➔ RATIONALE

The first step in any GHG reduction plan is to measure and create a baseline of what current GHG emissions are for an organization. Without accurate and comparable measurement methods, companies cannot identify opportunities for reduction, benchmark their progress against each other, and track reductions made in emissions over time. The quality of the measurement is also critical for ACT methodologies, or indeed any assessment methodology, as it forms the basis for reasonable analysis and comparison.

Transparency on GHG emissions is a prerequisite to the development of shared accountability for reducing them, which the ACT project has identified as critical to reducing carbon emissions in the economy. Stakeholders can hold companies accountable for the GHGs they emit, and transparency allows investors to compare companies and provides the opportunity to make more climate-friendly investment decisions. Finally, exposing data to external scrutiny is a powerful incentive for companies to ensure that it is accurate, so transparency can also drive improvements in data quality. While the ACT assessment process is private and the information disclosed by companies during this phase is confidential, the analysis also takes into account publicly available data reported voluntarily by companies.

The creation of GHG reduction targets provides clarity of purpose to the employees within an organization. This allows for realistic and achievable plans to enable emissions reduction whilst maintaining business performance. Initiatives range from the adoption of science-based emissions targets to the removal of commodity-driven deforestation in supply chains. Thus, public commitment is also a prerequisite to shared accountability.

The ACT methodologies aim to shed light on whether company commitments are adequate and on track to be met, and whether broader company performance on reducing emissions is on the correct pathway. The analysis looks at recent actions, current performance, and uses information on this and the company's strategic future direction to predict its future climate performance. This is vital for verifying individual corporate contributions and commitments to climate change mitigation, and to emphasize the urgency with which we need to act globally to reduce climate change.

5.1. ASSESSMENT FRAMEWORK

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

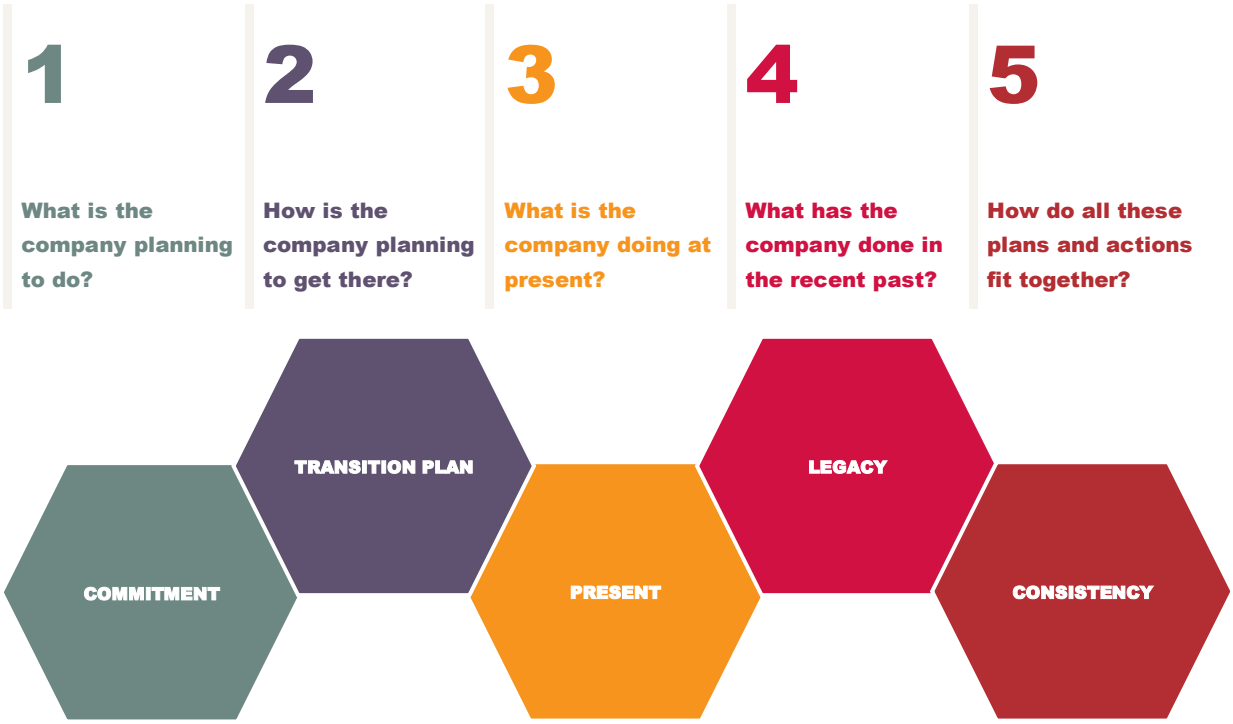

FIGURE 1: ACT ASSESSMENT FRAMEWORK

The assessment framework shall remain similar for the development of all ACT methodologies. The first 4 questions express the dynamic vision of companies in a transition state as proposed by ACT. From the commitment (Q1) ACT will evaluate the associated means that are going to be deployed (Q2) and are already in place (Q3, Q4) and subsequently validate that business models are accordingly linked (Q5).

➔ RATIONALE

The key question to begin our assessment is “What does the company propose to do to transition to a low-carbon future?” In order to assess this, a particular focus will be placed on companies’ explicit targets in terms of reducing carbon emissions. A target is one of the fundamental indicators of the readiness for transition. Use will be made of science-based methodologies to assess how appropriate the strength and the length of the target are.

Once we know where the company wants to be in the future, and how far in the future that is, we should seek to understand how the company proposes to get there. The key question is then “How does the company plan to do it?”: the company’s plans will need to be disclosed and interpreted with particular

emphasis on what is under direct control, such as the carbon-intensive nature of its investments and products. Next to this we consider those aspects it can only influence indirectly, such as the impacts of the value chain, or policy or regulations.

While the companies' intentions and plans to achieve them are extremely important, past actions and current performance will also be considered. The key questions then relate to "What is the company doing now?" and "What has the company already done?". To a large extent, the answer to these questions not only determines how much a company still has to do, but also how credible it is to expect that it will achieve its goals.

Finally, from the 4 questions discussed above a fifth key question then emerges, which is "Is the company able to continue to earn profits" or, better put, "To what degree is the transition integral to (and integrated into) its business model"?

5.2. INDICATOR FRAMEWORK

ACT relies on the development of indicators, which provide insight regarding the readiness of an organization to transition. To help this development, a separate set of indicator modules is used next to the 5-question ACT assessment framework. All ACT indicators come from applying the five questions to information on various aspects of company operations. As we cannot collect information about the future, ACT instead relies on information from the present and recent past to answer the five questions. ACT prefers comparable and verifiable data, and it looks at various spheres of a company's operations, products and external influence to gather information on it. While the 5-question framework largely follows a chronological pathway from the past towards the future, these modules bring together the indicators across the relevant aspects of company operations to answer each of the 5 questions.

TABLE 3: ACT INDICATORS OVERVIEW

		ACROSS SECTORS			
			PAST	PRESENT	FUTURE
		1. TARGETS	Company performance on existing targets	Timeline of emissions reduction targets	Alignment of emissions reduction targets with climate science
CORE BUSINESS PERFORMANCE	INVESTMENT	2.MATERIAL INVESTMENT	Historic trend in direct emissions	Carbon intensity of current asset base	Future locked-in emissions of current asset base
		3.INTANGIBLE INVESTMENT	R&D expenditure trends	Current R&D expenditure in low-carbon technology	R&D directions & investment in transition plan
		4.SOLD PRODUCT PERFORMANCE	Historic trend in indirect emissions	Present-day actions and interventions to reduce embedded emissions	Projected emissions intensity of products in-use and of products to be sold in the future
		5.MANAGEMENT	Trend in management incentives for non-fossil fuel technology	Low-carbon scenario testing	Strategic low carbon transition plan
INFLUENCE		6.SUPPLIER	Supply chain engagement performance trend	Supply chain engagement level & depth	Forward-looking supply chain strategy & risk assessments
		7.CLIENT	Previous campaigns to promote low-carbon products	Engagement with clients to promote low-carbon products	Activities and proposals for moving customer demand to low-carbon products
		8.POLICY ENGAGEMENT	Policy engagement history & public positions	Company policy on engagement with trade associations	Alignment of transition plans with NDCs and other policies
		9.BUSINESS MODEL	Experience with running low-carbon business models	Integration of circular economy principles in current business model	Development of future low-carbon compatible business models

By relating the five questions to the information available on a company's investments, actions, and strategy, a set of indicators shall be developed for each sector to benchmark a state of alignment with low-carbon transition, and measure how far away companies are from that state. Indicators can be a mix of sector-specific and common elements, and the weighting attributed to each indicator can vary across sectors. This reflects the fact that different sectors have different sources of emissions, and different actions to take to transition to the low-carbon economy.

➔ RATIONALE

To support the development of indicators to answer the 5 questions, ACT uses a secondary framework that aids the methodology developers in identifying indicators that together could provide enough information for a full organizational assessment.

This framework introduces 9 distinct elements across the main categories of targets, core business performance, influence and business model. Next, it introduces a temporal element that looks for past, present and future-relevant indicators for each of the 9 elements. Not every sector needs indicators in all 27 possible 'indicator spaces' that are created this way, but following this framework and attempting to find indicators for each ensures that a holistic and comprehensive picture of a sector is obtained.

Targets are the accepted quantitative formalization of company commitments and are the starting point of the indicator framework. The core business performance section incorporates the main quantitative indicators on emissions measurement and performance, and how investment decisions in the past and future ultimately impact these emissions. Non-tangible investments are also included here. Sold product performance deals with indirect emissions measurements and the actions the company takes to reduce them for all products the company sells. Finally, the management section includes all indicators that describe the company's strategic direction, as well as the level of expertise and management capabilities with respect to the low-carbon transition. The influence section covers indicators that look at the way the organization engages with the outside world, and how it attempts to change its internal and external policies to develop its low-carbon strategies.

5.3. DATA SOURCES

To carry out a company level assessment, many data points need to be gathered which can be sourced from various locations. ACT methodologies shall rely on voluntary data provision by companies as well as external data sources. External data sources shall be preferred where the data are reliable, streamline the process, ensure fairness, and provide additional value for checking, validation and preparation of the analysis narrative.

ACT analyses and scores shall be based on consideration of a complete set of information on raw company data or indicators. Indicators may be reported directly by companies. Indicators may also be calculated, modelled or otherwise derived from different data sources supplied by the company. Following the "verifiability" principle for methodology development, preference shall be given to data that is verified,

verifiable or can be validated in some way. Data sources requested by an ACT methodology may be quantitative or qualitative in nature, as may be the indicators selected. Lastly, ACT ratings should be accompanied by information on the credibility of the data used to produce them.

Data collection requirements shall be driven by the methodology development principles (relevance, verifiability etc.) but also by practical considerations. For example, when choosing between two data formats, it may be necessary to select one which is more widely used within an industry than one which is little used but more relevant to the project requirements. The sector methodology shall contain the full data request as an appendix or as a separate document.

To ensure transparency, methodology developers shall also publish a concise data request summary for public access and company engagement purposes.

➔ RATIONALE

Suitability considerations for data are its accessibility, comparability, difficulty of collection, and level of adoption industry-wide. Whether its production or collection is supported by a pre-existing standard (thus enhancing comparability and credibility) is also a consideration. Data should contain an appropriate level of detail for the purposes of the assessment and must be available over an appropriate time scale where required. For example, annual data is probably more appropriate than monthly or quarterly data. The key data points used for benchmarking should also be available on an appropriate geographic scale, and for an appropriate scope, for example covering all operations of the company.

The analysis may also consider the credibility of data provided as part of the assessment process. For example, if data is incomplete, cannot be validated or is inconsistent (whether internally inconsistent or inconsistent with other data sources) this will hamper the effectiveness of the assessment procedure and the credibility of the resulting rating. It is therefore important that ACT ratings are accompanied by a means to communicate the level of confidence in the rating. It is for this reason that ACT also stipulates the publication of a data request summary to all participating companies as well as publicly for all other relevant stakeholders.

Company data could also be considered less credible due to reputational concerns. There are three main reasons why a company may receive a score downgrade due to reputational concerns:

- → Any behaviour directly impacting climate performance, such as deceptive or fraudulent emissions testing or reporting.
- → Other serious issues that call into question the credibility of data reported. This relates to the overall credibility of any data reported by the company, which could be damaged by incidents such as accounting scandals or evidence of fraud.
- → Extremely serious incidents that call into question the credibility of the management of the company, thus undermining confidence in its ability to deliver on its strategy or transition plan.

In addition to data provided by companies, it may be necessary to gather data from external sources for benchmarking purposes or to support the methodology rationale and development. This data should respect the project and methodology development principles. Preference shall be given to data from credible, reliable and well-known sources that has been validated or peer-reviewed, that is openly available (in accordance with the “transparency” principle) and that is relevant to the scope of the project.

Data about the company or its performance from third-party sources may also be considered as part of the assessment process. This could be to supplement, validate or support data provided by companies. It could also be used to form the basis of part of the assessment on its own, without reference to data provided by the company. The sector methodologies will provide guidance on the type, amount and level of detail of the data required for the assessment, for both data supplied by companies and that found from external sources.

6. Assessment

For any reference to an existing methodology, benchmark, database or other type of background information in the ACT methodologies (Framework and sector methodologies), the most recent publication or version of this source shall be used at all times. Thus, whenever a new version of a referenced source is available and provides the updated contents relevant for ACT, it shall be used instead of the referenced version.

6.1. BENCHMARK

The fundamental target to achieve for all organizations is to contribute to not exceeding a threshold of 2°C global warming compared to pre-industrial temperatures. This target has long been widely accepted as a credible threshold for achieving a reasonable likelihood of avoiding climate instability, while a 1.5°C rise has been agreed upon as an aspirational target.

The 2-Degree Scenario (2DS) has been the main and most ambitious climate scenario in the International Energy Agency (IEA) Energy Technology Perspectives (ETP) works for years. In the IEA ETP 2017 [3], the more ambitious Beyond-2-Degree scenario (B2DS) was first proposed in order to limit the rise of global temperature by 1.75 degrees by 2100. More ambitious scenarios such as the IEA B2DS are also encouraged to be adopted as benchmarks.

From a more general point-of-view, sector benchmarks may be changed from the 2DS scenario to another relevant low-carbon scenario depending on the availability of geography-specific, context-specific, future-relevant scenarios, or future updates of the 2DS scenario – and possibly to explore higher ambition requirements. In this case, the ACT assessment report shall disclose which low-carbon background scenario has been used. This also adds some flexibility to the assessment of specific companies and to the use of the most up-to-date or more ambitious (e.g. IEA ETP B2DS) scenarios.

Thus, each company shall be benchmarked according to globally and/or nationally acceptable and credible benchmarks that are aligned with the boundaries of the methodology. If the methodology is only applied to a local sample, the associated benchmarks shall still be compatible with global low-carbon scenarios.

QUANTITATIVE BENCHMARKS

To assess company targets and emissions trends for quantitative indicators, global emissions scenarios shall be translated into target pathways at the company level via the Sectoral Decarbonization Approach (SDA) [1]. This approach is broken down into three elements:

- → Establish an underlying emissions scenario (aiming for a global low-carbon pathway)
- → Disaggregate scenarios at the sectoral level
- → Apply an allocation mechanism for companies per sector

Not every sector for which an ACT methodology may be wished to be developed has an equally advanced SDA. Therefore, in situations where the SDA methodology is not applicable, best practice approaches shall be applied with proper scientific foundations.

QUALITATIVE BENCHMARKS

Qualitative benchmarks shall be based as much as possible on low-carbon scenarios that are used in the quantitative indicators of the methodology. In cases where this is not possible, the methodology developers shall base the benchmarks on scientific understanding or expert knowledge of the required practices and traits that signify an organization in transition.

➔ RATIONALE

Extensive pathway modelling for the 2° target has been undertaken by numerous organizations. For instance, the IEA 'Energy Technology Perspectives 2-Degree Scenario' (ETP 2DS) scenario and the 'Representative Concentration Pathways' (RCP) 2.6 scenario assessed by the IPCC. In the IPCC fifth assessment report (AR5), a cumulative emissions budget of 550 to 1,300 $GtCO_2$ over the years 2011-2050 was reported as necessary for a high likelihood of staying below 2° warming. A scenario envelope was brought together to illustrate a range of pathways aligning with this budget. This envelope is shown in **Error! Reference source not found.** The scenarios were modelled using the Global Calculator [4], an open source model developed through a consortium of international organizations.

The Sectoral Decarbonization Approach (SDA) [1] is a widely-adopted methodology for equitable translation of global carbon budgets to company level carbon budgets and decarbonization pathways[2]. It allows the methodology developers to take into account specific sector and geographic challenges to decarbonization, which should ensure a fair treatment of all companies in any ACT methodology anywhere in the world.

[2] The SDA approach uses the estimated future company activity growth as an input to the company benchmark pathway definition. In the context of ACT, the company benchmark pathway definition uses the assumption that the company activity trend is the same as the sector activity trend in the future.

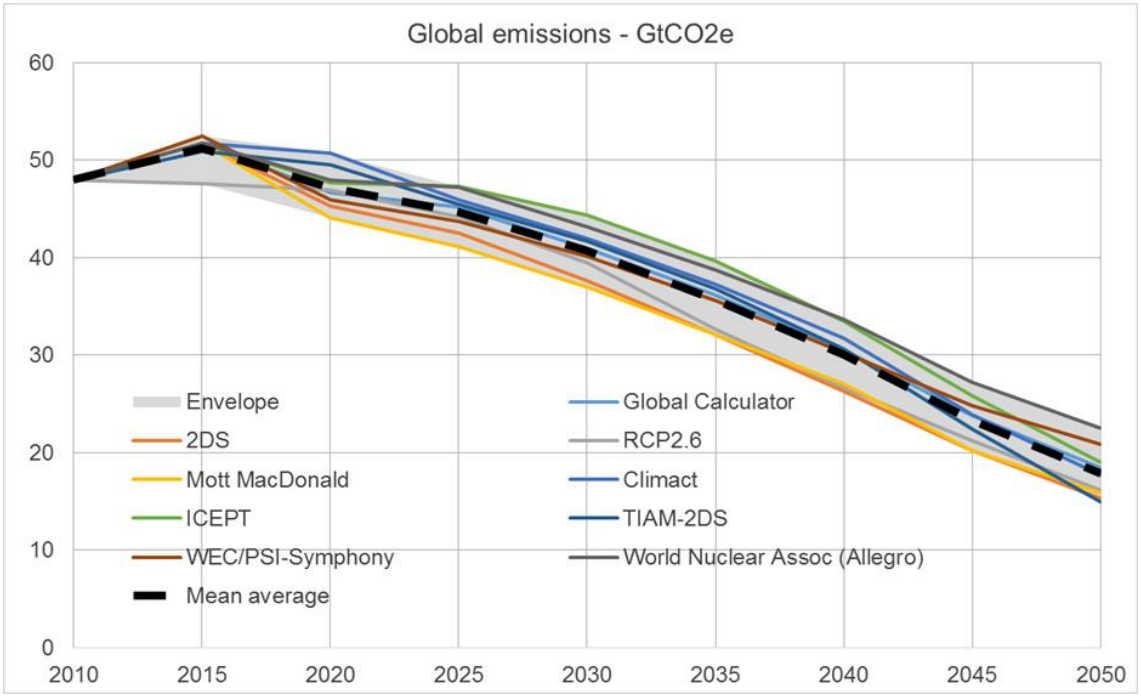

FIGURE 2: GLOBAL EMISSIONS SCENARIO ENVELOPE EXTRACTED FROM [4]

There are three main approaches to allocating emissions targets at the company level:

- **CONVERGENCE OF CARBON INTENSITY** - In this mechanism, it is assumed that the carbon intensity of a company converges towards the low-carbon carbon intensity of the sector at a rate that ensures the corresponding sectoral carbon budget is not exceeded. The rate of convergence of a company is a function of its initial carbon intensity of the company, the low-carbon intensity of the sector, and the growth of the company relative to the growth of the sector.
- **COMPRESSION OF CARBON INTENSITY** - In this allocation mechanism, it is assumed that all companies within the same level of disaggregation (i.e. sector, region or globally) reduce their carbon intensity at a uniform rate that would ensure their respective low-carbon budget is not exceeded. The rate of compression in this mechanism is a function of a decreasing carbon budget and the expected level of activity for the sector or region. Activity should be expressed, in the case of power, using a physical indicator such as GW.h.
- **CONTRACTION OF ABSOLUTE EMISSIONS** - With this allocation mechanism, all companies within the same sector, region, or globally (in the case of an aggregated emissions scenario) reduce emissions at the same rate, e.g. 80% of the 2015 base.

The most common starting point for our analysis is the convergence of carbon intensity, which is also employed by the SDA. Contraction of absolute emissions is more appropriate for heterogeneous sectors, for which determining a meaningful measure of intensity is less straightforward. Compression of carbon intensity does not discriminate between different companies by past and present performance. This could potentially allow for a company that has not yet implemented measures to benefit from a focus on hitherto unpicked 'low-hanging fruit'. Convergence of carbon intensity puts a higher burden on companies with more intensive asset bases. The modeling of company allocations will enable each mechanism to be compared.

6.2. WEIGHTING

Each module and indicator in the methodology shall have a number of points allocated to it. The relative numbers of points for each indicator, or weighting, shall be determined on a sector-by-sector basis. In general, higher weightings are given to questions/issues which have greater relevance for that specific sector to achieve the low-carbon transition.

The selection of weights for both the modules and the individual indicators was guided by the following set of principles:

TABLE 4: GENERAL PRINCIPLES FOR THE ASSIGNMENT OF WEIGHTINGS TO ACT INDICATORS AND MODULES

PRINCIPLE	EXPLANATION
VALUE OF INFORMATION	The value of the information that an indicator gives about a company's outlook for the low-carbon transition is the primary principle for the selection of the weights.
IMPACT OF VARIATION	A high impact of variation in an indicator means that not performing in such an indicator has a large impact on the success of a low-carbon transition, and this makes it more relevant for the assessment.
FUTURE ORIENTATION	Indicators that measure the future, or a proxy for the future, are more relevant for the ACT assessment than past & present indicators, which serve only to inform about the likelihood and credibility of the transition.
DATA QUALITY SENSITIVITY	Indicators that are highly sensitive to expected data quality variations are not recommended for a high weight compared to other indicators, unless there is no other way to measure a particular dimension of the transition.

Weighting has to be assigned at module level and at indicator level. Based on the above principles, the following paragraphs provide guidance for the assignment of weightings first at the level of the modules, and then at the level of the indicators.

WEIGHTING AT THE MODULES LEVEL

ACT is organized around 9 modules and a top-down approach assigning clear weightings at the modules level increases the clarity and the attractiveness of the ACT methodology.

When assigning weightings, the macro story of low-carbon transition for the sector should be considered and areas that are more significant for this change should be more heavily weighted.

Assigning weight at the modules level has to take into consideration the sector specificities regarding climate transition, especially the positioning of the companies in the sector in the carbon value chain (are the strategic GHG emissions in scope 1,2 or 3 of the company?).

In addition, the following comments can be added according to module specificities:

TABLE 5: MODULE-SPECIFIC CONSIDERATIONS FOR THE ASSIGNMENT OF WEIGHTINGS

TARGETS	Weighting of this module should take into account the complexity of assigning clear targets due to sector specificities
MATERIAL INVESTMENT	Weighting should reflect the specific importance of the owned asset base in the carbon performance of the sector
INTANGIBLE INVESTMENT	Weighting should reflect the specific importance of R&D and technologies in the low carbon transition (some sectors are more technology-dependent than others for the transition)
PERFORMANCE OF PRODUCTS	Weighting should reflect the specific importance of the scope 3 emissions in the carbon performance of the sector
MANAGEMENT	Weighting should be similar for all sectors in order to reflect the equal importance of management for achieving the climate transition
SUPPLIERS	Weighting should reflect the specific importance of suppliers in the global carbon performance, and therefore the key role of the company to influence them regarding climate transition
CLIENTS	Weighting should reflect the specific importance of clients in the global carbon performance and therefore the key role of the company to influence them regarding climate transition
POLICY ENGAGEMENT	Weighting should reflect the specific importance of regulation in the climate transition of the sector, and therefore the key role of the company to influence these policies
BUSINESS MODEL	Weighting should reflect the specific potential of new business models to achieve the climate transition

WEIGHTING AT THE INDICATORS LEVEL

At the micro level of each indicator, the robustness of the indicator shall be considered. The weighting assigned to indicators shall be assigned according to a list of criteria.

These criteria include:

- How well the indicator functions to measure real performance
- How the actions related to the indicator are advanced or mature
- Whether the measure relates to an absolute measure of (climate) performance or a relative benchmark. According to the ACT principles, absolute benchmarks are to be preferred and the weighting should reflect this.
- The amount of data requested from the company: more requested data can be weighted more heavily to encourage disclosure
- Complexity of data gathering: score allocation can provide an incentive for complex data collection

- If the indicator is a proxy rather than a direct measurement, which uses second source data instead of primary source data, how closely correlated or related to the desired measurement the proxy is should be factored in
- Data-driven or directly measured indicators

These same criteria may also be used at the modules level.

Indicators may indicate the presence of positive action, or just the absence of negative action. The latter is less closely associated with positive action and therefore should be underweighted.

Nevertheless, in some cases, indicators can be identified as very relevant but difficult to assess. In such cases, a lower weighting should be allocated to reflect this difficulty of analysis. These cases might occur in the following circumstances: lack of maturity of the methodology (e.g. absence of scenario/benchmark), difficulties in collecting information, difficulties in verifying collected information, etc.

➔ RATIONALE

For each indicator, there will be a maximum number of points that can be attained, representing the denominator. The number of points awarded to the company can then be represented as the numerator of a fraction. For example, if 2 points are available for a question, then possible scores for that question could be 0/2, 1/2, or 2/2. The final score for a company can be represented as a fraction, for example 40/50 points, by calculating the sum of all numerators and denominators. It can then be resolved to a percentage, 80% in this example. This system allows certain questions to be excluded from the assessment of a specific company because they are not relevant, without affecting the company results. For example, a company could have a denominator of 45 rather than 50 if certain questions were excluded from their assessment. A score of 36/45 is still a percentage score of 80%, the same as our previous example. However, if points were allocated cumulatively, then the comparison would be between 36 and 40, giving a false impression that the company scoring 36 had scored worse.

6.3. ASSESSMENT GUIDELINES

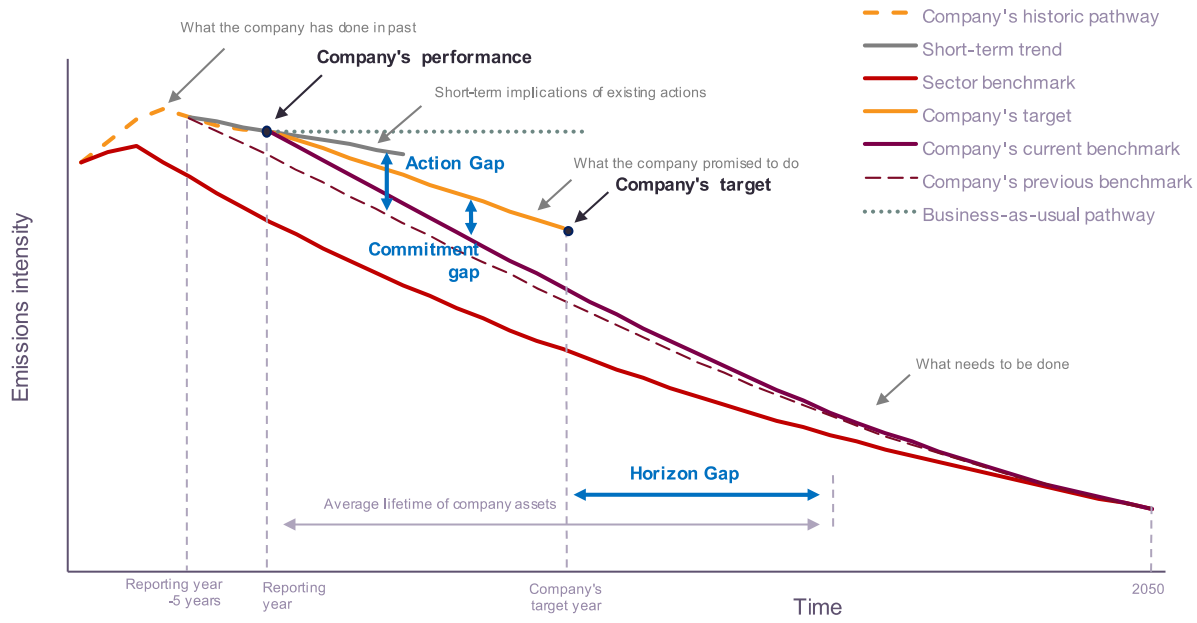

FIGURE 3: ILLUSTRATION OF COMPANY CLIMATE PERFORMANCE CONCEPTS

ACT will measure three gaps in the GHG emissions performance of companies, as visualized in Figure 3:

- **COMMITMENT GAP** – The difference between what needs to be done and what the company says it will do (Q1).
- **HORIZON GAP** – The difference between the average lifetime of the company's production assets (particularly carbon intensive) and the time horizon of its commitments. Companies with large asset lifetimes and small-time horizons do not look far enough into the future to properly consider a transition plan. This gap links Q1 and Q2.
- **ACTION GAP** – The difference between what the company has done in the past plus what is doing now and what has to be done (Q1, Q2, Q3, and Q4). Companies with large action gaps have done relatively little in the past and their current actions point to continuation of past practices.
  This model closely follows the assessment framework presented above. It starts at the future, with the goals companies want to achieve, followed by their plans, current actions and past actions.

The comparison of the company pathway versus the benchmark will essentially use 3 types of analyses:

- **THE GAP METHOD** will determine the gap, for a time horizon, between the company's pathway and the company's low-carbon benchmark. It will assess the effort level requested.
- **THE TREND METHOD** will compare the company's past and current performance trend with the trend that would be requested to achieve a given target.
- **THE RATIO METHOD** will compare climate information (e.g. CO2 emissions) cumulated over time with requested thresholds and benchmarks. In practice, it is used to compare the future

operational emissions from existing and planned assets (locked-in emissions) with the company's carbon budget over the same period of time.

It is important to note that, as visualized in Figure 3, all the pathways compared through the above methods have their initial point either on the reporting year, or 5 years before the reporting year. More specifically, no use is made of the notion of "base year": this is deliberate as, although comfortable at first sight, this notion poses complex questions in the context of ACT, both in terms of definitions and in terms of consistency between indicators.

ASSESSING THE CONSISTENCY OF TRANSITION STRATEGIES

Climate change is a systemic issue, where solutions will largely appear from the relationships between the different subsystems from where it emerged: society, economy, and environment. A good reason to think of climate change as the result of a system is that the behaviour of systems can be deduced by their structure and relationships, or deduced from the measuring of certain variables.

Companies are particularly important actors with strong interactions with these subsystems: economy, society, and environment. Furthermore, companies are systems themselves, with varied parts executing different functions, structure, inter-relationships, capacity to adapt and purpose. In looking at their responses to climate change, companies will be "systems in transition", actively working to modify themselves to become "low-carbon systems". We consider that there are 3 fundamental levers with which companies can adapt/respond to the "low-carbon transition" challenge, which are:

- **STRATEGY:** will correspond to a change in paradigm of the company's mission, vision or business model, which can imply a change in goals, structure and rules of how the company operates. Changes at the strategic level offer the highest potential to quickly align the company with the transition to 2°C or beyond. Incumbent companies expecting a "gradual" transition to a low-carbon economy through a slow adaptation of their old paradigms to a new business reality might get pushed out by new companies creating new (competing) markets (or changing their paradigm) or positioning themselves in different ways more appealing to customers.
- **INVESTMENT:** all companies need investment to survive. It is through investment that a company renews its physical assets or acquires key intellectual or human capital. It is through these changes in capital that companies have the ability to "reinvent themselves" and change how they organize themselves. Investments constitute a unique opportunity in time to align with the low-carbon transition and can have long-lasting effects and create strong dependencies for companies' future response in aligning with the low-carbon transition. As far as climate change is concerned, GHG emissions and the transition, there are particular concerns with the physical asset base with respect to technology change (RD&D in low-carbon technologies), locked-in emissions of current (and future) investments [5] [6] [7] [8] and stranded assets.
- **MANAGEMENT:** the managerial level corresponds to the different actions that companies can take that try to address climate change issues through managerial incentive policies: GHG reduction targets, how it deals with and organizes information (for example, how physical climate risk is managed), changes in production systems in response to regulation or the threat of it, etc.

The three levers are linked and influence each other. While recognizing that all companies are "living systems" trying to survive (make money) by adapting to their external environment, a company's mission defined as "to maximize the return to our shareholders" is bound to lead to different goals, structures, information flows (and so on) than a company's mission that is "to create a better everyday life for people". The way a company defines its mission and designs its business model will have a direct influence on its investment decisions

and management practices. Its investment decisions and management practices will impact its operations. This approach mirrors, in a simplified way, the concept of “integrated thinking”, which is “the active consideration by an organization of the relationships between its various operating and functional units and the capitals that the organization uses or affects” [9].

7. Rating

The ACT rating shall comprise:

- A performance score
- A narrative score
- A trend score

These pieces of information shall be represented within the ACT rating as follows:

a. Performance score as a number from 1 (lowest) to 20 (highest)
b. Narrative score as a letter from E (lowest) to A (highest)
c. Trend score as either "+" for improving, "-" for worsening, or "=" for stable.

In some situations, trend scoring may reveal itself to be unfeasible depending on data availability. In this case, it should be replaced with a "?".

The highest rating is thus represented as "20A=", the lowest as "1E=" and the midpoint as "10C=".

TABLE 6: EXAMPLE OF LOWEST, HIGHEST AND MIDPOINT FOR EACH ACT SCORE TYPE

LOW SCORES	MID SCORES	HIGH SCORES
1, E, -	10, C, =	20, A, +

7.1. PERFORMANCE SCORING

7.1.1. PURPOSE AND APPROACH

The performance scoring measures the degree of alignment with the requirements of a low-carbon economy as measured by the limited set of performance indicators included in the ACT methodology.

The performance scoring shall be calculated mathematically from the points awarded to the participating company for each indicator in the ACT scoring methodology according to the level of performance attained. Points shall be awarded on a numerator/denominator system and then the fraction of points awarded converted to a percentage, before being converted to a score between 1 and 20.

7.1.2. GUIDANCE TO THE PERFORMANCE SCORING

The sets of performance indicators and their associated weightings, as well as the associated module weightings, are sector-specific by nature and are therefore presented in the ACT sector methodologies.

Each performance indicator measures the response of the company for all the activities of the company assessed versus ACT. Thus, if the response of the company does not cover all the involved activities for a

given indicator, then the score is adjusted downwards equal to the % coverage of the response, unless otherwise specified in the sector methodology.

> **➔ FOR EXAMPLE**
>
> For the RT 1.1 performance indicator in the Retail sector ("Alignment of inclusive Scope 1+2 emissions reduction targets"), the combined targets set by a company should cover 100% of the inclusive Scope 1+2 emissions. If this is not the case, then the score is adjusted downwards equal to the % of the inclusive Scope 1+2 emissions covered by the combined company targets.

7.2. NARRATIVE SCORING

7.2.1. PURPOSE AND APPROACH

The narrative scoring summarises the full conclusions of the analysis, including performance score results and narrative indicators, which are less fit to be analysed quantitatively, in a single letter from A (highest) to E (lowest).

The analyst shall prepare an analysis narrative on the results of the analysis for the feedback report. The narrative shall address the five ACT questions (presented in *5.1 Assessment framework*) based on the information from the indicator framework.

While the performance scoring focuses on quantitative information, the narrative scoring has a holistic approach and is based on additional and less quantifiable information, such as external data from sources as reputation platforms, news, financial data, etc.

7.2.2. GUIDANCE TO THE NARRATIVE SCORING

- **GENERAL NARRATIVE SCORING ASSIGNMENT PROCESS**

The narrative scoring has 3 steps:

a. **The performance score insights** summarize why a certain score has been assigned to each module/indicator, and focus on the lower module scores where the most improvement can be gained.
b. **Narrative indicators and accompanying data source verification**. This consists of a review of the data available on the company. The considered data includes the data gathered for the performance scoring, as well as data from other sources such as annual reports and investment analysis prepared by third parties.
c. Finally, the information gathered through the **performance score insights** and narrative indicators should be analysed with the following four criteria in mind:

   I. *Business model and strategy*
   II. *Consistency and credibility*
   III. *Reputation*
   IV. *Risk*

The analyst shall develop an **analysis narrative**, in which the five ACT questions shall be addressed, and assign the associated **narrative score**, ranging from A to E.

- **DETAILED NARRATIVE SCORING CRITERIA DESCRIPTION**

To develop the analysis narrative and establish a score, the analyst shall review the data that is available on the company according to the four criteria described in this section.

In general, the 4 criteria have the same importance in the analysis. However, there may be certain situations where one of the 4 criteria should be assigned a higher weight than the others because there is evidence of critical issues that could seriously hamper the company's climate performance. It is up to the analyst to consider each specific case and adjust the calculated score if needed by, for example, increasing the weight of one particular criterion.

> **➔ FOR EXAMPLE**
>
> A serious fraud event, which could affect the credibility of the company's management, could make the reputation criterion more impacting than the others.

BUSINESS MODEL AND STRATEGY

The Business model and strategy criterion will explore whether the company has experience in running a profitable business from low-carbon activities and is adapting its business model.

Questions to be asked are the following:

- Is the company's short-term strategic direction significantly influenced by decarbonization efforts?
- Is the company's core business model threatened by the transition? Is the company strategically repositioning itself, e.g. as a service provider instead of manufacturer?
- Are the company climate targets aligned with a low-carbon trajectory?
- What are the foreseeable implications of meeting these targets? Do they pose significant challenges either operationally, technologically, financially or other?
- Are the company's recent actions such as acquisitions and mergers in line with its targets?
- Does the company invest R&D in those technologies that it places its faith in for the transition?

CONSISTENCY AND CREDIBILITY

The Consistency and credibility criterion considers whether the company's transition plan and accompanying scenario analysis is consistent with its short and long-term business strategy.

Questions to be asked are the following:

- Do the company's recent actions (present and past) show alignment with its climate strategy?
- Does the company acknowledge climate change as an issue and does it advocate for a forward-thinking policy?
- Is the company's policy position and influence not in conflict with its own climate-related communications?
- Are there conflicting incentives in place that discourage a low-carbon transition in certain parts of the company?

- Does the group (that the company is part of) have any conflicting activities that undermine its ability to transition?

REPUTATION

The reputation criteria will explore whether there are any serious events in the company's history that may hamper its credibility towards the low-carbon transition, and therefore its credibility for receiving a higher ACT assessment score. The analyst may refer to external data from reputation platforms (e.g. RepRisk).

Questions to be asked are the following:

- Is there evidence that the company's behaviour directly impacts climate performance, such as deceptive or fraudulent emissions testing or reporting?
- Are there serious issues that call into question the credibility of data reported? This relates to the overall credibility of any data reported by the company, which could be damaged by incidents such as accounting scandals or evidence of fraud.
- Have any extremely serious incidents, calling into question the credibility of the management's ability to deliver on the company strategy or transition plan, happened in the recent past?
- Has the company previously made any public announcements on which it has failed to deliver, namely announcements related to climate and environmental performance?

RISK

The Risk angle considers specific indicators from the performance scoring and external information which can help identify any major future risks that the company may face. External factors should also be explored, such as policy constraints or technological and cost barriers to the successful implementation of the company's transition plan.

Questions to be asked are the following:

- Does the company's asset base/product portfolio show a lock-in to high carbon impact technologies that is not consistent with the transition plan? Is there a risk of stranded assets and how significant it is?
- How reliant is the company on high-carbon activities for its profits?
- Are there market or policy barriers in place that may block the successful implementation of a particular strategic low-carbon direction?
- Is the company's technological direction high-risk/unproven/unidirectional/dependent on future innovation that is yet to be realized?

• QUANTITATIVE APPROACH FOR NARRATIVE SCORING BASED ON 4 CRITERIA

This section proposes a method for assigning the narrative score. The purpose is to improve fairness and comparability of scores assigned by different analysts.

To produce the narrative scoring, the analyst should use the maturity 5-level matrix proposed in *Appendix 3: Maturity matrix on narrative scoring criteria*. The matrix will help to evaluate the maturity of the company's low-carbon transition strategy across the 4 criteria.

The company's maturity for each of the 4 criteria is then evaluated based on 5 levels defined as follow:

a. **BASIC**: the level of maturity is unsatisfactory, it seems that very important efforts are needed and there is no evidence the company is taking any action.
b. **STANDARD**: the level of maturity is not yet satisfactory but there is evidence that the company is considering putting in place mechanisms to improve the situation.
c. **ADVANCED**: the level of maturity is satisfactory, the company is heading in the right direction but still needs to demonstrate its capacity to transition.
d. **NEXT PRACTICE**: the level of maturity is very good, the company has implemented good practices, showing signs of transformation toward low-carbon trajectories.
e. **LOW-CARBON TRANSITION ALIGNED**: the level of maturity is outstanding, there is reliable evidence that the company's performance is and will be aligned with a low-carbon trajectory.

Each criterion in the maturity matrix should receive a score from 0 to 4 according to the assigned maturity level (*Basic* = 0; *Low-carbon alignment* = 4) and the total score should be calculated as the sum of the scores individually retained for each criterion:

$$Total\ Score = 1.25 * \sum_{i=business\ model}^{Risk} Score_i$$

With this approach, the maximum achievable score is 20.

In specific situations where criteria should not be considered with equal importance for the narrative scoring, the above formula may be adapted.

The alphabetical score can then be derived according to the table below, which illustrates how to convert the total numerical score, as calculated above, to the retained letter-based ACT narrative score.

TABLE 7: DERIVING THE FINAL NARRATIVE SCORE BASED ON A LINEAR QUANTITATIVE SCORE WITH A MAXIMUM OF 20 POINTS.

	QUANTITATIVE SCORE REQUIRED
A	16 to 20
B	12 to <16
C	8 to <12
D	4 to <8
E	0 to <4

7.3. TREND SCORING

7.3.1. PURPOSE AND APPROACH

The Trend score aims to forecast changes in the company's alignment with the low-carbon transition by answering the following question: will the company's ACT score improve, worsen or stay the same if repeated in the near future?

The analyst should analyse the forward-looking information collected during the other parts of the ACT assessment (Performance score and analysis narrative) looking for strong evidence that the company's ACT score will change, or not, in the near future. All possible major events, which have the potential to affect the company's alignment to a low-carbon transition, should be considered for the trend scoring.

> **➔ FOR EXAMPLE**
>
> If an electric utility company is making important investments in new renewable capacity, it is probable that its ACT score will improve in the short-term, which should count as positive.

7.3.2. GUIDANCE TO THE TREND SCORING

The trend scoring has 3 steps:

a. **TREND IDENTIFICATION**: Existing data infrastructure, data points and existing indicators that provide time-relevant information about a possible change or stability of a particular business dimension should be identified. Indicators from the ACT performance scoring, which can have an impact on the company's future directions, can include: Future targets, Time horizon of targets, Locked-in emissions, Trend in future emissions intensity, Mitigation R&D, Low carbon transition plan, Business models, Sold product performances and so on.
b. **TREND RESEARCH**: External information from news sources, reputation platforms (e.g. RepRisk) and other available reports that can indicate significant future changes with an impact on the company's low carbon alignment should also be consulted and considered when assigning the trend score.
c. **TREND SCORE**: The information gathered from the trend identification and research should be considered and combined into a consistent ternary score.

It is important to note that future-relevant information by itself does not provide robust insight into a possible change. For that, information about the past, the present and the future needs to be combined.

In practice, to establish the trend score, the analysts should analyse the company's direction by comparing past/recent/current information with future expectations from the following angles:

a. Quantitative information about past performance versus emissions reduction targets
b. Qualitative (and quantitative) information about the current business model versus the expected future business model
c. Lastly, a modifier to the score should be applied if changes in the above dimensions are caused by external or indirect internal factors and not by conscious choices or vice-versa.

TABLE 8: EXAMPLES OF COMBINATIONS OF DATA AND INDICATORS THAT CAN PROVIDE AN INSIGHT INTO THE FUTURE CHANGES IN THE COMPANY'S ALIGNMENT WITH A LOW-CARBON TRANSITION

INFORMATION LEVEL	DATA COMBINATIONS	COMPUTATION OF THE SCORE
CHANGE IN FUTURE EMISSIONS Is it likely that the company's targets are able to affect the emissions trends? **(50%)**	Past emissions performance compared with emissions reduction targets	Ratio computation of target with past emissions performance (direct ternary). Assesses whether future targets are more ambitious than past performance.
	Locked-in emissions future impact compared with the sectoral benchmark	Measures if the gap between projected emissions and the sectoral benchmark increases, decreases or stays unchanged over time.
CHANGE IN BUSINESS MODEL AND STRATEGY Is it expected that the company's transition plan and business model can incite a change of direction toward better alignment with the low-carbon transition? **(50%)**	Company future vision: • Low-carbon transition plan • Business model indicators • Strategic information on company's future business model from reports or news Current business model: - Financial information on current business model	Assessment of the differences between the future vision of the company and the company's current business model. Measure of the company's change in its low carbon transition alignment, due to the expected developments in the company's strategy and business model.
CAUSE OF CHANGE (MODIFIER) Optional dimension	Climate performance with financial/asset level information from external sources	Measures whether changes in the company's short-term emissions were caused by external or indirect internal (e.g. growth) factors or by active strategic choices. Allows for modification/correction of the score if the outcome of the two first elements is not in line with expectations.

The outcome of the above process should allow the analyst to devise a negative, positive or equal balance for the trend score. In cases where the trend score cannot be assigned with enough confidence, such as when information is not available or unreliable, a question mark (**?**) shall be assigned instead of the +, - and = ternary score.

The proposed scoring methodology is not binding and in certain cases different approaches may be needed: the analyst shall choose the most appropriate scoring methodology according to the sector and company-specific characteristics.

7.4. FEEDBACK REPORT

Participating organizations shall receive a feedback report that contain all the relevant results of the ACT assessment for a company. Each company shall be presented with this feedback report either in person or remotely. The feedback report shall include the following elements:

a. **PERFORMANCE, ANALYSIS AND TREND SCORING RESULTS.** This is the communication of the performance and narrative scores and shall be presented at least as a visual examination at the module level. More transparency on the indicator level may be given at the discretion of the analysts.
b. **COMMENTARY:** This is a textual explanation of the performance, narrative and trend scoring results, which shall focus on the main shortcomings identified in the company analysis that have resulted in losses of points. It should also provide pointers and leads for short-term improvement of the score. The commentary shall be written in such a way that the report is standalone and does not need a presentation to be useable by the organization.
c. **RATING HIGHLIGHTS:** Depending on the level of detail in the ACT assessment, each feedback report should contain relevant visual representations of (groups of) important indicators. These examples may be similar for all companies in a particular sector, or they may be tailored to the organization to make the feedback report more bespoke.

The feedback report should include more details on each indicator's score to address the highlight priority areas of action for each company. The confidential information explicitly indicated by companies shall not be reported in the feedback report.

To prepare the feedback report, the analyst may use the dedicated feedback report template provided by ACT on the ACTproject.net website.

7.5. DATA COMMENTARY

The data commentary may be standalone or part of the feedback report. It shall be standalone when the feedback reports are confidential. The analyst shall prepare a brief narrative on the type and quality of the information used for the assessment, which will aid data users to interpret the final results. Conclusions are provided on the information used for the analysis; completeness of information, quality of information, data sources used and verification status of data.

For reporting and verification, the guidance document developed within the ACT Initiative that aims to clarify sectoral reporting requirements and provides verification guidance shall be consulted. In particular, for verification processes, GHG verification standards such as the ISO 14064-3 standards is proposed. However, since the ACT assessment covers more than just GHG emissions and targets, and also assesses other activities (e.g. R&D, strategies, management and business models), the verification of ACT reports entails a larger scope than just GHG verifications, and therefore requires additional information (e.g. forward-oriented and/or not based on any specific standard).

➔ RATIONALE:

The data commentary provides key information to users of the ACT rating on the nature of the information used to produce the rating. It is important that this is standalone in the case where feedback reports are not publicly available. ACT ratings are expected to be more widely available than the associated feedback reports, which may contain confidential information. It is therefore imperative that data users of the ratings have access to this infrastructure note.

8. Sources

[1] “Sectoral Decarbonization Approach (SDA): A method for setting corporate emissions reduction targets in line with climate science,” Science Based Targets Initiative, *2015*

[2] “ACT Guidelines for the development of sector methodologies - Version 1.0”, ACT Initiative, *2018*

[3] "Energy Technology Perspectives 2017", IEA, *2017*

[4] "The Global Calculator," *2015*. Available at: http://tool.globalcalculator.org/

[5] “Commitment accounting of CO2 emissions”, Socolow, Robert H. and Davis, Steven J., Environmental Research Letters, 9, *2014*. Available at: http://iopscience.iop.org/article/10.1088/1748-9326/9/8/084018/pdf

[6] “Assessing carbon lock-in”, Erickson, Peter; Kartha, Sivan; Lazarus, Michael and Tempest, Kevin, Environmental Research Letters, 10, *2015*. Available at: http://iopscience.iop.org/article/10.1088/1748-9326/10/8/084023/pdf

[7] “Future CO2 emissions and climate change from existing energy infrastructure”, Davis, S. J.; Caldeira, K. and Matthews, H. D., Science, 329, 1330, *2010*.

[8] “Existing infrastructure and the 2 C target - A letter”, Guivarch, Celine; Hallegarte, Stephane, Climatic Change, 109:801-805, *2011*

[9] “The International <IR> Framework”, IIRC, *2013*. Available at: http://integratedreporting.org/wp-content/uploads/2015/03/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf

[10] “Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change”, Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.), IPCC, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, *2014*

[11] “Assessing Transformation Pathways”, Clarke L., K. Jiang, K. Akimoto, M. Babiker, G. Blanford, K. Fisher-Vanden, J.-C. Hourcade, V. Krey, E. Kriegler, A. Löschel, D. McCollum, S. Paltsev, S. Rose, P. R. Shukla, M. Tavoni, B. C. C. van der Zwaan, and D.P. van Vuuren, *2014*. In: “Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change”, Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.), IPCC, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, *2014*

[12] "Adoption of the Paris Agreement - Draft decision -/CP.21,", UNFCCC, *2015*.

9. Glossary

2 DEGREES (2°C)	A political agreement was reached at COP21 on limiting global warming to 2°C above the pre-industrial level (COP21: Why 2°C?). A 2°C scenario (or 2°C pathway) is a scenario (or pathway) compatible with limiting global warming to 2°C above the pre-industrial level.
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 future-oriented, sector-specific methodology (ACT website).
ACTION GAP	In relation to emissions performance and reduction, the action gap is the difference between what a given company has done in the past plus what it is doing now, and what has to be done. For example, companies with large action gaps have done relatively little in the past, and their current actions point to continuation of past practices.
ADEME	Agence de l'Environnement et de la Maîtrise de l'Energie; The French Environment and Energy Management Agency (ADEME webpage).
ALIGNMENT	The ACT project seeks to gather information that will be consolidated into a rating that is intended to provide a general metric of the 2-degree alignment of a given company. The wider goal is to provide companies specific feedback on their general alignment with 2-degrees in the short and long term.
ANALYST	Person in charge of the ACT assessment.
ASSESS	Under the ACT project, to evaluate and determine the low-carbon alignment of a given 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, modelled or otherwise derived from different data sources supplied by the company. The ACT project will measure 3 gaps (Commitment, Horizon and Action – defined in this glossary) in the GHG emissions performance of companies. This model closely follows the assessment framework presented above. It starts with the future, with the goals companies want to achieve, followed by their plans, current actions and past actions.
ASSET	An item of property owned by a company, regarded as having value and available to meet debts, commitments, or legacies. Tangible assets include 1) fixed assets, such as machinery and buildings, and 2) current assets, such as inventory. Intangible assets are nonphysical such as patents, trademarks, copyrights, goodwill and brand value.

BARRIER	A circumstance or obstacle preventing progress (e.g. lacking information on supplier emissions and hotspots can be a barrier to companies managing and reducing their upstream Scope 3 emissions).
BASE YEAR	According to the GHG Protocol and ISO14064-1, a base year is "a historic datum (a specific year or an average over multiple years) against which a company's emissions are tracked over time". Setting a base year is an essential GHG accounting step that a company must take to be able to observe trends in its emissions information (GHG Protocol Corporate Standard).
BENCHMARK	A standard, pathway or point of reference against which things may be compared. In the case of pathways for sector methodologies, a sector benchmark is a low-carbon pathway for the sector average value of the emissions intensity indicator(s) driving the sector performance. A company's benchmark is a pathway for the company value of the same indicator(s) that starts at the company performance for the reporting year and converges towards the sector benchmark in 2050, based on a principle of convergence or contraction of emissions intensity.
BUSINESS-AS-USUAL	No proactive action taken for change. In the context of the ACT methodology, the business-as-usual pathway is constant from the initial year onwards. In general, the initial year – which is the first year of the pathway/series – is the reporting year (targets indicators) or the reporting year minus 5 years (performance indicators).
BUSINESS MODEL	A plan for the successful operation of a business, identifying sources of revenue, the intended customer base, products, and details of financing. Under ACT, evidence of the business model shall be taken from a range of specific financial metrics relevant to the sector and a conclusion made on its alignment with low-carbon transition and consistency with the other performance indicators reported.
CAPITAL EXPENDITURE	Money spent by a business or organization on acquiring or maintaining fixed assets, such as land, buildings, and equipment.
CARBON CAPTURE AND STORAGE (CCS)	The process of trapping carbon dioxide produced by burning fossil fuels or other chemical or biological process and storing it in such a way that it is unable to affect the atmosphere.
CDP	Formerly the "Carbon Disclosure Project", CDP is an international, not-for-profit organization providing the only global system for companies and cities to measure, disclose, manage and share vital environmental information. CDP works with market forces, including 827 institutional investors with assets of over US$100 trillion, to motivate companies to disclose their impacts on the environment and natural resources and take action to reduce them. More than 5,500 companies worldwide disclosed environmental information through CDP in 2015. CDP now holds the largest collection globally of primary climate change,

	water and forest risk commodities information and puts these insights at the heart of strategic business, investment and policy decisions (CDP website).
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).
COMPANY	A commercial business.
COMPANY PATHWAY	A company's past emissions intensity performance pathway up until the present.
COMPANY TARGET PATHWAY	The emissions intensity performance pathway that the company has committed to follow from the initial year on until a future year, for which it has set a performance target.
COMMITMENT GAP	In relation to emissions performance, the difference between what a company needs to do and what it says it will do.
CONFIDENTIAL INFORMATION	Any non-public information pertaining to a company's business.
CONSERVATIVENESS	A principle of the ACT project; whenever the use of assumptions is required, the assumption shall err on the side of achieving 2-degrees maximum.
CONSISTENCY	A principle of the ACT project; whenever time series data is used, it should be comparable over time. In addition to internal consistency of the indicators reported by the company, data reported against indicators shall be consistent with other information about the company and its business model and strategy found elsewhere. The analyst shall consider specific, pre-determined pairs of data points and check that these give a consistent measure of performance when measured together.
COP21	The 2015 United Nations Climate Change Conference, held in Paris, France from 30 November to 12 December 2015 (COP21 webpage).
DATA	Facts and statistics collected together for reference and analysis (e.g. the data points requested from companies for assessment under the ACT project indicators).
DECARBONIZATION	A complete or near-complete reduction of greenhouse gas emissions over time (e.g. decarbonization in the electric utilities sector by an increased share of low-carbon power generation sources, as well as emissions mitigating technologies like Carbon Capture and Storage (CCS)).
DECARBONIZATION PATHWAY	Benchmark pathway (See 'Benchmark')

EMISSIONS	The GHG Protocol defines direct GHG emissions as emissions from sources that are owned or controlled by the reporting entity, and indirect GHG emissions as emissions that are a consequence of the activities of the reporting entity, but occur at sources owned or controlled by another entity (GHG Protocol).
ENERGY	Power derived from the utilization of physical or chemical resources, especially to provide light and heat or to work machines.
FOSSIL FUEL	A natural fuel such as coal, oil or gas, formed in the geological past from the remains of living organisms.
FUTURE	A period of time following the current moment; time regarded as still to come.
POWER GENERATION	The process of generating electric power from other sources of primary energy.
PRIMARY ENERGY	Primary energy is an energy form found in nature that has not been subjected to any conversion or transformation process. It is energy contained in raw fuels, and other forms of energy received as input to a system. Primary energy can be non-renewable or renewable.
GREENHOUSE GAS (GHG)	Greenhouse gas (e.g. carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and three groups of fluorinated gases (sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs)) which are the major anthropogenic GHGs and are regulated under the Kyoto Protocol. Nitrogen trifluoride (NF_3) is now considered a potent contributor to climate change and is therefore mandated to be included in national inventories under the United Nations Framework Convention on Climate Change (UNFCCC).
GUIDANCE	Documentation defining standards or expectations that are part of a rule or requirement (e.g. CDP reporting guidance for companies).
HORIZON GAP	In relation to emissions performance, the difference between the average lifetime of a company's production assets (particularly carbon intensive) and the time-horizon of its commitments. Companies with large asset-lives and small time horizons do not look far enough into the future to properly consider a transition plan.
INCENTIVE	A thing, for example money, that motivates or encourages someone to do something (e.g. a monetary incentive for company board members to set emissions reduction targets).
INDICATOR	An indicator is a quantitative or qualitative piece of information that, in the context of the ACT project, can provide insight on a company's current and future ability to reduce its carbon intensity. In the ACT project, 3 fundamental types of indicators can be considered:

	→ Key performance indicators (KPIs); → Key narrative indicators (KNIs); and → Key asset indicators (KAIs).
INTENSITY (EMISSIONS)	The average emissions rate of a given pollutant from a given source relative to the intensity of a specific activity; for example grams of carbon dioxide released per MWh of energy produced by a power plant.
INTERVENTION	Methods available to companies to influence and manage emissions in their value chain, both upstream and downstream, which are out of their direct control (e.g. a retail company may use consumer education as an intervention to influence consumer product choices in a way that reduces emissions from the use of sold products).
LIFETIME	The duration of a thing's existence or usefulness (e.g. a physical asset such as a power plant).
LONG-TERM	Occurring over or relating to a long period of time; under ACT this is taken to mean until the year 2050. The ACT project seeks to enable the evaluation of the long-term performance of a given company while simultaneously providing insights into short- and medium-term outcomes in alignment with the long-term.
LOW-CARBON SCENARIO (OR PATHWAY)	A low-carbon scenario (or pathway) is a 2°C scenario, a well-below 2°C scenario or a scenario with higher decarbonization ambition.
LOW-CARBON TRANSITION	The low-carbon transition is the transition of the economy according to a low-carbon scenario.
MANUFACTURE	Making objects on a large scale using machinery.
MATURITY MATRIX	A maturity matrix is essentially a “checklist”, the purpose of which is to evaluate how well advanced a particular process, program or technology is according to specific definitions.
MITIGATION (EMISSIONS)	The action of reducing the severity of something (e.g. climate change mitigation through absolute GHG emissions reductions)
MODEL	A program designed to simulate what might or what did happen in a situation (e.g. climate models are systems of differential equations based on the basic laws of physics, fluid motion, and chemistry that are applied through a 3-dimensional grid simulation of the planet Earth).
PATHWAY (EMISSIONS)	A way of achieving a specified result; a course of action (e.g. an emissions reduction pathway).

PERFORMANCE	Measurement of outcomes and results.
PLAN	A detailed proposal for doing or achieving something.
POINT	A mark or unit of scoring awarded for success or performance.
POWER	Energy that is produced by mechanical, electrical, or other means and used to operate a device (e.g. electrical energy supplied to an area, building, etc.).
RELEVANT / RELEVANCE	In relation to information, the most relevant information (core business and stakeholders) to assess low-carbon transition.
RENEWABLE ENERGY	Energy from a source that is not depleted when used, such as wind or solar power.
REPORTING YEAR	Year under consideration.
RESEARCH AND DEVELOPMENT (R&D)	A general term for activities in connection with innovation; in industry; for example, this could be considered work directed towards the innovation, introduction, and improvement of products and processes.
SCIENCE-BASED TARGET	To meet the challenges that climate change presents, the world's leading climate scientists and governments agree that it is essential to limit the increase in the global average temperature at below 2°C. Companies making this commitment will be working toward this goal by agreeing to set an emissions reduction target that is aligned with climate science and meets the requirements of the Science-Based Targets Initiative.
SCENARIO	The Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) presents the results of an extensive climate modelling effort to make predictions of changes in the global climate based on a range of development/emissions scenarios. Regulation on climate change-related issues may present opportunities for your organization if it is better suited than its competitors to meet those regulations, or more able to help others to do so. Possible scenarios would include a company whose products already meet anticipated standards designed to curb emissions, those whose products will enable its customers to meet mandatory requirements or those companies that provide services assisting others in meeting regulatory requirements.
SCENARIO ANALYSIS	A process of analysing possible future events by considering alternative possible outcomes.
SECTORAL DECARBONIZATION APPROACH (SDA)	To help businesses set targets compatible with 2-degree climate change scenarios, the Sectoral Decarbonization Approach (SDA) was developed. The SDA takes a sector-level approach and employs scientific insight to determine the

	least-cost pathways of mitigation, and converges all companies in a sector towards a shared emissions target in 2050.
SHORT-TERM	Occurring in or relating to a relatively short period of time in the future.
SCOPE 1 EMISSIONS	All direct GHG emissions (GHG Protocol Corporate Standard).
SCOPE 2 EMISSIONS	Indirect GHG emissions from consumption of purchased electricity, heat or steam (GHG Protocol Corporate Standard).
SCOPE 3 EMISSIONS	Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc. (GHG Protocol Corporate Standard).
SECTOR	A classification of companies with similar business activities, e.g. automotive manufacturers, power producers, retailers, etc.
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.
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).

TARGET	A quantifiable goal (e.g. to reduce GHG emissions).
	• The following are examples of absolute targets:
	  ○ metric tonnes CO2e or % reduction from base year
	  ○ metric tonnes CO2e or % reduction in product use phase relative to base year
	  ○ metric tonnes CO2e or % reduction in supply chain relative to base year
	• The following are examples of intensity targets:
	  ○ metric tonnes CO2e or % reduction per passenger.kilometre (also per km; per nautical mile) relative to base year
	  ○ metric tonnes CO2e or % reduction per square foot relative to base
	  ○ metric tonnes CO2e or % reduction per MWh

TRADE ASSOCIATION	Trade associations (sometimes also referred to as industry associations) are an association of people or companies in a particular business or trade, organized to promote their common interests. Their relevance in this context is that they present an “industry voice” to governments to influence their policy development. The majority of organizations are members of multiple trade associations, many of which take a position on climate change and actively engage with policymakers

	on the development of policy and legislation on behalf of their members. It is acknowledged that in many cases companies are passive members of trade associations and therefore do not actively take part in their work on climate change (CDP climate change guidance).
TRANSPORT	To take or carry (people or goods) from one place to another by means of a vehicle, aircraft, or ship.
TREND	A general direction in which something (e.g. GHG emissions) is developing or changing.
TECHNOLOGY	The application of scientific knowledge for practical purposes, especially in industry (e.g. low-carbon power generation technologies such as wind and solar power, in the electric power generation sector).
TRANSITION	The process or a period of changing from one state or condition to another (e.g. from an economic system and society largely dependent on fossil fuel-based energy, to one that depends only on low-carbon energy).
VERIFIABLE / VERIFIABILITY	To prove the truth of, as by evidence or testimony; confirm; substantiate. Under the ACT project, the data required for the assessment shall be verified or verifiable.
WEIGHTING	The allowance or adjustment made in order to take account of special circumstances or compensate for a distorting factor.

Appendix 1: The transition

To fully understand the challenges underlying the transition to a low-carbon economy, it is important to put it into the historical context of man-made CO_2 emissions since the advent of the industrial revolution. For that purpose, CO_2 emissions scenarios are portrayed with historical CO_2 emissions[3]. One possible way emissions can evolve in a way that is compatible with low-carbon transition scenarios during the XXIst century up to 2100 is portrayed here based on the underlying data from the RCP2.6 scenario of the IPCC AR5[4].

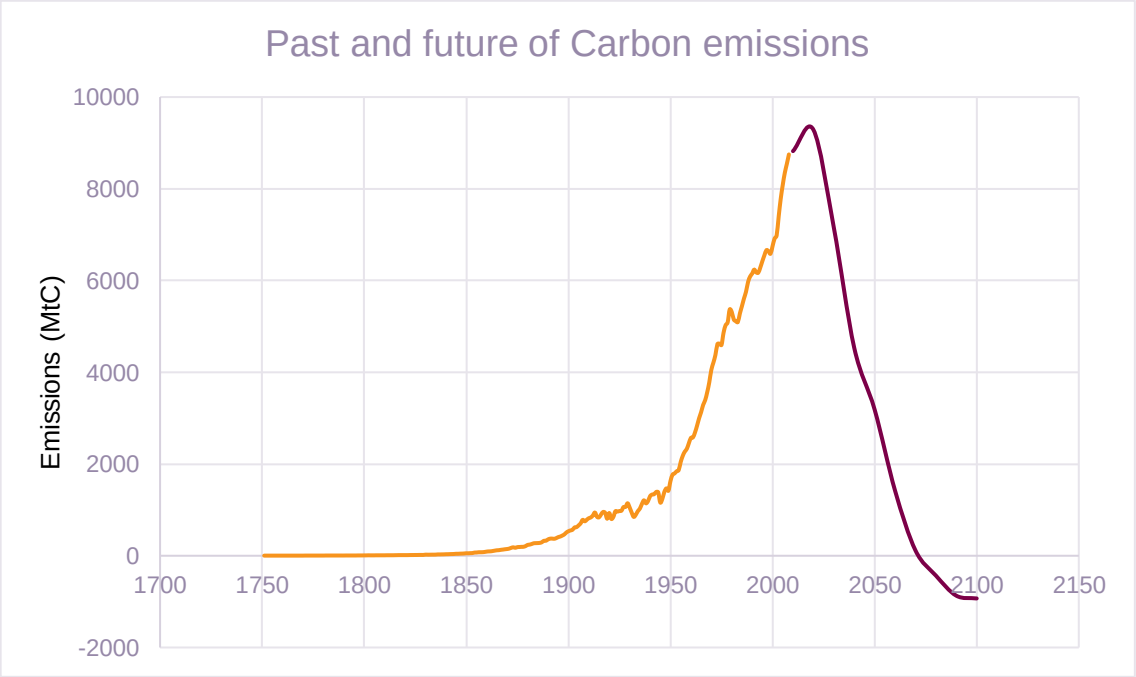

FIGURE 4: HISTORICAL CO2 EMISSIONS (BLUE) AND TRANSITION (ORANGE) IN ACCORDANCE WITH RCP2.6 SCENARIO

Scenarios can be distinguished by the long-term concentration level they reach by 2100. The underlying link between scenarios that stabilize temperature below 2°C with a high degree of probability (>60%) is that

[3] For this purpose, CDIAC data on historical CO_2 emissions from fossil-fuels have been used. These do not comprise all historical GHG emissions, but they constitute the large majority of emissions and clearly show the trends and dynamics of GHG emissions. The original source of the data can be found at http://cdiac.ornl.gov/trends/emis/tre_glob_2011.html

[4] The chart reflects CO_2 sources only. The original data sources are http://cdiac.ornl.gov/ftp/ndp030/CSV-FILES/global.1751_2011.csv and http://tntcat.iiasa.ac.at:8787/RcpDb/dsd?Action=htmlpage&page=welcome from where the complete data set for the RCP2.6 scenario data has been downloaded.

atmospheric concentrations do not exceed the range of 430-480 ppm in 2100[5]. However, low-carbon scenarios also have other important features in common, namely [1, pp. 418][6]:

- The degree to which concentrations exceed (overshoot) the 450 ppm level before 2100. "The large majority of scenarios produced in the literature that reach about 450 ppm CO_2e by 2100 are characterized by concentration overshoot facilitated by the deployment of carbon dioxide removal (CDR) technologies".
- Large-scale changes to global and national energy systems, which are inconsistent with both long- and short-term trends.
- Large-scale change is also likely relative to land-use-change. The different scenarios articulate very different changes in the land surface, reflecting different assumptions of the potential for bioenergy production, afforestation, and reduced deforestation.
- There is a large potential for energy efficiency to drive reductions, but these are insufficient by themselves to constrain GHG emissions.
- The next 15 years (2015-2030) will be determinant for the options for bringing concentrations to the 450 - 500 ppm CO_2e by the end of the twenty-first century. 2°C scenarios are characterized by 2030 emissions roughly between 30 GtCO2eq and 50 $GtCO_2e$. Scenarios with emissions above 55 $GtCO_2e$ in 2030 are predominantly driven by delays in additional mitigation relative to what would be most cost-effective and imply substantially higher rates of emissions reductions from 2030 to 2050 and on CDR technologies in the long-term, with higher transitional and long-term economic impacts. Studies confirm that delaying additional mitigation through 2030 has substantially larger influence on the subsequent challenges of mitigation than delaying only through 2020.
- The availability of key technologies and improvements in the cost and performance of these technologies will have important implications for the challenge of achieving concentration goals. Early deployment of low-carbon technology is determinant for achieving 2°C, but equally large-scale deployment of CDR technologies is relied upon in the second-half of the century in many scenarios.
- There is uncertainty about the potential of geoengineering by CDR or solar radiation management (SRM) to counteract climate change, and all techniques carry risks and uncertainties. No currently existing technique could fully replace mitigation or adaptation efforts. Nevertheless, many low-GHG concentration scenarios rely on two CDR techniques, afforestation and biomass energy with carbon dioxide capture and storage (BECCS), which some studies consider to be comparable with conventional mitigation methods. Proposed geoengineering techniques differ substantially from each other, but all raise complex questions about costs, risks, governance, social acceptance and ethical implications of research and potential implementation.

[5] IPCC 5th assessment report.

[6] This section presents the most relevant conclusions from the analysis of multiple scenarios carried out by the IPCC for its AR5 and it closely follows material presented in the Executive Summary of Chapter 6 of the WG3 "Climate Change 2014: Mitigation of Climate Change".

The AR5 reports[7] in total 114 scenarios that extend to 2100 and result in CO_2e concentrations of 430-480 ppm, with radiative forcing between 2.3-2.9 W/m2 and cumulative emissions <950 $GtCO_2$ for the period 2011-2100 and which generically correspond to the RCP2.6. Of these, 72 have an overshoot of greater than 0.4W/m2 relative to the radiative forcing in 2100. Note that the temperature ranges presented in AR5 are harmonized, that is, they are derived from running in the same climate model (MAGICC) the GHG concentration pathways resulting from the different scenarios[8]. Overall the scenarios represent a probability range of staying within 2°C of between 63%-88%, but considering only those scenarios with overshoot <0.4W/m2, the probabilities of staying within 2°C are within the range of 78%-88%[9].

Given the set of common characteristics of low-carbon scenarios, it is important to portray some of their potential variations that might imply different transition options, namely:

- Expected mitigation potential of each sector and respective costs and who is likely to bear them;
- Technological vs. societal mitigation options;
- Technology options and implied risks, namely the degree of dependence of CDR;
- Regional mitigation differences;
- Population and economic growth and other assumptions of the models and their implications on other variables;
- Main challenges companies face in the transition and what might help overcome them (e.g. policy environment);
- Other drivers of change, beyond climate, that might be pushing companies in similar or opposite directions.

SCENARIOS FOR THE TRANSITION

The fundamental target for all transition scenarios is a threshold of 2°C global warming compared to pre-industrial temperatures. This target has long been widely accepted as a credible threshold for achieving a reasonable likelihood of avoiding climate instability, while a 1.5°C rise has been agreed upon as an aspirational target [10] [12].

Many transition scenarios aiming to describe a pathway to a global 2°C goal have been developed and could potentially be used to assess the alignment of a business to a low carbon trajectory. These scenarios could be classified by the model-type on which they are based including bottom-up, top-down or hybrid models and by their geographic (national vs. global) and sectoral (e.g. electricity) coverage and level of detail.

Extensive pathway modelling for the 2°C target has been undertaken by numerous organizations. For instance, the IEA 'Energy Technology Perspectives' (ETP) 2DS scenario and the 'Representative Concentration Pathways' (RCP) 2.6 scenario developed for IPCC. In the IPCC fifth assessment report, a cumulative emissions budget of 550-1,300$GtCO_{2e}$ over the years 2011-2050 was reported necessary for staying below 2°C to be *likely*. As there are many potential scenarios and pathways (e.g. the WEC World Energy Scenario or the BP energy outlook etc.) for achieving this goal, a scenario envelope was determined.

[7] See table 6.2 of [11], pp. 430.

[8] [11], pp. 430

[9] See table 6.3 of [11], pp. 431

These scenarios were modelled using the Global Calculator: an open source model developed through a consortium of international organizations [4].

Contributing to each global emissions scenario are emissions reductions at the sectoral level. These will be further investigated in the context of the methodology development. It will be essential to understand the different technological and societal choices to be undertaken in each scenario and the interdependencies between them. Likewise, consideration of the inertia built into the system – or system lock-in – will be most relevant, as the rapid pace of decarbonization might not be compatible with the continuation of the deployment of long-life and high-carbon assets.

Appendix 2: Quality Assurance Process - Principles

METHODOLOGY DEVELOPMENT PRINCIPLES

Like for any methodology, the development of ACT needed principles that would be focused on the process of developing standards, as well as the recognition of additional principles that can reflect the data (or content) required for the methodology, e.g. corporate GHG accounting data generated according to certain principles. In order to be aligned with the GISR principles, we will call these principles "Content" principles.

To support the development process, suitable principles have to be agreed on. These principles were set based on:

- The experience of the project team in similar processes[10];
- Existing best practice in the development of standards namely:
  - → The work done by the Global Initiative for Sustainability Ratings (GISR) in which CDP has actively participated[11]. GISR has been set specifically to focus on the issue of sustainability rating development and was thus considered to be particularly suitable for the ACT project; furthermore, CDP has been involved from the early stages of the project in the development of its principle framework, and so many of the best practices followed by CDP are already reflected in their principles.
  - → ISEAL alliance credibility principles[12];
  - → ISO development principles[13];
  - → ISO 14080 Principles (current version of November 15, 2015) of the ISO 14080 Standard - Guidance with framework and principles for methodologies on climate actions.

While recognizing that there are many principles that can be formulated and that they all make sense, effort should be focused on deciding what principles would be most likely to influence key decisions.

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[10] E.g. CDP scoring development process and CDP questionnaire development process; ISO standard development; GHG Protocol standard development.

[11] For more info check http://ratesustainability.org/ and http://ratesustainability.org/wp-content/uploads/2015/07/GISR_CORE_Framework12Principles.pdf.

[12] ISEAL is the global membership association for sustainability standards, created by leading organizations in the field of sustainability standardization such as the Forest Stewardship Council (FSC), the International Federation of Organic Agriculture Movements (IFOAM), Fairtrade and Marine Stewardship Council (MSC). For more info check http://www.isealalliance.org/about-us/ and http://www.isealalliance.org/infographic/iseals-credibility-principles.

[13] Check http://www.iso.org/iso/home/standards_development.htm.

Considering time constraints and practicality, we focus on 3 reputable organizations that have previously codified the process for: sustainability ratings specifically (GISR); sustainability standards (ISEAL); and standards in general (ISO). In this way, going from the specific to the generic, we have sufficient coverage of usual practice in the adoption of principles to guide standard development. The principles used in the process of standard development by each of these organizations and their application to ACT are discussed below.

9.1.1. GISR

TABLE 9: GISR PRINCIPLES

Process	
Transparency	A rating should be transparent to those whose decisions are affected by the application of such rating.
Impartiality	The design and application of a rating, whose primary users are external to the evaluated company, should be protected from undue influence by such company.
Continuous Improvement	Through periodic update, a rating should track and integrate the best-available science, measurement techniques, issues and indicators.
Inclusiveness	Development of a rating should identify and systematically engage those stakeholders whose decisions are influenced by the application of the rating.
Assurability	A rating should be designed to allow for independent, third-party assurance that its application comports with the GISR Principles.

Content	
Materiality	A rating should assess performance based on sustainability issues relevant to the decision-making of stakeholders for which a rating is designed.
Comprehensiveness	Evaluating one or more aspects of sustainability performance should systematically assess for impacts on human, intellectual, natural and social capital.
Sustainability Context	A rating should assess performance in the context of science-based thresholds and limits, or, if unavailable, widely-accepted norms pertaining to long-term human and ecological well-being.
Long-Term Horizon	A rating should enable the evaluation of the long-term performance of a company while simultaneously providing insights into short- and medium-term outcomes in alignment with the long-term.
Value Chain	A rating should reflect all portions of a company's value chain over which the company exercises significant influence.
Balance	A rating should utilize a mix of measurement techniques to capture historical and prospective performance.
Comparability	A rating should allow users to compare the performance of the same company over time and of different companies within the same time period.

TABLE 10: CONCLUSIONS OF THE GISR PRINCIPLES EVALUATION FOR USE IN THE ACT DEVELOPMENT PROCESS

GISR PROCESS PRINCIPLES	RATIONALE
TRANSPARENCY	Included - Transparency is a key value of both CDP and ADEME. Transparency is also a must for credible uptake of a standard by the market.
IMPARTIALITY	Included - The impartial consideration of inputs based on their rationality is an important principle. The methodology shall be protected from undue influences.
CONTINUOUS IMPROVEMENT	Not Included - TBD
INCLUSIVENESS	Included – In sustainability, including all voices, expert or not, and the voices that are directly involved in the work carried out is good practice.
ASSURABILITY / VERIFIABILITY	Included (see "Methodology principles") – As a guarantee of its robustness and quality, assurability/verifiability of the data in which the assessment will rely on should be sought.

GISR CONTENT PRINCIPLES	RATIONALE
MATERIALITY	Not included - This and other documents of the project should satisfy the principle of materiality on what concerns assessing the low-carbon transition models of companies, but "materiality" is not considered a methodology principle. Instead, the principle of relevance, in a similar formulation as in ISEAL, will be considered. This states that "the most relevant aspects for the transition, directly or indirectly influenced by the company should be considered".
COMPREHENSIVENESS	Not included - *Comprehensiveness*, as defined by GISR and encompassing several sustainability dimensions such as human, intellectual, natural and social capital, will not be taken into consideration. The remit of the project has been set with a much narrower scope.
SUSTAINABILITY CONTEXT	Not included – Considered by design and addressed in other parts of this framework but not a principle.
LONG-TERM HORIZON	Included – the Long-term horizon is a key characteristic of the ACT approach to assessing transition
VALUE CHAIN	Not included - Will be addressed, as can be seen in other sections of the framework, but not articulated as a principle. Value chain impacts need to be considered in light of the "relevance" principle and not be singled out as a principle itself. The consistent application of the

	framework will guarantee that value chain aspects are consistently considered.
BALANCE	Not included - TBD
COMPARABILITY	Not Included - TBD

9.1.2. ISEAL

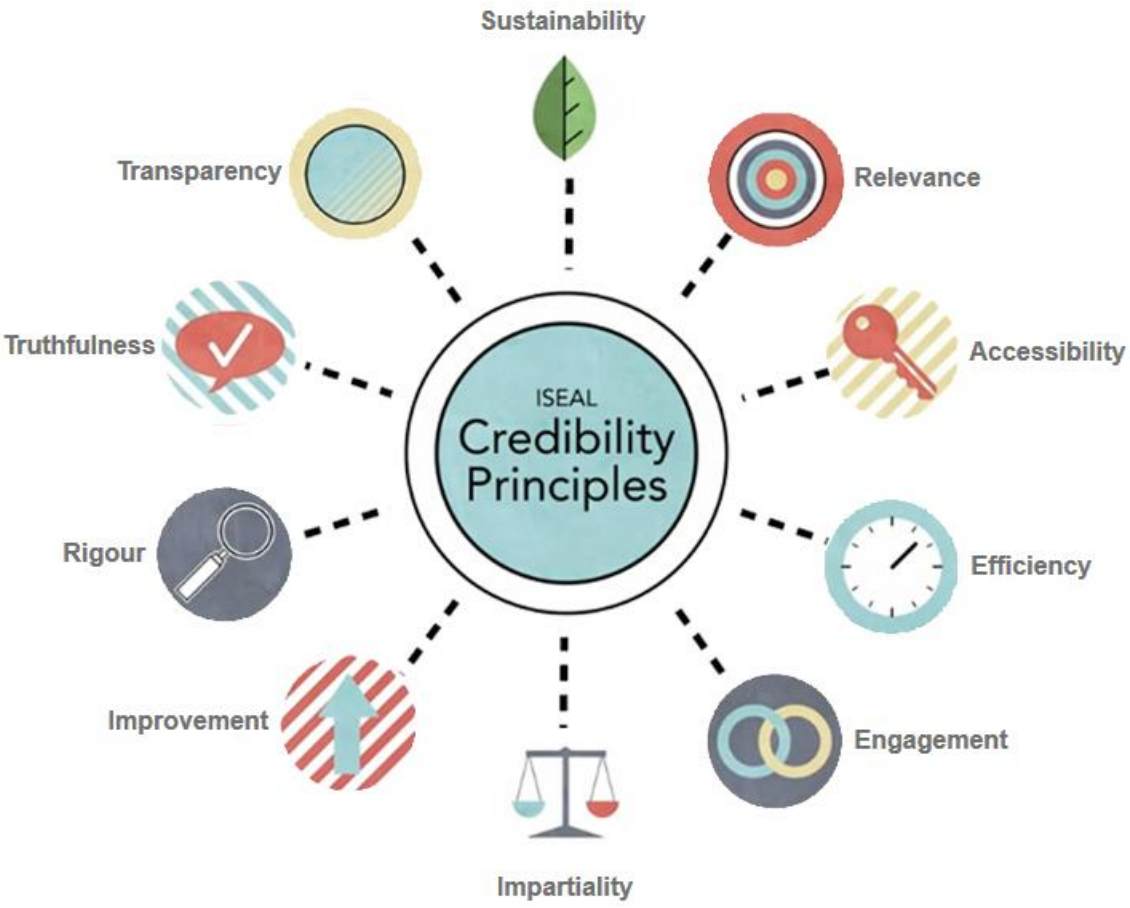

FIGURE 5: ISEAL CREDIBILITY PRINCIPLES SYNTHESIS

TABLE 11: CONCLUSIONS OF THE ISEAL PRINCIPLES EVALUATION FOR USE IN THE ACT DEVELOPMENT PROCESS

ISEAL	RATIONALE
SUSTAINABILITY - Standards scheme owners clearly define and communicate their sustainability objectives and approach to achieving them. They make decisions that best advance these objectives.	Not included - ACT is a sustainability standard and communicates its sustainability objectives and approach to achieving them in other sections of this framework. As such, this principle is considered in the development of this framework, but does not need to be considered for the methodology development process.
RELEVANCE - Standards are fit for purpose. They address the most significant sustainability impacts of a product, process, business or service; only include requirements that contribute to their objectives; reflect best scientific understanding and relevant international norms; and are adapted where necessary to local conditions.	Included - Relevance is considered a methodology principle, but not for the development process. See "Methodology implementation principles".
ACCESSIBILITY - To reduce barriers to implementation, standards systems minimise costs and overly burdensome requirements. They facilitate access to information about meeting the standard, training, and financial resources to build capacity throughout supply chains and for actors within the standards system.	Not included - In our view, Accessibility has two components. One that we would call "pragmatism", which is related to the need to reduce barriers to implementation, minimise costs and facilitate market adoption. This will lead to overly burdensome requirements to be simplified to more pragmatic, although less perfect, formulations. In our view this is a component of any standard setting process and does not need to be formulated as a guiding principle. Another component is related to the access and availability of the standard, training materials, etc. While we consider this an important aspect, particularly in the future scale up of current projects, it is not considered a key driver of the process for it to be recognized as a principle. As it currently stands, it is not considered likely (or desirable) that accessibility requirements will strongly influence methodology process and design.
EFFICIENCY - Standards systems refer to or collaborate with other credible schemes to improve consistency and efficiency in standards content and operating practices. They improve their viability through the application of sound	Not included - Efficiency, as formulated by ISEAL, is an important aspect of ACT. The adoption of some of the main GISR principles reflect some of the concerns of the "efficiency" principle. It is considered that in the current process, there is no particular need to raise it to a principle level.

revenue models and organisational management strategies.	
ENGAGEMENT - Standard-setters engage a balanced and representative group of stakeholders in standards development. Standards systems provide meaningful and accessible opportunities to participate in governance, assurance and monitoring and evaluation. They empower stakeholders with fair mechanisms to resolve complaints.	Included in “Inclusiveness”, see above.
IMPARTIALITY – Standards systems identify and mitigate conflicts of interest throughout their operations, particularly in the assurance process and in governance. Transparency, accessibility and balanced representation contribute to impartiality.	Included, see “Impartiality” above.
IMPROVEMENT - Standards scheme owners seek to understand their impacts and measure and demonstrate progress towards their intended outcomes. They regularly integrate learning and encourage innovation to increase benefits to people and the environment.	Not included - TBD
RIGOUR - All components of a standards system are structured to deliver quality outcomes. In particular, standards are set at a performance level that results in measurable progress towards the scheme’s sustainability objectives, while assessments of compliance provide an accurate picture of whether an entity meets the standard’s requirements.	Not included - Rigour, as formulated by ISEAL, reflects the need for quality outcomes. There is no disagreement with this principle, but it lacks “substance” on what quality means and how to assess it. The way quality issues will be considered within the process will be through the rigorous observation of the principles of transparency, impartiality, inclusiveness and continuous improvement principles, as well as by the quality assurance process. As such, there is no particular need to reflect it as a methodology development principle.
TRUTHFULNESS - Claims and communications made by actors within standards systems and by certified entities about the benefits or impacts that derive from the system or from the purchase or use of a certified product or	Not included - TBD

service are verifiable, not misleading, and enable an informed choice.	
TRANSPARENCY - Standards systems make relevant information freely available about the development and content of the standard, how the system is governed, who is evaluated and under what process, impact information and the various ways that stakeholders can engage.	Included, see above “Transparency”.

9.1.3. ISO

TABLE 12: CONCLUSIONS OF THE ISO PRINCIPLES EVALUATION FOR USE IN THE ACT DEVELOPMENT PROCESS

ISO	RATIONALE
MARKET LED - ISO standards respond to a need in the market, ISO does not decide when to develop a new standard, but responds to a request from industry or other stakeholders such as consumer groups. Typically, an industry sector or group communicates the need for a standard to its national member who then contacts ISO.	Not included - This principle is not considered, since ACT is market driven, but not market led. ACT explicitly defines itself as a pilot project testing the market readiness for what it proposes to achieve. Market considerations related to adoption, costs (etc.) will be important in the decision making process, but as commented above in the “accessibility” principle section, we consider this the norm for any standard development.
EXPERT LED - ISO standards are based on global expert opinion and developed by groups of experts from all over the world, that are part of larger groups called technical committees. These experts negotiate all aspects of the standard, including its scope, key definitions and content. Details can be found in the list of technical committees.	Not included - this principle is partially in conflict with the inclusiveness principle. In ACT, and in sustainability in general, the importance of expert-voices as well as non-expert voices is recognized. For this reason, this principle is not considered, although expert advice and input will be required during the entire methodology development process.
MULTI-STAKEHOLDER - ISO standards are developed through a multi-stakeholder process, the technical committees are made up of experts from the relevant industry, as well as from consumer associations, academia, NGOs and government.	Included, see “Inclusiveness” above.
CONSENSUS DRIVEN - ISO standards are based on a consensus and developing ISO standards is a consensus-based approach and	Not included - by design, during this pilot phase, consensus will be sought and a nice-to-have, but is not a requirement to be observed rigorously. Where consensus is not possible, pragmatic

comments from all stakeholders are taken into account.	decisions will be taken by project teams, justified and documented, as will the reasons for alternative decisions.

9.1.4. ISO 14080

TABLE 13 : CONCLUSIONS OF THE EVALUATION OF ISO14080 PRINCIPLES FOR USE IN THE ACT METHODOLOGIES

ISO 14080	RATIONALE
ACCURACY - Reduce bias and uncertainties as far as is practical.	Not Included – TBD
COMPARABILITY - Ensure that the methodologies generated, selected and provided for calculating emissions reduction and removal apply this framework in a consistent way, thereby allowing for comparisons.	Not included – TBD
COMPATIBILITY - Increase harmonizing, aggregate climate change mitigation and adaptation activities by methodology and its technologies	Not Included – This links with the Efficiency principle of ISEAL. Can be considered at the sectoral level, but not considered necessary to raise it to a principle level.
COMPLETENESS - Include all relevant GHG emissions and removals. Include all relevant information to support criteria and procedures.	Not included – Partially covered already by the relevance principle, which specifies that all relevant factors should be considered. In many cases important information gaps within companies' information is expected to be found. In other cases, it is expected that information will be organized according to the standards adhering to these principles.
CONSERVATIVENESS - Use conservative assumptions, values and procedures to ensure that GHG emissions reductions or removal enhancements are not over-estimated.	Included – Where data is not available or of limited availability, insuring that conservativeness is applied is key to maintaining environmental integrity. See "Methodology principles".
CONSISTENCY - Enable meaningful comparisons in GHG-related information.	Included – Particularly important to ensure time series data reported by companies.
EFFECTIVENESS - Extent to which planned activities are realized and planned results are achieved (ISO9000:2015).	Not included – Not a sufficient concern in a pilot project to be raised to a principle. See "Methodology implementation principles".

ETHICAL Conduct - Demonstrate ethical conduct through trust, integrity, confidentiality and discretion throughout the process.	Not Included – Partially covered at least through transparency and impartiality principles.
FLEXIBILITY - Increase the selection to balance between reducing costs and generating emissions.	Not included - TBD
GOVERNANCE - System of directing and controlling (ISO/IEC 38500:2015).	Not included as a principle, however noted in the ACT documentation.
RELEVANCE - Select the GHG sources, GHG sinks, GHG reservoirs, data and methodologies appropriate to the needs of the intended user.	Included, but not linked to GHG specifically. See “Methodology principles”.
TRANSPARENCY - Disclose sufficient and appropriate GHG-related information to allow intended users to make decisions with reasonable confidence.	Included as “Transparency”, see above.

Other principles developed and adopted by other standard makers have not been researched and have not been considered for practical reasons. Additionally, too many principles can create barriers for a fast standard development process, as there are also trade-offs between them that would have to be redeemed.

The table below summarizes the different principles and their use in the ACT process development and in the ACT methodologies (see following section).

TABLE 14: PRINCIPLES CHECKLIST AND USE IN THE ACT DEVELOPMENT PROCESS AND IN THE ACT METHODOLOGIES

	GISR	ISEAL	ISO 14080	ACT (PROCESS)	ACT (METHODOLOGIES)
TRANSPARENCY	✓	✓		✓	
IMPARTIALITY	✓	✓		✓	
CONTINUOUS IMPROVEMENT	✓	✓			
INCLUSIVENESS / ENGAGEMENT / MULTI-STAKEHOLDER	✓	✓	✓	✓	
ASSURABILITY / VERIFIABILITY	✓				✓
MATERIALITY	✓				
COMPREHENSIVENESS	✓				
SUSTAINABILITY CONTEXT	✓				
LONG-TERM HORIZON	✓				
VALUE CHAIN	✓				
BALANCE	✓				
COMPARABILITY	✓		✓		
SUSTAINABILITY		✓			
RELEVANCE		✓	✓		✓
ACCESSIBILITY		✓			
EFFICIENCY		✓			
RIGOUR		✓			
TRUTHFULNESS		✓			
MARKET LED			✓		
EXPERT LED			✓		
CONSENSUS DRIVEN			✓		
ACCURACY			✓		

COMPATIBILITY				✓		
COMPLETENESS				✓		
CONSERVATIVENESS				✓		✓
CONSISTENCY				✓		✓
EFFECTIVENESS				✓		
ETHICAL CONDUCT				✓		
FLEXIBILITY				✓		
GOVERNANCE				✓		

METHODOLOGY IMPLEMENTATION PRINCIPLES

To round out the principles related to the development process of the methodologies, it is also important to articulate principles to consider in the sector methodologies. There are many more principles that could be mapped and discussed, namely:

- GRI G4 principles for the application of its framework (Stakeholder Inclusiveness, Sustainability Context, Materiality, Completeness, Balance, Accuracy, Comparability, Timeliness, Clarity, Reliability);
- Integrated reporting principles, as defined by IIRC (Strategic focus, Connectivity of information, Future orientation, Responsiveness and Stakeholder Inclusiveness, Conciseness, Reliability, and Materiality);
- SASB principles for suitability of sustainability indicators (Relevant, Useful, Applicable, Cost-effective, Comparable, Complete, Directional, Auditable);
- Arista 3.0 commitments (Independent sources, global activities, Beyond legal compliance, Social and environmental, Balance, Relevance/ Materiality, Consistency and comparability, Stakeholder involvement, Up-to-date, transparency, Continuous improvement) and principles on conducting sustainability research (Independence, Professionalism, Accountability, Objectivity, Impartiality, Equal treatment, Responsible relationships, Selective disclosure, Avoidance of personal interest)
- GHG Protocol principles (relevance, completeness, consistency, transparency, accuracy).

No attempt has been made to map the entire principle space within the many sustainability standards there are and can be used. Many of the principles reported above either match or overlap with other principles already considered. As explained in the previous section and noted in the tables, five methodology principles are considered, which are:

- **RELEVANCE:** the most relevant aspects for the transition, directly or indirectly influenced by the company should be considered.
- **VERIFIABILITY:** the data required for the assessment shall be verified or verifiable.
- **CONSERVATIVENESS:** whenever it is necessary to make assumptions, ensure that error is conservative on the side of achieving 2°C or beyond.

- **CONSISTENCY:** whenever time series data is used, these should have been produced in order to generate comparable data over time.
- **LONG-TERM ORIENTED:** enables the evaluation of the long-term performance of a company while simultaneously providing insights into short- and medium-term outcomes in alignment with the long-term.

Appendix 3: Maturity matrix on narrative scoring criteria

TABLE 15: MATURITY MATRIX ON NARRATIVE SCORING CRITERIA

	BASIC		STANDARD		ADVANCED		NEXT PRACTICE		LOW-CARBON TRANSITION ALIGNED	
BUSINESS MODEL AND STRATEGY	The company does not seem to be able to be profitable in a low-carbon economy and there is no sign of internal efforts.	0	The company has begun to seek profitable activities in a low-carbon economy.	1	The company has identified profitable activities in a low-carbon economy, and climate issues have been integrated into its business model and strategy.	2	The company is in transition toward profitable activities in a low-carbon economy and there is evidence that mechanisms are being put in place for this purpose.	3	The company's activities seem to be profitable and its short-term strategy and targets are compatible with the low-carbon transition.	4
CONSISTENCY AND CREDIBILITY	The past and present actions, and transition plan if there is one, do not demonstrate overall coherence and the company does not seem to be able to achieve its climate objectives. Important efforts are needed for the implementation of a low-carbon transition plan.	0	The past and present actions are not in line with the company's potential climate objectives. However, there is some evidence that the company already begun to consider mechanisms to implement a low-carbon transition plan.	1	The past and present actions demonstrate that the company has a climate ambition, but additional efforts may still be needed to achieve climate targets. The company has started to establish an action plan to improve its climate performance.	2	The past and present actions are coherent with the company's transition plan. Additional efforts are needed but the company has always demonstrated the will to implement the needed mechanisms to stay aligned with its climate goals.	3	The past and present actions are coherent and already in line or beyond with a low-carbon transition.	4

REPUTATION	Existence of serious or several environmental controversies harming the company's climate commitments. There is no evidence that the company is addressing or taking the controversies seriously.	0	Existence of minor environmental controversies. There is no evidence that the company is working to avoid this kind of controversy.	1	Existence of minor environmental controversies. The company has made reliable commitments to address these types of controversies.	2	Existence of negligible environmental controversies that do not hamper the company's climate commitments. The company has always resolved environmental controversies with due importance.	3	No environmental controversies.	4
RISK	There are serious risks that could undermine the company's profitability and its ability to successfully implement a low-carbon transition plan. The company does not consider climate issues related to its activities and remains passive in the face of climate risks.	0	There are minor risks that could undermine the company's profitability and its ability to successfully implement a low-carbon transition plan. The company has begun to consider climate issues related to its activities.	1	There are minor potential risks that could undermine the company's profitability and its ability to successfully implement a low-carbon transition plan. However, there is evidence that the company is directing efforts to reduce these risks.	2	Risks that could undermine the company's profitability and its ability to implement a low-carbon transition plan are very limited. In addition, the company has always addressed and considered climate risks in its strategy.	3	No potential risk to the future profitability of the company or its ability to implement its transition to a low-carbon economic model.	4