



**ACCELERATE[®]
CLIMATE
TRANSITION**

ACT AGRICULTURE & AGRIFOOD

Low-carbon transition assessment methodology



Version 2.0 – November 2024

ACKNOWLEDGMENTS

ADEME and CDP warmly thank:

- ◆ The members of the Technical Working Group for their inputs and feedback on the methodology
- ◆ The companies involved in the road test of the A&A Methodology for their contribution to the methodology improvement.

(see list of members and companies in Appendix).

TECHNICAL COORDINATION:

Anaïs GOBURDHUN (ADEME)
Marlène DRESCH (ADEME)
Alice DE PALMA (CDP)
Jacob BUCKTON (CDP)



IN PARTNERSHIP WITH



ACT CO-FOUNDERS:



SUPPORTED BY:



Co-funded by the
European Union



Quality assurance and quality
control on development phase
provided by:
André PEDROSA-RODRIGUES
(Eco2 Initiative)
Patrick HARDY (Climate Check)



© CDP Worldwide & ADEME 2024. Reproduction of all or part of work without license of use permission of CDP Worldwide & ADEME is prohibited.

Contents

1.	INTRODUCTION	8
1.1.	CONTEXT FOR THE AGRICULTURE & AGRIFOOD SECTOR.....	8
1.2.	OBJECTIVE OF THE METHODOLOGY.....	8
2.	PRINCIPLES	9
3.	SCOPE	10
3.1.	SCOPE OF THE DOCUMENT.....	10
3.2.	SCOPE OF THE AGRICULTURE & AGRIFOOD METHODOLOGY	10
(1)	AGRICULTURAL PRODUCERS	11
(2)	AGRIFOOD COMPANIES	12
(3)	INTEGRATED COMPANIES	13
(4)	FOOD & BEVERAGE SERVICE COMPANIES.....	13
	COMPANIES EXCLUDED FROM THE SCOPE OF THE METHODOLOGY	13
	CASE OF FOOD RETAIL COMPANIES	14
4.	BOUNDARIES	15
	EMISSIONS BOUNDARIES FOR THE AGRICULTURE & AGRIFOOD SECTOR	15
	NOTE REGARDING THE USE OF SCOPES	16
	RATIONALE AND GUIDANCE ON EMISSION BOUNDARIES	20
	RATIONALE FOR EXCLUDING SPECIFIC EMISSIONS SOURCES	20
	THE SPECIFIC CASE OF NEGATIVE EMISSIONS.....	21
5.	CONSTRUCTION OF THE DATA INFRASTRUCTURE	22
5.1.	DATA SOURCES	22
5.2.	COMPANY DATA REQUEST	22
5.3.	PERFORMANCE INDICATORS.....	23
	MODULE 1: TARGETS	26
•	AG 1.1 ALIGNMENT OF AFOLU EMISSIONS REDUCTION TARGETS	26
•	AG 1.2 ALIGNMENT OF POST-FARM SCOPE 1+2 EMISSIONS REDUCTION TARGETS	32
•	AG 1.3 TIME HORIZON OF TARGETS	37
•	AG 1.4 ACHIEVEMENT OF PAST AND CURRENT TARGETS	40
	MODULE 2: MATERIAL INVESTMENTS	45
•	AG 2.1 TREND IN PAST EMISSIONS	45
•	AG 2.2 TREND IN FUTURE AFOLU EMISSIONS	49
•	AG 2.3 FOOD WASTAGE REDUCTION	52
•	AG 2.4 LOW-CARBON CAPEX	55
•	AG 2.5 ACTION ON DEFORESTATION.....	56

•	AG 2.6 INCREASE IN THE SHARE OF LOW-CARBON PRODUCTS	61
•	AG 2.7 IMPLEMENTATION OF BETTER FARMING PRACTICES	64
	MODULE 3: INTANGIBLE INVESTMENTS	69
•	AG 3.1 SHARE OF RESEARCH & DEVELOPMENT IN MITIGATION TECHNOLOGIES	69
•	AG 3.2 TRAINING FOR FARMERS AND TECHNICAL TEAMS	71
•	AG 3.3 INNOVATIVE LOW-CARBON FOOD-PRODUCTS	73
	MODULE 4: SOLD PRODUCT PERFORMANCE	75
•	AG 4.1 TREND IN PAST UPSTREAM AFOLU EMISSIONS	75
•	AG 4.2 TREND IN FUTURE UPSTREAM AFOLU EMISSIONS	77
•	AG 4.3 DOWNSTREAM EMISSIONS ASSOCIATED WITH RUMINANT ANIMAL FEED	78
•	AG 4.4 ACTION ON DEFORESTATION.....	80
•	AG 4.5 INCREASE IN THE SHARE OF LOW-CARBON PRODUCTS	85
	MODULE 5: MANAGEMENT	87
•	AG 5.1 OVERSIGHT OF CLIMATE CHANGE ISSUES	87
•	AG 5.2 CLIMATE CHANGE OVERSIGHT CAPABILITY	89
•	AG 5.3 LOW-CARBON TRANSITION PLAN	92
•	AG 5.4 CLIMATE CHANGE MANAGEMENT INCENTIVES	98
•	AG 5.5 CLIMATE CHANGE SCENARIO TESTING.....	101
•	AG 5.6 WASTE REDUCTION STRATEGY.....	105
	MODULE 6: SUPPLIER ENGAGEMENT	108
•	AG 6.1 STRATEGY TO INFLUENCE SUPPLIERS TO REDUCE THEIR GHG EMISSIONS.....	108
•	AG 6.2 ACTIVITIES TO INFLUENCE SUPPLIERS TO REDUCE THEIR GHG EMISSIONS	114
	MODULE 7: CLIENT ENGAGEMENT	118
•	AG 7.1 STRATEGY TO INFLUENCE CLIENTS TO REDUCE THEIR GHG EMISSIONS.....	118
•	AG 7.2 ACTIVITIES TO INFLUENCE CLIENTS TO REDUCE THEIR GHG EMISSIONS	122
	MODULE 8: POLICY ENGAGEMENT	125
•	AG 8.1 COMPANY POLICY ON ENGAGEMENT WITH ASSOCIATIONS, ALLIANCES, COALITIONS OR THINKTANKS	125
•	AG 8.2 ASSOCIATIONS, ALLIANCES, COALITIONS AND THINKTANKS SUPPORTED DO NOT HAVE CLIMATE-NEGATIVE ACTIVITIES OR POSITIONS.....	129
•	AG 8.3 POSITION ON SIGNIFICANT CLIMATE POLICIES (WEIGHTING: 1%).....	131
•	AG 8.4 COLLABORATION WITH LOCAL PUBLIC AUTHORITIES AND NGOS.....	133
	MODULE 9: BUSINESS MODEL.....	137
•	AG 9.1 BUSINESS ACTIVITIES SHIFTING SUPPLY FROM HIGHLY EMISSIVE TO LOW-CARBON PRODUCTS 137	
•	AG 9.2 BUSINESS ACTIVITIES SHIFTING TO BETTER PRODUCTION PRACTICES	140
6.	ASSESSMENT	142
	6.1. SECTOR BENCHMARK	142
	6.1.1. FLAG BENCHMARKS	142
	6.1.2. POST-FARM GATE BENCHMARK	144
	6.1.3. FOOD WASTAGE BENCHMARK.....	146

6.1.4.	LOW-CARBON FOOD PRODUCTS BENCHMARK	147
6.2.	QUANTITATIVE BENCHMARKS USED FOR THE INDICATORS.....	148
6.3.	WEIGHTINGS.....	149
•	RATIONALE FOR WEIGHTINGS.....	159
7.	RATING	161
7.1.	PERFORMANCE SCORING	161
7.2.	NARRATIVE SCORING	161
7.3.	TREND SCORING.....	163
8.	ALIGNED STATE.....	165
9.	SOURCES.....	166
10.	GLOSSARY.....	169
11.	APPENDIX.....	177
11.1.	TWG MEMBERS LIST.....	177
11.2.	VOLUNTEER COMPANIES INVOLVED IN THE ROAD TEST	177
11.3.	ROADTEST DECARBONISATION SCENARIOS.....	178
11.3.1.	INTRODUCTION.....	178
11.3.2.	APPROACH OVERVIEW.....	179
•	TECHNICAL MITIGATION POTENTIAL.....	180
•	APPLICABILITY AND UPTAKE.....	181
•	ALIGNMENT WITH PARIS AGREEMENTS GOALS.....	182
11.3.3.	DATA SOURCES.....	183
11.3.4.	EMISSIONS BOUNDARIES.....	185
11.3.5.	METHODOLOGY OF PATHWAYS AND CURVES.....	185
•	GLOBAL PATHWAYS	185
•	REGIONAL PATHWAYS.....	186
•	AGRIFOOD PATHWAYS	189
•	RATE OF CHANGE.....	189
11.3.6.	ADDITIONAL CONSIDERATIONS.....	190
11.3.7.	EXTENSION TO THE DEFINITION OF LOW-CARBON FOOD PRODUCTS.....	191

TABLE 1: ACT AGRICULTURE & AGRIFOOD PERFORMANCE SCORE IN BRIEF

Module	Indicator	AG	AF	INT	FB
TARGETS	1.1 Alignment of AFOLU emissions reduction targets	●	●	●	●
	1.2 Alignment of post-farm Scope 1+2 emissions reduction targets		●	●	●
	1.3 Time horizon of targets	●	●	●	●
	1.4 Achievement of past and current targets	●	●	●	●
MATERIAL INVESTMENT	2.1 Trend in past emissions intensity	●	●	●	●
	2.2 Trend in future absolute emissions	●		●	
	2.3 Food wastage reduction	●	●	●	●
	2.4 Low-carbon CapEx	●	●	●	●
	2.5 Action on deforestation	●		●	
	2.6 Increase in the share of low-carbon products	●			
	2.7 Implementation of better farming practices	●		●	
INTANGIBLE INVESTMENT	3.1 Share of Research & development in mitigation technologies	●	●	●	
	3.2 Training for farmers and technical teams	●	●	●	
	3.3 Innovative low-carbon food-products	●	●	●	●
SOLD PRODUCT PERFORMANCE	4.1 Trend in past upstream AFOLU emissions		●	●	●
	4.2 Trend in future upstream AFOLU emissions		●	●	●
	4.3 Downstream emissions associated with ruminant animal feed	(●)	(●)	(●)	
	4.4 Action on deforestation		●	●	●
	4.5 Increase in the share of low-carbon products		●	●	●
MANAGEMENT	5.1 Oversight of climate change issues	●	●	●	●
	5.2 Climate change oversight capability	●	●	●	●
	5.3 Low-carbon transition plan	●	●	●	●
	5.4 Climate change management incentives	●	●	●	●
	5.5 Climate change scenario testing	●	●	●	●
	5.6 Waste reduction strategy	●	●	●	●
SUPPLIERS	6.1 Strategy to influence suppliers to reduce their GHG emissions	●	●	●	●
	6.2 Activities to influence suppliers to reduce their GHG emissions	●	●	●	●
CLIENTS	7.1 Strategy to influence client to reduce their GHG emissions	●	●	●	●
	7.2 Activities to influence client to reduce their GHG emissions	●	●	●	●
POLICY ENGAGEMENT	8.1 Company policy on engagement with associations, alliances, coalitions or thinktanks	●	●	●	●
	8.2 Associations, alliances, coalitions and thinktanks supported do not have climate-negative activities or positions	●	●	●	●
	8.3 Position on significant climate policies	●	●	●	●
	8.4 Collaboration with local public authorities and NGOs	●	●	●	●
BUSINESS MODELS	9.1 Business activities shifting supply from highly emissive to low-carbon products and production	●	●	●	●
	9.2 Business activities shifting to better production practices	●	●	●	●

Table 1 illustrates the indicators that are used depending on the category of company considered. The criteria to be used to define the company's category are detailed in the Section 3.2.

Legend:

AG: Agriculture company

AF: Agrifood company

INT: Integrated company

FB: Food & Beverage company

1. Introduction

1.1. CONTEXT FOR THE AGRICULTURE & AGRIFOOD SECTOR

The 2015 United Nations Climate Change Conference (COP21) in Paris solidified the global commitment to act on climate change with the political agreement to limit warming to below 2°C, and if possible, 1.5°C above pre-industrial levels. The 'Assessing low-Carbon Transition' (ACT) initiative measures a company's alignment with a low-carbon world. The goal is to drive action by companies and encourage businesses to move to a well-below 2°C-aligned pathway in terms of their climate strategy, business model, investments, operations and GHG emissions management. The general approach of ACT is based on the Sectoral Decarbonisation Approach (SDA) developed by the Science-Based Targets initiative (SBTi) in order to compare a company's alignment with a below-2°C pathway, the application of which is described in the ACT Framework [1]. The ACT Agriculture & Agrifood Methodology aligns with other reporting frameworks where applicable (e.g., CDP, TCFD, EU Taxonomy).

The land sector is responsible for 10-12 Gt CO₂e/year of net GHG emissions – approximately a quarter of global GHG emissions [2]. Half of these are driven by agriculture, while the rest derive from land use, land-use change and forestry (LULUCF). The largest contributions from agriculture arise from enteric fermentation, manure from ruminant livestock production, crop-related fertilisation practices and soil GHG emissions. In addition, some 5% of emissions related to food production come after the farm gate, up to but not including retail [3]. Therefore, it is clear that to decarbonise the agriculture & agrifood sector, the largest GHG emissions reduction will need to be achieved at the agricultural production phase.

1.2. OBJECTIVE OF THE METHODOLOGY

The objective of the methodology is to set out a process which can be used to assess the low-carbon transition of companies in the agriculture & agrifood sector. Three subsectors of the food value chain are included within this single methodology: **agriculture**, **agrifood**, and **food & beverage services**. This methodology also contains a fourth weighting scheme for **integrated companies** which have activities in agricultural production and in food processing. Most companies with an activity in the food & beverage value chain will be included in one of these four categories and will be able to have their low-carbon transition assessed using this methodology. More details on the activities included in each segment are available in section 3 (Scope) below.

This methodology aims to focus on the main sources of emissions in the agriculture & agrifood sector, but also to take into account emissions sources where there is high potential for decarbonisation. Agricultural production is highlighted within the document as both the main source of emissions in the sector [2] as well as having a large mitigation potential, and this is reflected in the weighting scheme.

NOTE REGARDING THE TERMINOLOGY

The ACT Agriculture & Agrifood Methodology follows the principles and guidelines of the ACT Framework [1] which allows consistency between the sectoral methodologies. In some cases, module names such as "Material Investment" (Module 2) or "Sold Product Performance" (Module 4) are more relevant in other sectors (e.g., industrial sectors) and might not accurately describe the elements being assessed but were kept for the sake of consistency. The indicator rationales explain the elements being assessed in the context of the agriculture & agrifood sector.

2. Principles

The selection of principles to be used for the methodology development and implementation is explained in the general ACT Framework [1]. Table 2 recaps the ACT principles that were adhered to when developing the methodology.

[TABLE 2: 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 well-below 2°C maximum global warming and pursuing efforts to limit the temperature increase to 1.5°C (compared to pre-industrial levels).

CONSISTENCY - Whenever time series data is used, it should be comparable over time.

LONG-TERM ORIENTATION - 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.

3. Scope

3.1. SCOPE OF THE DOCUMENT

This document presents the ACT assessment methodology for the agriculture & agrifood sector. It includes the rationales, definitions, indicators and guidance for the sector-specific aspects of performance, narrative and trend scoring.

The methodology was developed in compliance with the ACT Guidance [4], which describes the governance and process of this development, as well as the required content for such documents.

It is intended to be used in conjunction with the ACT Framework [1], which describes the aspects of the methodology that are not sector-specific.

3.2. SCOPE OF THE AGRICULTURE & AGRIFOOD METHODOLOGY

This section on the scope of the ACT Agriculture & Agrifood Methodology specifies which type of company the methodology can assess. [1]

The ACT Agriculture & Agrifood Methodology aims to be applicable to most of the companies with activities along the food & beverage value chain. As the activities and challenges in the sector are diverse, four segments of companies that can use the methodology to assess their low-carbon transition were identified: companies producing agricultural products, companies processing food, companies with a food & beverage service activity (e.g., restaurants, catering), and integrated companies (i.e., companies with activities across both agriculture and agrifood).

Companies shall include all activities they are subcontracting within the agriculture & agrifood value chain when defining which segment they fall into. For example, if a company produces an agricultural commodity and subcontracts processing activities, it will be considered as covering both agricultural production and processing activities.

TABLE 3: FOUR SEGMENTS OF COMPANIES INCLUDED IN THE SCOPE OF THE ACT AGRICULTURE & AGRIFOOD METHODOLOGY

Segments	Agricultural producers (1)	Agrifood companies (2)	Integrated companies (3)	Food & beverage service companies (4)
Activities covered	Agricultural production	Processing and manufacture of agricultural products (including packaging)	Agricultural production and processing and manufacture of agricultural products (including packaging)	Food processing and sale for immediate consumption (e.g., restaurants, catering)

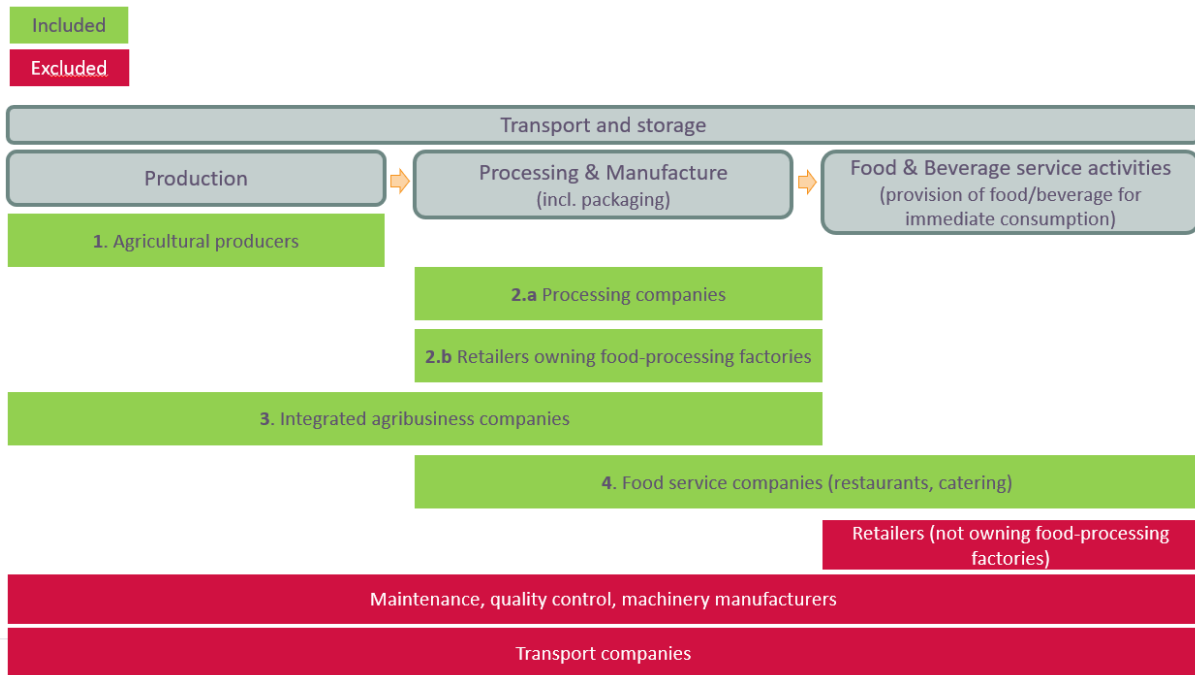


FIGURE 1: SCOPE OF THE ACT AGRICULTURE & AGRIFOOD METHODOLOGY

(1) AGRICULTURAL PRODUCERS

The agricultural producers segment includes **companies producing all agricultural products**, excluding activities related to forestry, hunting and trapping. The agricultural products include crop and animal husbandry, and fishing activities. The types of companies eligible for an ACT assessment using this ACT Agriculture & Agrifood Methodology are listed in Table 4.

Some agricultural producers include a small share of processing activities (e.g., post-harvest handling) but the majority of their activities remain in agricultural production. It also sometimes occurs that companies who mainly see themselves as processing companies or integrated companies have a GHG inventory with a high contribution from agricultural activities. In these cases, as long as emissions associated with processing activities are lower than 10% of total emissions, they should be assessed as agricultural producers only. Companies with emissions that are associated with processing activities that are higher than 10% of total emissions should be assessed as (3) integrated companies.

Non-producing agricultural cooperatives, which only have an activity in food processing, are assessed as (2) agrifood companies.

Agricultural companies producing agricultural products sold to companies operating in other sectors than the food value chain (such as biofuels, chemicals or cosmetics) shall be assessed using the ACT Agriculture methodology.

This segment includes crop producers of ruminant animal feed. 24% of global crop production is used for animal feed [5], and as a result, companies producing crops to be transformed into prepared feeds are expected to monitor and reduce downstream GHG emissions from the ruminant animals they are providing feed for. If more than 10% of total sold products (in kg) is used for ruminant animal feed, indicator 2.4 is activated.

TABLE 4 : AGRICULTURE ACTIVITIES INCLUDED IN SCOPE OF AGRICULTURAL PRODUCERS SEGMENT

Categories	NACE Group
Growing of non-perennial crops	01.1
Growing of perennial crops	01.2
Plant propagation	01.3
Animal production	01.4
Mixed farming	01.5
Support activities to agriculture and post-harvest crop activities	01.6
Fishing	03.1
Aquaculture	03.2

(2) AGRIFOOD COMPANIES

This segment includes any company with an **activity in food and/or beverage processing**, including when this activity is subcontracted. The types of companies eligible to be assessed as agrifood companies have activities listed in Table 5. Companies with emissions that are associated with agricultural production activities that are higher than 10% of total emissions should be assessed as (3) integrated companies.

Some agrifood producers may include a small share of agricultural production but the majority of their activities remain in processing. In these cases, as long as emissions associated with the agriculture production activities are lower than 10% of total emissions, they should be assessed as agrifood companies only.

This segment includes manufacturers of animal feed. 24% of global crop production is used for animal feed [5]. In particular, companies transforming crops into animal feeds are expected to monitor and reduce downstream GHG emissions from the ruminant animals they are providing feed for. If more than 10% of total sold products (in kg) is used for ruminant animal feed, indicator 2.4 is activated.

TABLE 5 : AGRIFOOD ACTIVITIES INCLUDED IN SCOPE OF AGRIFOOD SEGMENT

Categories	NACE Group
Processing and preserving of meat and production of meat products	10.1
Processing and preserving of fish, crustaceans and mollusks	10.2
Processing and preserving of fruits and vegetables	10.3
Manufacture of vegetable and animal oils and fats	10.4
Manufacture of dairy products	10.5
Manufacture of grain mill products, starches and starch products	10.6
Manufacture of bakery and farinaceous products	10.7

Manufacture of other food products	10.8
Manufacture of prepared animal feeds	10.9
Manufacture of beverages	11.0

(3) INTEGRATED COMPANIES

The integrated companies segment includes **companies that have an activity on both sides of the value chain**, i.e., both agriculture and agrifood. The ACT assessment for these companies will therefore be a combination of the methodology for the two segments, with similar indicators but different weightings. The proposed weighting scheme to be used is detailed in section 6.3.

Some agricultural producers include a small share of processing activities (e.g., post-harvest handling) but the majority of their activities remain in agricultural production. In these cases, as long as emissions associated with the processing activities are lower than 10% of total emissions, they should be assessed as (1) agricultural producers only.

If more than 10% of total sold products (in kg) is used for ruminant animal feed, indicator 2.4 is activated.

(4) FOOD & BEVERAGE SERVICE COMPANIES

Companies with an activity in food & beverage service (e.g., restaurants, catering) eligible for an ACT assessment must include at least one of the activities listed in Table 6. Food & beverage service companies **can include food processing or manufacture activities**.

No examples of food & beverage service companies with agricultural production activities were identified in the Technical Working Group. However, such companies should be assessed as (3) integrated companies.

TABLE 6 : FOOD & BEVERAGE SERVICE ACTIVITIES IN SCOPE OF FOOD & BEVERAGE SERVICE SEGMENT

Categories	NACE Group
Restaurants and mobile food service activities	56.1
Event catering and other food service activities	56.2
Beverage serving activities	56.3

COMPANIES EXCLUDED FROM THE SCOPE OF THE METHODOLOGY

The following companies are excluded from the scope of the ACT Agriculture & Agrifood Methodology, which means that they cannot be assessed using this ACT methodology:

- ◆ non-producing companies operating only in transport and storage,
- ◆ companies producing only inputs (e.g., seeds, fertilisers),
- ◆ pure biofuels producers,¹

¹ Pure biofuel producers should be assessed using the ACT Oil & Gas Methodology [11].

- ◆ maintenance, quality control and machinery manufacturers,
- ◆ companies selling only bottled water.

CASE OF FOOD RETAIL COMPANIES

Food retail companies are generally excluded from the scope of the Agriculture & Agrifood Methodology since the ACT Retail Methodology [6] is available and dedicated to this sector. Even though the Retail Methodology is not specifically dedicated to food products, it is designed to integrate the upstream emissions when they are significant, which is the case for food products.

However, if a retail company has activities in agricultural production and/or food processing, that portion of activity relevant to agriculture and/or agrifood can be assessed with the ACT Agriculture & Agrifood Methodology. The company's overall ACT score will be a mix of their ACT Agriculture & Agrifood and ACT Retail scores, following the guidance provided by the ACT Initiative [7].

4. Boundaries

The Boundaries section specifies which emissions sources are included in this methodology. [1]

→ NOTE

- ◆ Hereafter, the term “emissions” will refer to all GHG emissions (not just CO₂) which shall be measured in CO₂ equivalent (CO₂e).
- ◆ The gases considered in the Agriculture & Agrifood Methodology are: CO₂, CH₄ and N₂O.
- ◆ Measuring emissions: ACT provides guidelines concerning the scope and boundaries of the sector covered by this methodology to determine which type of GHG emissions sources are included or excluded. However, it does not provide tools and databases to measure and calculate these emissions. In particular, the choice of emissions factor does not fall under the responsibility of the ACT methodology. ACT recommends using company-specific emissions factors, or if unavailable, standard emissions factors recognized in the sector. As such, some recommendations but not requirements may appear in this document.

EMISSIONS BOUNDARIES FOR THE AGRICULTURE & AGRIFOOD SECTOR

Production activities at the farm level, including the associated land use, is by far the most emissive step along the overall food & beverage value chain and accounts for 82% of emissions, as illustrated in Figure 2 below. It includes emissions from livestock and fisheries, crop production and land use. Activities along the supply chain, including packaging, transport, food processing and retail account for 18% of emissions in the sector and while this is much smaller than emissions from the farm level, it remains a non-negligible source of emissions and is therefore included in the methodology (except for retail activities). The main share of emissions from agricultural production will still be reflected in the assessment of a pure agrifood company (i.e., company with processing activities) through the inclusion of upstream scope 3 emissions and their allocated weighting.

The ACT Agriculture & Agrifood Methodology includes a large majority of the emissions attributable to the production of food at the farm and food industry levels: land use, deforestation or reforestation, farm emissions, animal feed and supply chain. More specifically, the farm emissions include emissions sources linked to land management, soil fertilisation, methane from rice production, manure management, ruminant enteric fermentation, ruminant wastes on pasture, and energy. Gases other than CO₂ are responsible for a significant share of emissions in the agriculture sector. The most significant of these, methane (CH₄) and nitrous oxide (N₂O) [8], are included in the ACT assessment. As a result, emissions totals must be expressed as CO₂ equivalent (CO₂e).

Other emissions from sources such as food transportation, storage and refrigeration may occur within the same company and are considered in the assessment. With global annual emissions estimated at 4.4 Gt CO₂e [9], food wastage is another considerable source of emissions along the food value chain. Therefore, the ACT assessment evaluates company actions to reduce food waste through both a quantitative indicator in the Material Investments module and a qualitative indicator in the Management module.

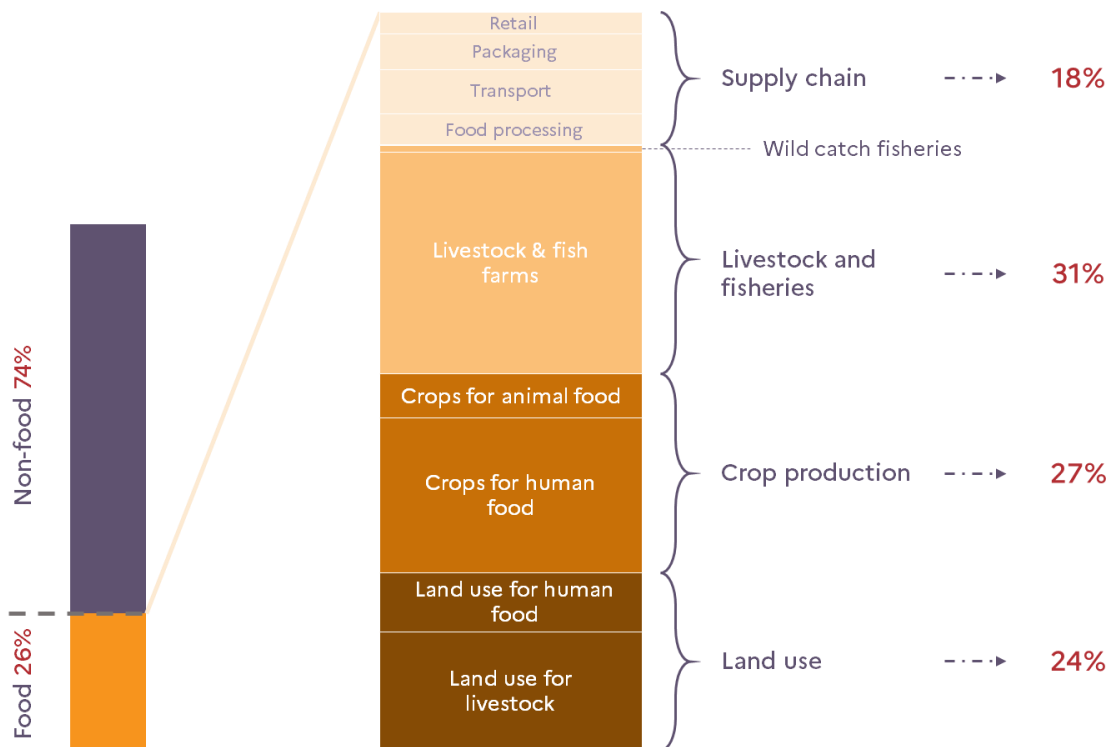


FIGURE 2: GLOBAL GREENHOUSE GAS EMISSIONS FROM FOOD PRODUCTION (SOURCE: OUR WORLD IN DATA, POORE & NEMECEK - 2019)

For animal food producers: companies producing animal food **cannot** use the co-product LCA approach consisting of downgrading the carbon impact by a given factor.

NOTE REGARDING THE USE OF SCOPES

Boundaries in an ACT methodology refer to the identification of the sources of emissions to be considered in an ACT assessment. As companies may cover very different activities along the agriculture & agrifood value chain, the approach for defining the boundaries is to list the emissions sources included – and excluded, where relevant – rather than using scopes 1, 2 and 3 as defined in the GHG Protocol.² While the importance of aligning with international standards wherever possible is recognised, using the scopes approach was not specific enough for this methodology because nearly the entire value chain is considered, so an emissions source can vary between scope 1 and scope 3 depending on which segment is being considered (e.g., emissions from rice production will be considered scope 1 for an agricultural producer but scope 3 for a processing company). This approach of referring directly to emissions sources will bring homogeneity among the ACT assessments of the same segment and will allow comparability between companies' assessments and results. It also ensures alignment with the decarbonisation benchmarks defined for the sector as the same emissions sources are included.

² Unrelated to the terminology used, companies are encouraged to **measure emissions** from the emissions sources detailed in the ACT Agriculture & Agrifood Methodology **using internationally recognized standards**.

Companies may not be able to report all the emissions listed below. It is up to the assessor to use a proxy to estimate the missing emissions so as to define the emissions coverage.

Table 7 summarizes the emissions included in each subsector.

Remark; the emissions sources listed below may refer to several benchmarks that would apply differently depending on the companies profile. In particular, the AFOLU emissions sources table refers to the emissions boundaries in the FLAG SBTi pathways [10], and the post-farm emissions sources table refers to the emissions to be included for the Agrifood, Integrated and Food & Beverage services companies. The use of companies benchmarks is detailed in Section 6.1.

The emissions sources **in red** only apply to the sector approach and those **in blue** only apply to the relevant commodity approach. Certain emissions sources marked in blue, like CH₄ emissions from flooded soil, are available for the relevant commodity approach. Certain emissions sources are both available for the sector approach and for one or several specific commodities approaches, and are marked in **green**.

TABLE 7: SUMMARY OF EMISSIONS INCLUDED IN THE METHODOLOGY PER SEGMENT OF COMPANY

AFOLU emissions sources	
Included	Excluded
Land-use change	
<ul style="list-style-type: none"> ◆ CO2 emissions from LUC associated with deforestation and forest degradation, including conversion of natural forest to plantation following GHG Protocol definitions ◆ CO2 emissions from LUC associated with conversion of coastal wetlands (mangroves, seagrass and marshes), conversion/drainage and burning of peatlands, and conversion of savannas and natural grasslands 	
Land management	
<ul style="list-style-type: none"> ◆ CH₄ emissions from manure management ◆ Enteric CH₄ emissions ◆ CH₄ emissions from flooded soil (lowland rice) ◆ Direct and indirect N₂O emissions from manure management ◆ Fertilizer: direct N₂O emissions from soil due to fertilizer application ◆ Fertilizer: indirect N₂O emissions from leaching, runoff and volatilization ◆ N₂O emissions from crop residue ◆ CH₄ and N₂O emissions from agricultural waste burning ◆ CO₂ emissions from machinery used on-farm ◆ CO₂ emissions from transport of biomass ◆ CO₂ and N₂O emissions from fertilizer production ◆ Forest harvest and management 	
Carbon removals & storage	
<ul style="list-style-type: none"> ◆ Forest restoration that occurs on working lands only (e.g., silvopasture) ◆ Improved forest management (timber and wood fiber) ◆ Agroforestry (carbon sequestration from integration of agroforestry into agricultural and grazing lands) ◆ Enhancing soil organic carbon 	

Post-farm emissions sources	
Included	Excluded
Processing	
<ul style="list-style-type: none"> ◆ Energy (CO₂) ◆ Refrigeration (HFCs) 	<ul style="list-style-type: none"> ◆ Wood burning (CH₄, N₂O) ◆ Wastewater (CH₄, N₂O) ◆ Incineration (CH₄, N₂O) ◆ Transport [freight] (CO₂) ◆ Food loss (CO₂e)
Packaging	
	<ul style="list-style-type: none"> ◆ Consumer packaging materials (CO₂e) ◆ Consumer packaging transport (CO₂e) ◆ End of life disposal (whether it is reused, recycled, or disposed) (CO₂e)
Retail	
	<ul style="list-style-type: none"> ◆ Energy use (CO₂) ◆ Food waste (CO₂e)
Consumer use	
	<ul style="list-style-type: none"> • Refrigeration (HFCs) • Cooking (CO₂) • Food waste (CH₄)
Other	
	<ul style="list-style-type: none"> • Biofuel combustion • Agricultural products used in chemical production

RATIONALE AND GUIDANCE ON EMISSION BOUNDARIES

The food sector represents alone more than a quarter of total global GHG emissions [2]. Addressing the low-carbon transition for this sector is particularly complex given that it is heterogeneous. There is no single solution to tackling this issue, and it is one of the only high-impact sectors to include carbon sequestration through land-use activities.

The proposed boundaries are combining the FLAG pathways [10] boundaries and the emissions sources related to processing and packaging.

As presented above, the AFOLU emissions are key for the food sector and represent the main emission source and decarbonisation lever. Their integration in this methodology is key to assess the companies' transition to a low-carbon economy.

Land use change: this emissions source encompasses the carbon stock loss due to the conversion of a land use, from one category to another. For example, conversion of natural forest to plantation can result in significant CO₂ emissions because of the high amount of carbon stored into the initial forest that is consequently lost.

Land management: this step includes all the biogenic emissions resulting from land management, excluding the above-mentioned land use change emissions. They also integrate machinery and transport of biomass emissions. This emissions source is particularly key as it encompasses the emissions related to enteric fermentation and manure management, which are among the highest emissions sources for the food sector.

Carbon removal and storage: biogenic removals include biomass (above and below ground), dead organic matter (dead wood and litter) and soil organic matter. They can be included if they occur on the company's working land. The removals must be reported separately from the emissions, and can be included in the AFOLU target if the GHG Protocol Land Sector and Removals Guidance requirements are met.

RATIONALE FOR EXCLUDING SPECIFIC EMISSIONS SOURCES

Consumer use emissions: Emissions from the consumer use of products (e.g., energy use for cooking and refrigeration, emissions from food waste) are excluded from the quantitative indicators of the Agriculture & Agrifood Methodology in order to focus on the food production and processing aspects. The influence that companies have over the behaviour of their consumers is included and assessed qualitatively in the 'Client engagement' module.

Combustion of biofuels: Downstream emissions from the use of biofuels, including second generation biofuels, are covered under the ACT Oil & Gas Methodology [11] and are excluded from the quantitative indicators of the Agriculture & Agrifood Methodology because agricultural producers have little influence and levers for action regarding the use of their agricultural products. The influence that agricultural producers have over their choice of clients is included and assessed qualitatively in the 'Client engagement' module.

Chemical production: Downstream emissions from the production of chemicals using agricultural products are excluded from the quantitative indicators of the Agriculture & Agrifood Methodology because agricultural producers have little influence and levers for action regarding the use of their agricultural products. The influence that agricultural producers have over their choice of clients is included and assessed qualitatively in the 'Client engagement' module.

Packaging: emissions related to packaging are mostly falling into Scope 3 emissions for Agrifood, Integrated and Food & Beverage companies. At sector level, packaging represents 5% of total emissions of the food sector [3], but can vary from 3 to 25% of total emissions depending on the company [12]. These Scope 3

emissions are deemed negligible compared to the AFOLU Scope 3 emissions and are therefore excluded, even though they can be material for some companies.

THE SPECIFIC CASE OF NEGATIVE EMISSIONS

The ACT Agriculture & Agrifood Methodology allows the inclusion of negative emissions from carbon sequestration, on the company's **own land**, in the company's reported emissions. This includes carbon sequestration from reforestation and agricultural projects on the company's own land. This is aligned with the decarbonisation scenario of the Agriculture & Agrifood Methodology. It also considers carbon sequestration along its value chain (i.e., on suppliers' land), if it results from company interventions to increase carbon sequestration.

Carbon removals from carbon offsetting projects on land external to the company shall be excluded from the emissions totals reported by companies. Carbon offsetting projects will be considered in the ACT Narrative scoring.

Companies are encouraged to use the Greenhouse Gas Protocol Standard Land Sector and Removals Guidance³ to account for removals in the Scope 1, 2 and 3 (still in draft version) [13]. GHG removals shall therefore respect the GHG Protocol quality criteria.

³ <https://ghgprotocol.org/land-sector-and-removals-guidance>

5. Construction of the data infrastructure

5.1. DATA SOURCES

In order to carry out a company-level assessment, many data points need to be gathered which can be sourced from various locations. Principally, ACT relies on the voluntary provision of data by the participating companies. The data provided by the companies may be of different types. Alongside this, however, external data sources are consulted where this would streamline the process, ensure fairness, and provide additional value for verification and validation.

The ACT assessment uses the following data sources:

TABLE 8: ACT ASSESSMENT DATA SOURCES

DATA SOURCE	MAIN USE
Company data from survey	Data source for calculating indicators.
Company data from models and simulations	Data source for calculating indicators.
Company data from life cycle assessment	Data source for calculating indicators.
Company data from econometric data	Data source for calculating indicators.
Contextual and financial information database sources (E.g. Online and press news, RepRisk)	Contextual and financial information on company and events related to the company that could impact the ACT assessment
CDP questionnaire (where cited in this document, in the data requirements, the questions refer to the 2023 question numbers. E.g., [C1.2a], [C4.1]). It is important to note that in some cases, CDP data may not be directly transferable to ACT.	Data regarding company emissions, targets, management, business model, etc

Where indicators use third-party data sources as the default option, reporting companies may provide their own data if they can provide a justification for doing so, information about its verification status, any assumptions used and the calculation methodology.

5.2. COMPANY DATA REQUEST

The data request will be presented to companies in a comprehensive data collection format. The indicators were designed in collaboration with agriculture & agrifood companies in order to ensure that necessary data would be mostly available. Where current data availability is limited, indicators were designed to encourage companies to set-up a collection process for the relevant information.

Companies are encouraged to use existing standards and references to build their reporting/collection process, such as the CDP Climate Change and Forest Questionnaires, to make data compiling and processing easier.

Companies may use external databases to estimate their GHG emissions at the different steps of the value chain. However, it is up to the assessor to judge the relevance of the data reported regarding the company’s activity through two ways: the emissions coverage for the quantitative indicators and the data quality in the narrative score.

5.3. PERFORMANCE INDICATORS

MATURITY MATRIX:

Some modules are scored using a maturity matrix, as the assessment is qualitative. The maturity matrix contains five levels of evaluation that are associated with scores given to the company for each indicator. For some indicators, all 5 levels of the matrix are used to score the company, while for other indicators only some levels are used, in a simpler and less granular approach (e.g. levels 1, 3 and 5 only). Some of the indicators might be divided into sub-dimensions that are evaluated individually before the score is aggregated to obtain the overall indicator score.

Evaluation level	Basic	Standard	Advanced	Next practice	Low-carbon aligned
Score	0	0.25	0.5	0.75	1

MODULES AND INDICATORS:

Table 9 illustrates the performance indicators used by the ACT Agriculture & Agrifood Methodology.

TABLE 9: PERFORMANCE INDICATORS OVERVIEW

AGRICULTURE, AGRIFOOD AND FOOD & BEVERAGE SERVICES					
	PAST	PRESENT	FUTURE		
CORE BUSINESS PERFORMANCE	1. TARGETS	AG 1.4 Achievement of past and previous targets		AG 1.1 Alignment of AFOLU emissions reduction targets	
				AG 1.2 Alignment of post-farm scope 1+2 emissions reduction targets	
				AG 1.3 Time horizon of targets	
	2. MATERIAL INVESTMENTS	AG 2.1 Trend in past emissions		AG 2.2 Trend in future AFOLU emissions	
		AG 2.3 Food wastage reduction			
		AG 2.4 Low-carbon CAPEX			
		AG 2.5 Action on deforestation			
		AG 2.6 Increase in the share of low-carbon products			
		AG 2.7 Implementation of better farming practices			
	3. INTANGIBLE INVESTMENTS	AG 3.1 Share of R&D in mitigation technologies			
		AG 3.2 Training for farmers and technical teams			
		AG 3.3 Innovative low-carbon food products			
	4. SOLD PRODUCT PERFORMANCE	AG 4.1 Trend in past upstream AFOLU emissions		AG 4.2 Trend in future upstream AFOLU emissions	
		AG 4.3 Downstream emissions from the ruminant animal feed			
		AG 4.4 Action on deforestation			
		AG 4.5 Increase in the share of low-carbon products			
	5. MANAGEMENT			AG 5.1 Oversight of climate change issues	AG 5.3 Low-carbon transition plan
				AG 5.2 Climate change oversight capability	
				AG 5.4 Climate change management incentives	
				AG 5.5 Climate change scenario testing	
AG 5.6 Waste reduction strategy					

INVESTMENT

CORE BUSINESS PERFORMANCE

INFLUENCE	6. SUPPLIERS	AG 6.1 Strategy to influence suppliers to reduce their GHG emissions	AG 6.2 Activities to influence suppliers to reduce their GHG emissions	
	7. CLIENTS	AG 7.1 Strategy to influence clients to reduce their emissions	AG 7.2 Activities to influence clients to reduce their emissions	
	8. POLICY ENGAGEMENT		AG 8.1 Company policy on engagement with associations, alliances, coalitions or thinktanks	
			AG 8.2 Associations, alliances, coalitions and thinktanks supported do not have climate-negative activities or positions	
			AG 8.3 Position on significant climate policies	
AG 8.4 Collaboration with local public authorities and NGOs				
9. BUSINESS MODEL		AG 9.1 Business activities shifting supply from highly emissive to low-carbon products and production		
		AG 9.2 Business activities shifting to better production practices		

MODULE 1: TARGETS

• AG 1.1 ALIGNMENT OF AFOLU EMISSIONS REDUCTION TARGETS

DESCRIPTION & REQUIREMENTS	AG 1.1 ALIGNMENT OF AFOLU EMISSIONS REDUCTION TARGETS
SHORT DESCRIPTION OF INDICATOR	<p>A measure of the alignment of the company's near- and long-term AFOLU emissions reduction targets with its decarbonisation pathway. The indicator will compare the trend of the company's target pathway to the trend of the company's benchmark and thus identify the gap between both pathways at the target year, which is expressed as the company's commitment gap.</p>
DATA REQUIREMENTS	<p>The relevant data for this indicator are:</p> <ul style="list-style-type: none">◆ Absolute emissions reduction targets for AFOLU emissions (current and future) (global target or for commodities not covered by an intensity target): target year, absolute emissions in reporting year and target year, coverage; optional: base year, emissions at base year, activity at base year / reporting year / target year, <p>AND/OR</p> <ul style="list-style-type: none">◆ Emissions intensity reduction targets for one or more of the 9 commodities included in the FLAG commodities pathways (current and future): target year, emissions intensity + production per commodity in reporting year and target year, coverage ; optional: base year, emissions intensity + production per commodity at base year <p>for emissions falling within the AFOLU emissions falling within the ACT boundaries described in Section 0. .</p> <p>Depending on the company, these targets may concern scope 1+2 (agriculture) or scope 3 emissions (agrifood, food & beverage services)</p> <p>CDP Questionnaire 2023 mapping to this indicator:</p> <ul style="list-style-type: none">◆ C4.1a (absolute targets)◆ C4.1b (intensity targets) <p>CDP 2024 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none">◆ 7.53.1 (absolute targets)◆ 7.53.2 (intensity targets)

External sources of data used for the analysis of this indicator are:

- ◆ Forest, Land and Agriculture Science-Based Target-Setting Guidance [10]

The benchmark indicators involved are the following (see Section 6.1 for more information on benchmark calculation):

TARGET TYPE	PARAMETER	METRIC	BENCHMARK
Global target (absolute contraction)	<i>CB</i>	% of absolute emissions	FLAG sector approach (absolute contraction approach, near- and long-term)
Commodity approach (physical intensity convergence)		kg CO ₂ e/kg product	FLAG commodity approach
Other products (absolute contraction)		% of absolute emissions	FLAG sector approach (absolute contraction approach, near- and long-term)

HOW THE ANALYSIS WILL BE DONE

The analysis has two dimensions.

- ◆ Dimension 1 assesses the alignment of the company's near-term targets. Any target where the target year \leq reporting year + 10 can be included in this dimension.
- ◆ Dimension 2 assesses the alignment of a company's long-term targets. Any target for which the target year $>$ reporting year + 10 can be included in this dimension.

The scoring rationale and calculation are the same for both dimensions.

This sector specificity lies in the option for the company to be scored through one of the two following ways:

- ◆ Using a unique and global target in absolute emissions reduction, scored against the FLAG sector approach. In this case, if the company has also set commodity targets for its main commodities, it will be accounted for in the narrative score. This is the preferred option for agrifood and food & beverage services companies.
- ◆ Using a mix of several targets, where each target will be assessed separately against the appropriate FLAG benchmark:

- commodity targets (intensity convergence) for commodities available in the FLAG benchmarks and
- one absolute target for the other products, scored against the FLAG sector approach.

Between both cases (i.e. if the company has reported both global and commodity targets), the preferred option to score the indicator is the first one, using the global target.

CALCULATION OF SCORE:

The analysis is based on a trend ratio between the company's AFOLU emissions reduction target and the company benchmark. Trends are calculated between reporting year and the target year.

The company's target pathway is the decarbonization over time, defined by the company's AFOLU emissions reduction target. To calculate it, a straight line is drawn between the starting point of the analysis and the company's target endpoint.

The company benchmark pathway is the company-specific AFOLU emissions low-carbon benchmark pathway. See Section 6.1 for details on the calculation of this pathway.

The company achieves the maximum score if the company's target pathway and the company benchmark pathway are aligned (commitment gap = 0) and also if the targets are covering most of the company's AFOLU emissions at reporting year.

Depending on the characteristics of the benchmark, the calculations are done using emission intensity or absolute emissions. In order to make the following more readable, only the calculation in emission intensity is described; the calculation with absolute emissions is similar.

1) Trend ratio

For each target, the trend ratio is calculated by dividing the company engagement of reduction by the specific benchmark emissions intensity reduction between the reporting year and the target year:

$$\text{Trend ratio} = \frac{\text{Company's target trend}}{\text{Benchmark pathway trend}} = \frac{EI_C(TY) - EI_C(RY)}{EI_B(TY) - EI_B(RY)}$$

where

- ◆ $EI_C(TY)$ is the company AFOLU emissions intensity at target year,
- ◆ $EI_C(RY)$ is the company AFOLU emissions intensity at reporting year,

- ◆ $EI_B(TY)$ is the company's benchmark AFOLU emissions intensity at target year
- ◆ $EI_B(RY)$ is the company's benchmark AFOLU emissions intensity at reporting year.

The commitment gap of the company is equal to (1- trend ratio). Thus, when the company's target pathway is aligned on the company's benchmark, the trend ratio is equal to 1 and the commitment gap is 0 (see next figure).

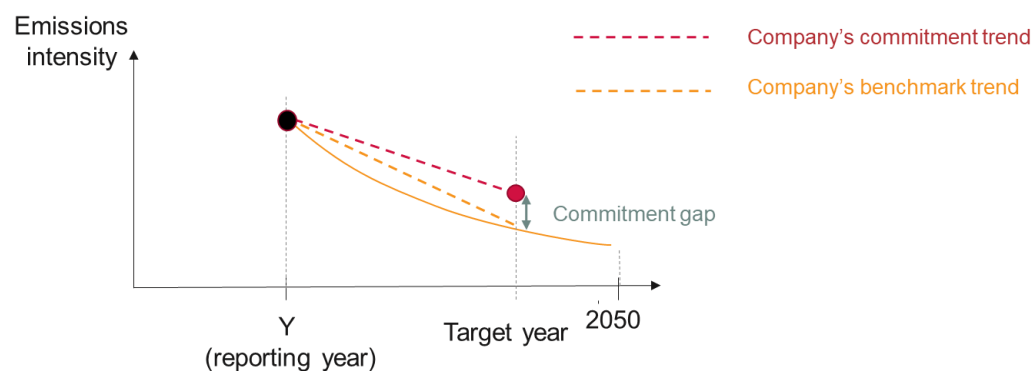


FIGURE 3: TREND RATIO AND COMMITMENT GAP

2) Score per target

The score assigned to the target is calculated as follows:

Conditions	Score
<p>$Company's\ target\ trend > 0$</p> <p>Increase in company emissions intensity</p>	0%
<p>$Company's\ target\ trend \leq 0$</p> <p>$0 \leq trend\ ratio \leq 1$</p>	$Trend\ ratio \times 100\%$

Decrease in company emissions intensity but company's commitment does not go beyond the company's benchmark ambition	
<i>Company's target trend < 0</i>	100%
<i>trend ratio > 1</i>	
Decrease in company emissions intensity and company's commitment equals or exceeds the company's benchmark ambition	

If part of the emissions included in the company's targets are excluded from the ACT boundaries:

- ◆ If these emissions represent less than 10% of the total emissions accounted for in the targets, the calculation is done without any modification.
- ◆ If these emissions represent 10% or more of the emissions of the targets, they are removed to calculate the indicator.

3) Aggregation of scores

The aggregation is conducted following the process below, for each dimension, within the corresponding timescale:

- ◆ Aggregation of scores for targets on the same sources of emissions and scope

E.g. global target in 2040 and 2050

The score is the average of the different target scores.

- ◆ Aggregation of scores for targets on different sources of emissions and scope

E.g. targets for corn, maize and other products in 2030; for an integrated company, targets on direct AFOLU emissions for wheat and scope 3 AFOLU emissions for wheat, in 2030

The consolidation of the scores assigned to each source of emissions will be based on the share of emissions covered by the targets.

Considering all the assessed targets, if the global target coverage of company's AFOLU emissions at reporting year (C_{RY}) represents less than 95%, then the score is adjusted downwards in the proportion of the percentage coverage.

$$\text{Corrected Score} = \text{Score} \times \text{Target coverage of total company emissions } (C_{RY})$$

4) Final score

AGGREGATE SCORE: DIMENSION 1: 50%, DIMENSION 2: 50%

RATIONALE

AG 1.1 ALIGNMENT OF AFOLU EMISSIONS REDUCTION TARGETS

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Targets are included in the ACT assessment for the following reasons:

- ◆ Targets are an indicator of corporate commitment to reducing emissions and are a meaningful metric of the company's internal planning towards low-carbon transition.
- ◆ Companies can play a significant role in decreasing the emissions from the food sector. Target setting is therefore a very powerful tool to increase control over these emissions and drive their reduction.
- ◆ Targets are one of the few metrics that can predict a company's long-term plan beyond that which can be projected in the short-term, satisfying ACT's need for indicators that can provide information on the long-term future of a company.

SCORING RATIONALE:

Targets are quantitatively interpreted and directly compared to the company's benchmark (see how is built this benchmark in section 6.1).

Comparing the trends gives a direct measure of the commitment gap of the company. It was chosen for its relative simplicity in interpretation and powerful message.

The indicator is split into two dimensions to account for the importance of a company having targets which are aligned not just in the long-term but also in the near-term. The Science Based Targets initiative's Net Zero Standard requires companies to set both near-term and long-term science-based targets which are in line with 1.5-degree pathways. The justification for having both near- and long-term targets is explained in the Net Zero Standard: "Near-term targets galvanize the action required for significant emissions reductions to be achieved by around 2030. Near-term emissions reductions are critical to not exceeding the global emissions budget and are not interchangeable with long-term targets. [...] Long-term targets drive economy-wide alignment and long-term business planning to reach the level of global emissions reductions needed to meet climate goals based on science [14]." The recent report by the United Nations Secretary-General's High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities (HLEG) also recommends setting both near-term and long-term targets [15].

The preferred scoring methodology is the absolute contraction approach for the global target as it refers to the FLAG sector approach, which encompasses the challenges related to diet shifts and food losses. While the commodity benchmarks, expressed as emissions intensity,

focus on decreasing GHG emissions for a given amount of product, they cannot account for the need to shift from one product to another. Yet, a major decarbonization lever for the food sector is related to diet shifts, especially decreasing the consumption of animal-based proteins and switch to plant-based proteins. For these reasons, the assessment of the company's AFOLU emissions target shall be prioritized at the global level.

For Agrifood and Food & Beverage Services companies, this indicator is only targeting Scope 3 AFOLU emissions and does not cover other Scope 3 emissions (transport, processing, storage, retail, etc.). These emissions are excluded to focus on the AFOLU emissions, which constitute the main decarbonisation lever for this sector. The companies are nevertheless encouraged to set other scope 3 targets. Integrated companies may report two different FLAG targets, one for the Scope 1 emissions and another one for the Scope 3 emissions. In this case, the two targets will be scored independently in this indicator and the final score will be a weighted average of the two scores depending on the share of GHG emissions of each scope.

• **AG 1.2 ALIGNMENT OF POST-FARM SCOPE 1+2 EMISSIONS REDUCTION TARGETS**

DESCRIPTION & REQUIREMENTS	AG 1.2 ALIGNMENT OF POST-FARM SCOPE 1+2 EMISSIONS REDUCTION TARGETS
SHORT DESCRIPTION OF INDICATOR	<p>A measure of the alignment of the company's near- and long-term Scope 1+2 (excluding AFOLU) emissions reduction targets with its decarbonisation pathway. The indicator will compare the trend of the company's target pathway to the trend of the company's benchmark and thus identify the gap between both pathways at the target year. The emissions encompassed in this indicator are those falling in the post-farm emissions in the ACT boundaries and in the Scope 1+2 emissions of the company assessed.</p> <p>This indicator only applies to the agrifood, integrated and food & beverage services segments.</p>
DATA REQUIREMENTS	<p>The relevant data for this indicator are:</p> <ul style="list-style-type: none"> ◆ Absolute emissions reduction targets for post-farm scope 1+2 emissions (current and future): target year, absolute emissions in reporting year and target year, coverage; optional: base year, emissions at base year, activity at base year / reporting year / target year <p>CDP Questionnaire 2023 mapping to this indicator:</p> <ul style="list-style-type: none"> ◆ C4.1a (absolute targets) <p>CDP 2024 Questionnaire mapping to this indicator:</p>

- ◆ 7.53.1 (absolute targets)

External sources of data used for the analysis of this indicator are:

- ◆ SBTi (ACA cross sector pathway) [16] [17]
- ◆ FoodDrink Europe (for Agrifood companies based in Europe) [18]

TARGET TYPE	PARAMETER	METRIC	BENCHMARK
Scope 1+2 emissions target – ACA target	CB	% of absolute emissions	SBT ACA Cross sector pathway
Scope 1+2 emissions target – ACA target For Agrifood companies in Europe only	CB	% of absolute emissions	FoodDrink Europe [18]

HOW THE ANALYSIS WILL BE DONE

The analysis has two dimensions.

- ◆ Dimension 1 assesses the alignment of the company’s near-term targets. Any target where the target year \leq reporting year + 10 can be included in this dimension.
- ◆ Dimension 2 assesses the alignment of a company’s long-term targets. Any target for which the target year $>$ reporting year + 10 can be included in this dimension.
- ◆ The scoring rationale and calculation are the same for both dimensions.

This target shall be assessed as followed:

- ◆ For Agrifood companies based in Europe and for which the target is assessed against the FoodDrink Europe benchmark.
- ◆ For Integrated and Food & Beverage Services companies, and for Agrifood companies based outside Europe, the ACA approach shall be used.

CALCULATION OF SCORE:

The analysis is based on a trend ratio between the company's post-farm Scope 1+2 emissions reduction target and the company benchmark. Trends are calculated between reporting year and the target year.

The company's target pathway is the decarbonization over time, defined by the company's post-farm Scope 1+2 emissions reduction target. To calculate it, a straight line is drawn between the starting point of the analysis and the company's target endpoint.

The company benchmark pathway is the company-specific post-farm Scope 1+2 emissions low-carbon benchmark pathway. See Section 6.1 for details on the calculation of this pathway.

The company achieves the maximum score if the company's target pathway and the company benchmark pathway are aligned (commitment gap = 0) and also if the targets are covering most of the company's post-farm Scope 1+2 emissions at reporting year.

The calculations are done using absolute emissions for companies.

1) Trend ratio

The trend ratio is calculated by dividing the company engagement of reduction by the specific benchmark emissions reduction between the reporting year and the target year:

$$\text{Trend ratio} = \frac{\text{Company's target trend}}{\text{Benchmark pathway trend}} = \frac{ABS_C(TY) - ABS_C(RY)}{ABS_B(TY) - ABS_B(RY)}$$

Where

- ◆ $ABS_C(TY)$ is the company Scope 1+2 absolute emissions at target year,
- ◆ $ABS_C(RY)$ is the company Scope 1+2 absolute emissions at reporting year,
- ◆ $ABS_B(TY)$ is the company's benchmark Scope 1+2 absolute emissions at target year,
- ◆ $ABS_B(RY)$ is the company's benchmark Scope 1+2 absolute emissions at reporting year.

The commitment gap of the company is equal to (1- trend ratio). Thus, when the company's target pathway is aligned on the company's benchmark, the trend ratio is equal to 1 and the commitment gap is 0 (see next figure).

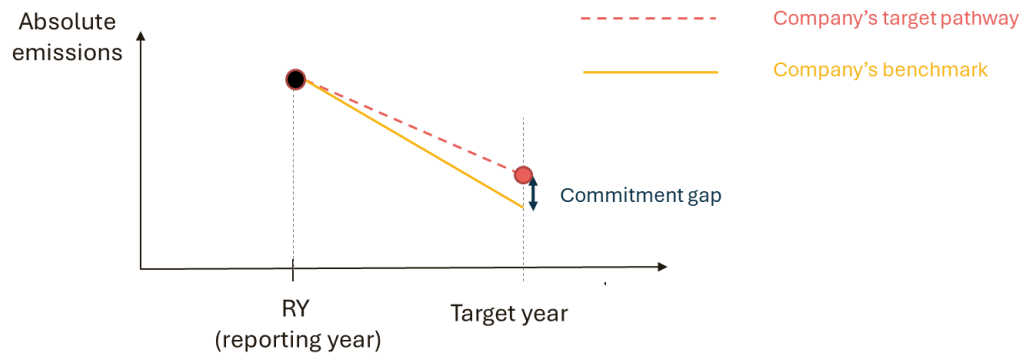


FIGURE 4: TREND RATIO AND COMMITMENT GAP

2) Score per target

The score assigned to the target is calculated as follows:

Conditions	Score
<p><i>Company's target trend</i> > 0</p> <p>Increase in company emissions</p>	0%
<p><i>Company's target trend</i> ≤ 0</p> <p>$0 \leq \textit{trend ratio} \leq 1$</p> <p>Decrease in company emissions but company's commitment does not go beyond the company's benchmark ambition</p>	<i>Trend ratio</i> × 100%
<p><i>Company's target trend</i> < 0</p> <p><i>trend ratio</i> > 1</p> <p>Decrease in company emissions and company's commitment equals or exceeds the company's benchmark ambition</p>	100%

If part of the emissions included in the company's targets are excluded from the ACT boundaries:

- ◆ If these emissions represent less than 10% of the total emissions accounted for in the targets, the calculation is done without any modification.
- ◆ If these emissions represent 10% or more of the emissions of the targets, they are removed to calculate the indicator.

3) Aggregation of scores

For each dimension, within the corresponding timescale, the score is the average of the different target scores.

Targets that do not cover > 95% of the company's activity-related emissions are not preferred in the calculations. If only these types of targets are available, then the score is adjusted downwards in the proportion of the percentage coverage.

- ◆ If the target coverage of total company emissions at reporting year (C_{Yr}) represents less than 95%, the final score is equal to:

$$\text{Final Score} = \text{Score} \times \text{Target coverage of total company emissions } (C_{Yr})$$

4) Final score

AGGREGATE SCORE: DIMENSION 1: 50%, DIMENSION 2: 50%

RATIONALE

AG 1.2 ALIGNMENT OF POST-FARM SCOPE 1+2 EMISSIONS REDUCTION TARGETS

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Targets are included in the ACT assessment for the following reasons:

- ◆ Targets are an indicator of corporate commitment to reducing emissions and are a meaningful metric of the company's internal planning towards low-carbon transition.
- ◆ Companies can play a significant role in decreasing the emissions from the food sector. Target setting is therefore a very powerful tool to increase control over these emissions and drive their reduction.
- ◆ Targets are one of the few metrics that can predict a company's long-term plan beyond that which can be projected in the short-term, satisfying ACT's need for indicators that can provide information on the long-term future of a company.

SCORING RATIONALE:

Targets are quantitatively interpreted and directly compared to the company's benchmark (see how the benchmark is built in section 6.1).

Comparing the trends gives a direct measure of the commitment gap of the company. It was chosen for its relative simplicity in interpretation and powerful message.

The indicator is split into two dimensions to account for the importance of a company having targets which are aligned not just in the long-term but also in the near-term. The Science Based Targets initiative's Net Zero Standard requires companies to set both near-term and long-term science-based targets which are in line with 1.5-degree pathways. The justification for having both near- and long-term targets is explained in the Net Zero Standard: "Near-term targets galvanize the action required for significant emissions reductions to be achieved by around 2030. Near-term emissions reductions are critical to not exceeding the global emissions budget and are not interchangeable with long-term targets. [...] Long-term targets drive economy-wide alignment and long-term business planning to reach the level of global emissions reductions needed to meet climate goals based on science [14]." The recent report by the United Nations Secretary-General's High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities (HLEG) also recommends setting both near-term and long-term targets [15].

- **AG 1.3 TIME HORIZON OF TARGETS**

DESCRIPTION & REQUIREMENTS

AG 1.3 TIME HORIZON OF ENDPOINT AND INTERMEDIATE TARGETS

SHORT DESCRIPTION OF INDICATOR

A measure of the time horizons of company targets. The ideal set of targets is forward-looking enough to include a long-term horizon to reflect the company's strategy to significantly reduce its emissions, but also includes short- and mid-term targets that incentivise action in the present.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- ◆ Absolute emissions reduction targets (current and future, including intermediate targets): target year
- ◆ Emissions intensity reduction targets (current and future, including intermediate targets): target year

CDP Questionnaire 2023 mapping to this indicator:

- ◆ C4.1a (absolute targets)
- ◆ C4.1b (intensity targets)

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 7.53.1 (absolute targets)

◆ 7.53.2 (intensity targets)

**HOW THE ANALYSIS
WILL BE DONE**

The analysis has two dimensions:

- 1 A comparison of: (a) the longest time horizon of the company's targets, and (b) a long-term point fixed by the ACT methodology.
- 2 A check whether the company has intermediate targets with time gaps no larger than 5 years between targets horizons, starting from the reporting year as baseline, to ensure both short and long-term targets are in place to incentivise short-term action and communicate long-term commitments.

DIMENSION 1 - TARGET ENDPOINT (50% OF THE SCORE):

The company's target endpoint (T_e) is compared to a default value L_f fixed at 2050 -time horizon for the Paris Agreement goal).

The company's target endpoint (T_e) is equal to the longest time horizon among the company's targets, minus the reporting year:

$$T_e = \text{Longest target time horizon} - \text{reporting year}$$

If the company is integrated, it can either:

- ◆ Set targets by activity, and so a separate analysis is done for each activity: the target endpoint T_e of the targets the company has set for the given activity is compared to L_f .
- ◆ Set aggregated targets and so T_e is compared to L_f . The horizon gap is used to rate the company on the time horizon relevance of its most long-term target.

$$\text{Horizon gap} = L_f - T_e$$

The company's target endpoint is scored according to the following scoring table:

HORIZON GAP	SCORE
$T_e > L_f$	50%
$33\% * L_f < T_e < L_f$	$75\% * \frac{T_e}{L_f} - 25\%$
$T_e \leq 33\% * L_f$	0%

DIMENSION 2 - INTERMEDIATE HORIZONS (50% OF THE SCORE):

All company targets and their endpoints are calculated and plotted. To get full score, the company must not have time gaps larger than 5 years between targets horizons, starting from the reporting year as baseline.

The company's targets are compared according to the following scoring table:

Intermediate target gap length	Score
All the gaps during T_e are equal to or less than 5 years	50%
All the gaps until 80% of T_e are equal to or less than 5 years	40%
All the gaps until 60% of T_e are equal to or less than 5 years	30%
All the gaps until 40% of T_e are equal to or less than 5 years	20%
All the gaps until 20% of T_e are equal to or less than 5 years	10%
All the gaps of 5 years or less do not reach 20% of T_e or there is no such gaps disclosed by the company	0%

An example is illustrated in Figure 5.

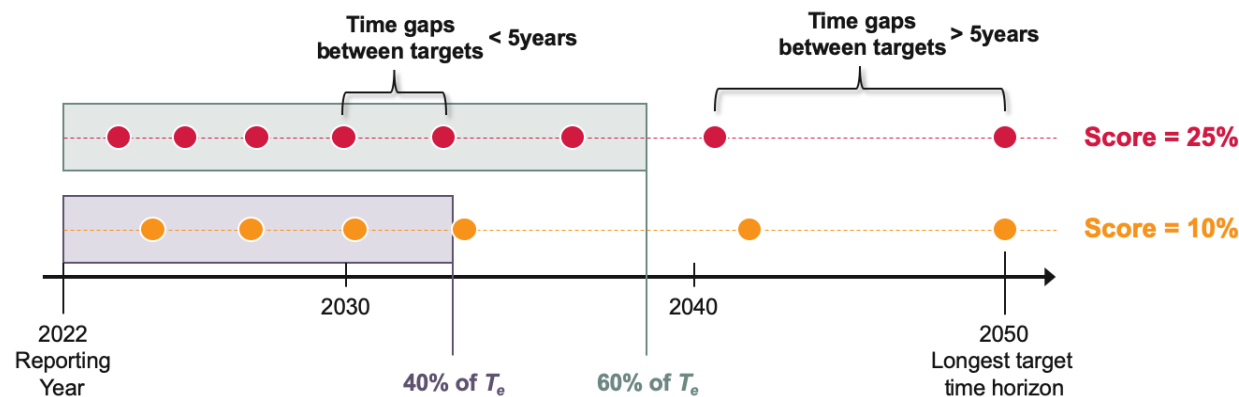


FIGURE 5 : EXAMPLES OF HORIZONS OF INTERMEDIATE TARGETS SET BY THE COMPANY AND CORRESPONDING SCORES ON DIMENSION 2 OF INDICATOR 1.2

RATIONALE	AG 1.3 TIME HORIZON OF ENDPOINT AND INTERMEDIATE TARGETS
RATIONALE OF THE INDICATOR	<p>RELEVANCE OF THE INDICATOR:</p> <p>The time horizon of targets is included in the ACT Agriculture & Agrifood assessment for the following reasons:</p> <ul style="list-style-type: none"> ◆ The target endpoint is an indicator of how forward-looking the company’s transition strategy is. ◆ Aside from communicating long-term commitments, short-term action needs to be incentivised. This is why short-time intervals between targets are needed. A 5-year interval is seen as a suitable interval to ensure company is taking enough action, holding itself accountable by measuring progress every 5 years.
<p>• AG 1.4 ACHIEVEMENT OF PAST AND CURRENT TARGETS</p>	
DESCRIPTION & REQUIREMENTS	AG 1.4 ACHIEVEMENT OF PAST AND CURRENT TARGETS
SHORT DESCRIPTION OF INDICATOR	A measure of the company’s historic target achievements and current progress towards active emissions reduction targets. The ambition of the target is not assessed in this indicator.

DATA REQUIREMENTS

The relevant data for this indicator are:

For each absolute or intensity target set in the past 10 years:

- ◆ Base year
- ◆ Start year
- ◆ Target year
- ◆ Percentage of targeted reduction from base year in absolute emissions / emissions intensity
- ◆ Percentage of absolute emissions / emissions intensity reduction achieved at reporting year (or target year for past targets)
- ◆ Coverage of the targets

CDP Questionnaire 2023 mapping to this indicator:

- ◆ C4.1a (absolute targets)
- ◆ C4.1b (intensity targets)

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 7.53.1 (absolute targets)
- ◆ 7.53.2 (intensity targets)

HOW THE ANALYSIS WILL BE DONE

For the performance score, this indicator is assessed on two dimensions, whereby companies achieve the maximum score if:

DIMENSION 1- PAST TARGETS

The company has achieved all previous emissions reduction targets with a target year in the past 10 years. If all past targets are indeed achieved, the highest score is obtained. If not, the achievement ratio a is calculated as follows:

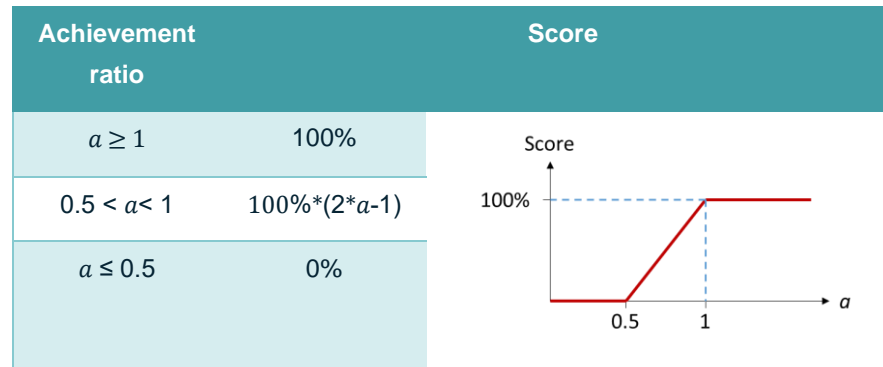
$$a = \frac{E(BY) - E(TY)}{E(BY) - T(TY)} \geq 0.5$$

Where:

- ◆ $E(BY)$ is the level of emissions of the company in the base year
- ◆ $T(TY)$ is the target the company set (a given level of emissions at a given horizon year, now past)
- ◆ $E(TY)$ is the effective level of emissions reached by the company in the target year

A threshold is set for scoring at 0.5: if the company has achieved less than 50% of its own past target, it shall receive a zero score.

If the company has several past targets over the last 10 years, the ratio a shall be calculated for each target, and the average of all a ratio shall be kept for scoring.



DIMENSION 2: RUNNING TARGETS

Assesses whether the company is currently on track to meet a current emissions reduction target. The assessment is based on the progress ratio p :

$$p = \frac{a}{\%time}$$

a being defined in dimension 1 and the past time ratio $\%time$ defined as follows:

$$\%time = \frac{RY - BY}{TY - BY}$$

Where

- ◆ BY is the target's base year
- ◆ RY is the reporting year
- ◆ TY is the year of horizon of the target

The highest score is attained if $p \geq 1$. A percentage score is assigned for any value between 0 and 1.

Progress ratio	Score
$p \geq 1$	100%
$p < 1$	p (%)

AGGREGATE SCORE - DIMENSION 1: 25%, DIMENSION 2: 75%

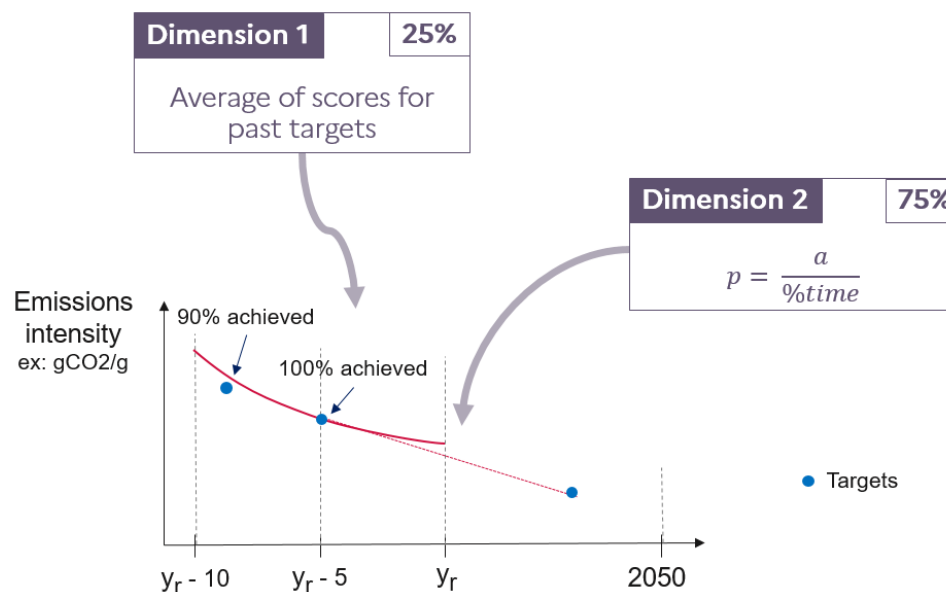


TABLE 10: CALCULATION OF THE ACHIEVEMENT OF PAST AND CURRENT TARGET INDICATOR

FOR ALL CALCULATIONS:

- ◆ Companies which do not have targets with target years in the past but only with target years in the future are not assessed on dimension 1, but only on dimension 2. Their score for this indicator is based on Dimension 2.
- ◆ Targets should cover >95% of the company's GHG emissions scope. However, if it is not the case, no penalty is applied since indicators assessing ambition of targets already penalize partial coverage of emissions.
- ◆ If the company has multiple targets in different scopes that can be assessed according to the above criteria, then the score is an average score based on the progress ratios of all targets assessed.

RATIONALE OF THE INDICATOR**RELEVANCE OF THE INDICATOR:**

The historical target ambition and company performance is included in the ACT assessment for the following reasons:

- ◆ The ACT assessment looks only to the past to the extent where it can inform the future. This indicator is future-relevant because it provides information on the organizational capability to set and meet emissions reduction targets. Dimension 1 of this indicator gives credibility to any company commitments to a science-based reduction pathway when the company shows it has succeeded in achieving its past targets.
- ◆ Dimension 2 of this indicator adds additional value to the assessment by showing if the company is on track to achieve current targets.

NOTE:

A difficulty in assessing this indicator properly is acknowledged because of potential changes in the company's scope of activity (due to mergers & acquisitions and asset sales). Such hurdles must not prevent companies from measuring their progress over time, since this is one of the very first steps towards low-carbon transition.

Different approaches do exist to address this issue:

- ◆ To ensure consistent tracking of performance over time, the SBTi recommends recalculating targets to reflect significant changes that would otherwise compromise the target's relevance.
- ◆ Other solutions can be applied to simplify the recalculation of targets, considering for instance the same reduction percentage for the acquired assets, from the date of acquisition only (the company not being responsible for the past emissions of these assets).

SCORING RATIONALE:

Previous target achievement is not straightforward to interpret quantitatively. Therefore, the performance score doesn't take into account past target ambition and leaves it to the narrative assessment for a meaningful judgement on the ambition level of past targets.

- ◆ Dimension 1 will penalize companies who have not met past targets in the past 10 years, as this means the company has lower credibility when setting ambitious science-based targets.
- ◆ Dimension 2 uses a simple ratio, which reflects how well or not the company is currently on track to reach its existing emissions reduction target. The maximum score is obtained when the percentage of the targeted reduction achieved is equal to or higher than the time elapsed since the target base year. This results in a progress ratio of 1 or above. No score is awarded if the percentage of reduction achieved is less than half the percentage of time elapsed. Consequently, staying on track with the original target throughout its timeline is rewarded.

MODULE 2: MATERIAL INVESTMENTS

Module 2, “Material investment”, assesses actions to reduce scope 1 and 2 emissions from the company’s assets and operations.

Reported scope 1+2 emissions shall cover at least 95% of the total scope 1+2 emissions.

• AG 2.1 TREND IN PAST EMISSIONS

DESCRIPTION & REQUIREMENTS	AG 2.1 TREND IN PAST EMISSIONS
SHORT DESCRIPTION OF INDICATOR	<p>This indicator assesses the alignment of the company’s recent scope 1+2 emissions intensity trend for emissions within the boundaries with the trend of its decarbonisation pathway. The recent emissions intensity trend is calculated over a 5-year period to the reporting year (reporting year minus 5 years).</p> <p>Depending on the company’s profile, this indicator can include AFOLU emissions and/or post-farm emissions (processing in particular).</p>
DATA REQUIREMENTS	<p>The questions comprising the information request that are relevant to this indicator are:</p> <p>For agricultural and integrated companies:</p> <ul style="list-style-type: none">◆ Total AFOLU emissions at reporting year and RY-5 <p>OR</p> <ul style="list-style-type: none">◆ AFOLU emissions for one or more of the 9 commodities included in the FLAG commodities pathways <p>For Integrated, Agrifood and Food & Beverage companies:</p> <ul style="list-style-type: none">◆ Total post-farm Scope 1+2 emissions within the ACT boundaries at reporting year and RY-5 <p>CDP Questionnaire 2023 mapping to this indicator:</p> <ul style="list-style-type: none">◆ C6.1◆ C6.3◆ C6.10

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 7.35
- ◆ 7.45
- ◆ 7.6

External sources of data used for the analysis of this indicator are:

- ◆ Forest, Land and Agriculture Science-Based Target-Setting Guidance [10]
- ◆ FoodDrink Europe [18]
- ◆ SBTi (ACA cross sector pathway) [16] [17]

The benchmark indicators involved are:

PARAMETER	METRIC	METHODOLOGICAL SOURCES
Upstream AFOLU emissions	Absolute emissions	FLAG Sector approach (absolute contraction approach) [10]
Upstream AFOLU emissions intensity	kgCO ₂ e/kg product	FLAG commodity approach [10]
Scope 1+2 post-farm emissions (absolute value)	Absolute emissions	SBT ACA Cross sector pathway [16]
Scope 1+2 post-farm emissions (emissions intensity)	kgCO ₂ e/kg product	FoodDrink Europe [18]

HOW THE ANALYSIS WILL BE DONE

For AFOLU emissions, this indicator can be assessed against the FLAG sector pathway, which encompasses diet shift and food loss and waste reduction, or against the FLAG commodity pathways when relevant.

For processing emissions, the assessment shall be done as followed:

- ◆ For Agrifood companies based in Europe, the FoodDrink Europe benchmark can be used;
- ◆ For Integrated and Food & Beverage Services companies, and for Agrifood companies based outside Europe, the ACA approach shall be used.

The example is provided with emissions intensity but works similarly with absolute emissions.

The analysis is based on the comparison between the company's recent (RY-5) emissions intensity trend gradient (CR') and the company's decarbonization pathway trend gradient (CB') in the short-term (RY+5).

- ◆ CR' is the gradient of the linear trend-line of the company's recent scope 1+2 emissions intensity over time (CR).
- ◆ CB' is the gradient of the linear trend-line of the company benchmark pathway for emissions intensity (CB).

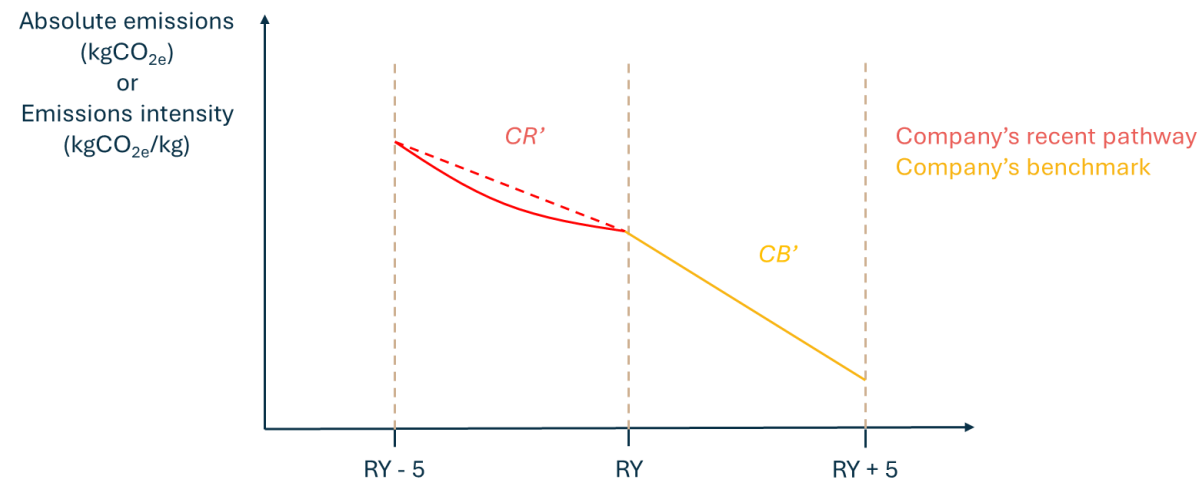


FIGURE 6: COMPARISON OF TREND IN PAST EMISSIONS AND TREND IN COMPANY'S BENCHMARK

The difference between CR' and CB' will be measured by their ratio (r). This is the transition ratio, which is calculated by the following equation, with the apostrophe (') used to denote gradients:

$$r = \frac{CR'}{CB'}$$

CALCULATION OF THE SCORE:

Conditions	Score
<p><i>Company's projected emissions slope $CR' > 0$</i></p> <p>Increase in company's emissions</p>	0%
<p><i>Company's projected emissions slope $CR' \leq 0$</i></p> <p>$0 \leq r \leq 1$</p> <p>Decrease in company's absolute emissions but company's pathway does not go beyond the ambition for the sector</p>	$r \times 100\%$
<p><i>Company's projected emissions slope $CR' < 0$</i></p> <p>$r > 1$</p> <p>Decrease in company emissions and company's pathway equals or exceeds the ambition for the sector</p>	100%

AGGREGATION OF THE SCORES

When companies are combining emissions sources that require the use of several benchmarks, the calculations and scores will be done separately for each category and aggregated as a weighted average based on absolute emissions.

RATIONALE

AG 2.1 TREND IN PAST EMISSIONS

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Trend in past emissions is included in the ACT Agriculture & Agrifood assessment for the following reasons:

- ◆ The trend shows the speed at which the company has been reducing its emissions over the recent past. Comparing this to the decarbonisation pathway gives an indication of the scale of the change that needs to be made within the company to bring it onto a low-carbon pathway.
- ◆ While ACT aims to be future-oriented, ACT does not want to solely rely on projections in a way that would make the analysis too vulnerable to uncertainty. Therefore, this particular indicator, along with projected emissions and absolute emissions, forms part of a holistic view of company emissions performance in the past, present, and future.
- ◆ This indicator is future-relevant by providing information on the organizational capability to deliver emissions reductions that are aligned with the benchmark.

• AG 2.2 TREND IN FUTURE AFOLU EMISSIONS

DESCRIPTION & REQUIREMENTS	AG 2.2 TREND IN FUTURE AFOLU EMISSIONS
SHORT DESCRIPTION OF INDICATOR	[For Agriculture and Integrated companies only] Measure of the alignment of the company’s future AFOLU emissions with the expected decarbonising efforts that the overall food sector shall do. The company must report projected AFOLU emissions 5 years after the reporting year.
DATA REQUIREMENTS	<p>The questions comprising the information request that are relevant to this indicator are:</p> <ul style="list-style-type: none"> ◆ Absolute emissions from agricultural production (scope 1+2) only at reporting year and at reporting year + 5 <p>CDP 2023 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none"> ◆ None <p>CDP 2024 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none"> ◆ None <p>External sources of data used for the analysis of this indicator are:</p> <ul style="list-style-type: none"> ◆ Forest, Land and Agriculture Science-Based Target-Setting Guidance [10] <p>The benchmark indicators involved are:</p>

PARAMETER	INTENSITY METRIC	METHODOLOGICAL SOURCES
AFOLU emissions	Absolute emissions	FLAG Sector approach (absolute contraction approach) [10]

HOW THE ANALYSIS WILL BE DONE

The analysis is based on the Absolute emissions trend ratio (r_A) which represents the ratio between the company's future (reporting year plus 5 years) scope 1+2 AFOLU emissions and the absolute contraction rate for the whole food sector.

The company's future emissions, given by the company's projected emissions, will be compared at RY + 5 to the mitigation potential of the sector.

CP' is the gradient of the linear trendline of the company's projected emissions.

CB' is the gradient of the linear trend-line of the company benchmark pathway.

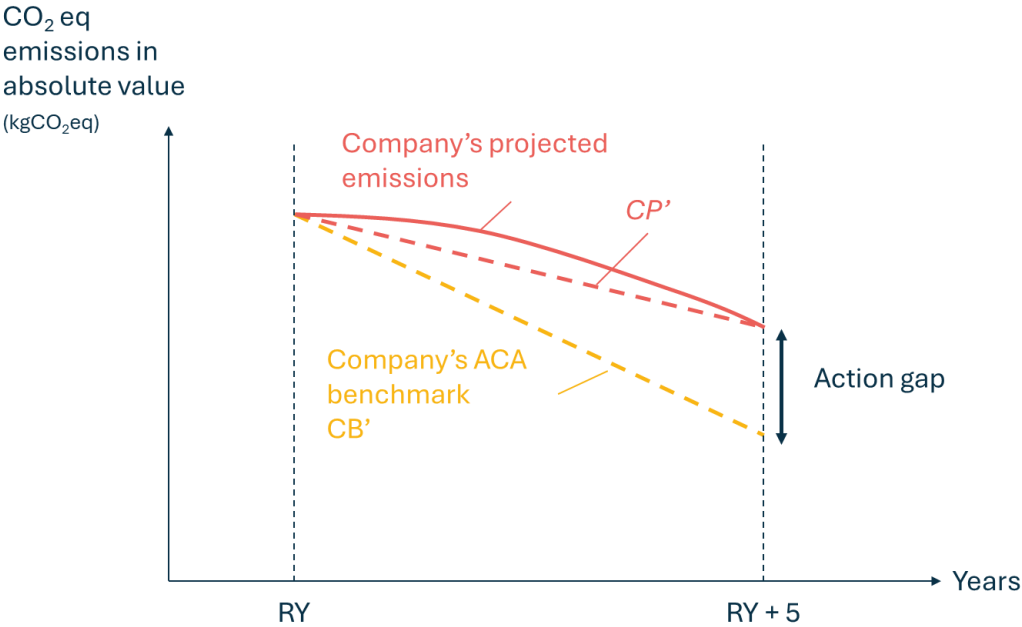


FIGURE 7: COMPARISON OF COMPANY'S PROJECTED ABSOLUTE EMISSIONS AND MITIGATION POTENTIAL FOR THE SECTOR

CALCULATION OF SCORE

The difference between CP' and MPS' will be measured by their ratio (r_a). This is the “Absolute emissions trend ratio” which is calculated by the following equation, with the symbol ‘ used to denote gradients:

$$r_a = \frac{CP'}{CB'}$$

The final score assigned to the indicator is calculated as follows:

Conditions	Score
<p><i>Company's projected emissions slope $CP' > 0$</i> Increase in company's emissions</p>	0%
<p><i>Company's projected emissions slope $CP' \leq 0$</i> $0 \leq r_A \leq 1$ Decrease in company's absolute emissions but company's pathway does not go beyond the ambition for the sector</p>	$r_A \times 100\%$
<p><i>Company's projected emissions slope $CP' < 0$</i> $r_A > 1$ Decrease in company emissions and company's pathway equals or exceeds the ambition for the sector t</p>	100%

RATIONALE

AG 2.2 TREND IN FUTURE AFOLU EMISSIONS

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Trends in future scope 1+2 AFOLU emissions are included in this ACT methodology for the following reasons:

- ◆ The trend shows the speed at which the company's emissions will evolve for the coming years. Comparing this to the global emission reduction gap for the food sector gives an indication of the scale of the change that needs to be made within the company to bring it onto a low-carbon pathway.

- ◆ ACT aims to be future-oriented. Therefore, this particular indicator, with projected emissions, forms part of a holistic view of company emissions performance in the past, present, and future.

SCORING RATIONALE

With a common percentage of emissions reduction across the sector, using the Absolute Contraction Approach (ACA) presents the advantage of adjusting the absolute level of effort required to the company's present emissions. Considering the whole AFOLU emissions instead of breaking them down per product allows to account for key challenges such as diet shift and food lost and waste reduction (which are included in the FLAG sectoral pathway).

• AG 2.3 FOOD WASTAGE REDUCTION

DESCRIPTION & REQUIREMENTS	AG 2.3 FOOD WASTAGE REDUCTION
SHORT DESCRIPTION OF INDICATOR	This indicator measures the level of food wastage reduction of the company compared with a benchmark. The expected level of wastage reduction depends on the activity of the company and of its location (developed country / developing country).
DATA REQUIREMENTS	<p>The questions comprising the information request that are relevant to this indicator are:</p> <ul style="list-style-type: none"> ◆ Ratio of food wastage at RY and RY-3 OR Food production (t) and food wastage (t) at RY and RY-3 ◆ Share of food wastage in developing and developed countries <p>CDP 2023 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none"> ◆ None <p>CDP 2024 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none"> ◆ None <p>External sources of data used for the analysis of this indicator are:</p> <ul style="list-style-type: none"> ◆ FAO Food wastage footprint & Climate Change [9] <p>The benchmark indicators involved are:</p>

TYPE	PARAMETER	METRIC	BENCHMARK
Amount of food wastage	$F_{company}$	Ratio of food wasted (kg)	FAO [19]. See Section 6.2

HOW THE ANALYSIS WILL BE DONE

To calculate the amount of food wastage within the company, the definition provided by FAO [19] along with the benchmark shall be used as a reference:

Food loss refers to a decrease in mass (dry matter) or nutritional value (quality) of food that was originally intended for human consumption. These losses are mainly caused by inefficiencies in the food supply chains, such as poor infrastructure and logistics, lack of technology, insufficient skills, knowledge and management capacity of supply chain actors, and lack of access to markets. In addition, natural disasters play a role.

Food waste refers to food appropriate for human consumption being discarded, whether or not after it is kept beyond its expiry date or left to spoil. Often this is because food has spoiled but it can be for other reasons such as oversupply due to markets, or individual consumer shopping/eating habits.

Both definitions of food loss and waste shall be included in the assessment. They only affect the company's direct operations. Beyond these definitions, here are additional features to include or exclude from the scope of this indicator:

- ◆ peels – *excluded*
- ◆ regulatory food waste – *excluded*
- ◆ samples for quality testing and veterinary samples – *excluded*
- ◆ milk lost in the machines – *included*
- ◆ waste sent to pet food production – *included*

CALCULATION OF THE SCORE

The company's food wastage reduction (FWR_C) in the last 3 years is calculated and compared to the company's food wastage reduction benchmark (FWR_{CB}).

$$FWR_C = \frac{\text{Ratio of food wastage}(RY - 3) - \text{Ratio of food wastage}(RY)}{\text{Ratio of food wastage}(RY - 3)}$$

Where:

- ◆ *Ratio of food wastage*(RY – 3) is the ratio of food wastage at RY-3 for the company
- ◆ *Ratio of food wastage*(RY) is the ratio of food wastage at RY for the company
- ◆ FWR_C is the company's food wastage reduction in the last 3 years

The company's food wastage reduction benchmark at RY is calculated using food wastage reduction benchmark in developed and developing countries:

$$FWR_{CB} = 1 - [1 - (FWshare_{Developing} \times Bench_{Developing} + FWshare_{Developed} \times Bench_{Developed})]^3$$

Where:

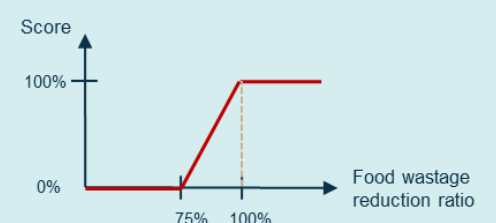
- ◆ $FWshare_{Developing}$ is the company's food waste share in developing countries
- ◆ $Bench_{Developing}$ is the food wastage reduction benchmark in developing countries
- ◆ $FWshare_{Developed}$ is the company's food waste share in developed countries
- ◆ $Bench_{Developed}$ is the food wastage reduction benchmark in developed countries
- ◆ FWR_{CB} is the company's benchmark food wastage reduction in the last 3 years

The assessment is based on the food wastage reduction ratio:

$$\text{Food wastage reduction ratio} = \frac{FWR_C}{FWR_{CB}}$$

The final score assigned to the indicator is calculated as follows:

Conditions	Score
No data on food wastage	0
<i>Food wastage reduction ratio</i> < 75%	0
$75\% \leq \text{Food wastage reduction ratio} < 100\%$	$\frac{\text{Food wastage reduction ratio}}{25\%} - 3$
<i>Food wastage reduction ratio</i> $\geq 100\%$	100%



RATIONALE**AG 2.3 FOOD WASTAGE REDUCTION****RATIONALE OF THE INDICATOR****RELEVANCE OF THE INDICATOR:**

Food wastage is responsible for 4.4 GtCO₂e per year, which represents about 8% of total anthropogenic GHG emissions [9]. While substantial efforts are expected on reducing the supply and demand for animal proteins, reducing emissions from agricultural production and food processing, etc. the fact that one third of the production is lost along the value chain is a critical issue. Among the different action levers, reducing food demand in terms of quantity is also a key recommendation to limit the increase in GHG emissions with population growth. Beyond the idea that one should eat no more than needed to maintain a healthy body weight, companies need to limit the amount of food waste they create, through a revised quality process (i.e., accept different notions of quality) and better food valuation [20]. Other actions such as improving harvest techniques and post-harvest storage are particularly relevant in developing countries [19].

• AG 2.4 LOW-CARBON CAPEX**DESCRIPTION & REQUIREMENTS****AG 2.4 LOW-CARBON CAPEX****SHORT DESCRIPTION OF INDICATOR**

Estimation of the CAPEX that was invested over the past 3 years to reduce GHG emissions.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- ◆ Share of low-carbon CAPEX (from RY-3 to RY)
- ◆ Emissions reduction resulting from low-carbon CAPEX.

CDP Questionnaire 2023 mapping to this indicator:

- ◆ C3.5b

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 5.4.2

**HOW THE ANALYSIS
WILL BE DONE**

As no benchmark currently exists to quantify and list the low-carbon CAPEX that shall be developed by agrifood companies, the assessment is qualitative and based on the existence of CAPEX dedicated to reducing GHG emissions.

Basic	Advanced	Low-carbon aligned
The share of CAPEX invested in reducing GHG emissions is 10% or less	The company has more than 10% of CAPEX invested in reducing GHG emissions but does not quantify the resulting GHG emissions reduction	The company has more than 10% of CAPEX invested in reducing GHG emissions and quantifies the resulting GHG emissions reduction

RATIONALE

AG 2.4 LOW-CARBON CAPEX

**RATIONALE OF THE
INDICATOR**

RELEVANCE OF THE INDICATOR:

While R&D is not a major lever for the food sector, investments to reduce GHG emissions can still be a significant step towards becoming a low-carbon aligned company. For agricultural companies, investments to improve manure management, limit the use of pesticides, and for agrifood and food & beverage companies, improving energy efficiency, can be significant and must be encouraged.

• AG 2.5 ACTION ON DEFORESTATION

**DESCRIPTION &
REQUIREMENTS**

AG 2.5 ACTION ON DEFORESTATION

**SHORT DESCRIPTION
OF INDICATOR**

Refers to Forest 500 methodology [21] to evaluate the level of a company's commitment to ban deforestation, track progress and incentivise reforestation in the short term.

This indicator only applies to Agricultural and Integrated companies.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- ◆ Commitments and implementation of actions on deforestation

CDP Questionnaire 2023 mapping to this indicator:

- ◆ F1.3
- ◆ F1.7
- ◆ F4.6b
- ◆ F6.1
- ◆ F6.2a
- ◆ F6.12a

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 8.7.1
- ◆ 8.8.1
- ◆ 8.10.1
- ◆ 8.17.1

External sources of data used for the analysis of this indicator are:

- ◆ Global Canopy, *The Forest 500: 2019 Company Assessment Methodology*, 2019 [21]

HOW THE ANALYSIS WILL BE DONE

This maturity matrix is derived from indicators from the company's assessment methodology of Forest 500 by Global Canopy [21].

Subdimension	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Deforestation commitments						
For agricultural producers & integrated companies (upstream): Existence of a zero-deforestation	No commitment to producing or procuring sustainably		Sustainably produced/procured	Commitment to zero-gross deforestation.	Commitment to zero-gross conversion.	10%

commitment (or equivalent). If yes, commitment must be active and ongoing.	sourced commodities.					
Scope/boundaries of zero deforestation production/procurement commitment	No / No commitment		Commitment applies to all regions OR to all company operations		Commitment applies to all regions AND to all company operations	5%
Progress on implementation of zero deforestation production/procurement is reported and independently verified	No / No commitment			Progress on implementation is reported in a quantifiable way.	Progress is reported in a quantifiable way and independently verified.	30%
Commitments apply to all direct and indirect third-party suppliers of the company	No / No commitment			Apply to direct suppliers	Apply to direct and indirect suppliers – if applicable. The company has no suppliers.	5%

Supply chain traceability system						
Commitment to develop and implement upstream supply chain traceability system. Commitment must be active and ongoing.	No commitment to traceability			Company implemented a traceability system back to production level. Does not check compliance with zero conversion commitment.	Company implemented a traceability system back to production level. Includes statement that suppliers are checked for compliance with zero conversion commitment.	5%
Commitment to develop and implement upstream supply chain traceability system applies to all sourcing regions and to all company operations	No / No commitment		Applies to all sourcing regions OR to all company operations		Applies to all sourcing regions AND to all company operations	3%
Progress on implementation of upstream supply chain traceability system is reported and independently verified	No / No commitment			Progress on implementation is reported in a quantifiable way.	Progress is reported in a quantifiable way and independently verified.	20%

The company monitors and verifies compliance in their supply chain with zero conversion commitment.	No monitoring / No commitment			Non-specific monitoring statement	Time-specific monitoring statement	2%
Reforestation efforts						
Company taking action on reforestation on own land (offsetting cannot be included)	No / No commitment		The company has a commitment to take reforestation actions on their own land		The company reports how many hectares of reforestation or restoration are being or have been conducted on their own land	20%

Guidance: “Conversion-free” is understood as no conversion of natural ecosystems anywhere (also referred to as zero/zero gross conversion), “deforestation-free” is understood as no loss of natural forests anywhere (also referred to as zero/zero gross deforestation), while zero net deforestation is understood as a commitment to offset forest loss through forest restoration [21].

Exception: for very specific cases, companies may not be affected by deforestation issues. For example, for pure agricultural companies producing exclusively certain fruits and vegetables with no impact on deforestation, or fishery productions, this indicator may not be relevant.

In these very specific cases only and upon a clear justification, this indicator can be removed from the company’s assessment. In this case, the indicator weighting is equally distributed among the other indicators of Module 2.

Caution: this exception does not prevail for companies indirectly affected by deforestation. For instance, food-processing companies, restaurant chains or catering companies must be assessed against this deforestation indicator, even if they operate at the end of the value chain.

RATIONALE OF THE INDICATOR**RELEVANCE OF THE INDICATOR:**

Four Forest Risk Commodities (FRC) sectors – cattle, soy, palm oil and timber – are responsible for 80% of deforestation globally [22]. The food sector consequently has a high responsibility in the global issue of deforestation. Food companies may not be directly involved in deforestation, but have a strong role to play in tracking their supplies.

• AG 2.6 INCREASE IN THE SHARE OF LOW-CARBON PRODUCTS**DESCRIPTION & REQUIREMENTS****AG 2.6 INCREASE IN THE SHARE OF LOW-CARBON PRODUCTS****SHORT DESCRIPTION OF INDICATOR**

This indicator quantitatively assesses how a company is switching its production to more low-emissive food products. This indicator focuses on AFOLU emissions.

This indicator applies to Agriculture companies only.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- ◆ AFOLU emissions intensity of each of the main products from agricultural production at reporting year and reporting year – 5
- ◆ Share of each of the main products at reporting year and reporting year – 5

CDP 2023 Questionnaire mapping to this indicator:

- ◆ C4.5a

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 7.74.1

External sources of data used for the analysis of this indicator are:

- ◆ Poore & Nemecek, *Reducing food's environmental impacts through producers and consumers*, 2018 [3] (decarbonisation scenario)

The benchmark indicators involved are:

TYPE	PARAMETER	INTENSITY METRIC	BENCHMARK
Emission intensity	Median emissions	kgCO ₂ e/kg product	See section Sector Benchmark

HOW THE ANALYSIS WILL BE DONE

“Low-carbon products” are defined as products not exceeding a certain threshold of kilograms of CO₂e per kilogram of product (kgCO₂e/kg product).

Increase in this ratio would be expected over the past 5 years.

For this indicator, companies are required to focus on the main products, both in terms of weight and emissions. The products must be included to ensure that:

- ◆ Products representing individually 10% or more of the total farm-gate emissions at the reporting year are included;
- ◆ The sum of all products reported shall cover at least 80% of the total farm-gate emissions at the reporting year.

Proposed threshold for a product to be considered as “low-carbon”: **5.4 kgCO₂e/kg product**. This threshold is derived from the median emissions at the global scale for all product categories drawn from the Poore & Nemecek publication and dataset [3]. The threshold chosen corresponds to the mean of the medians (see section 6.1.4 Low-carbon food products benchmark).

The first step is to calculate the share of low-carbon food products at RY and at RY – 5, that is the share of products emitting less than 5.4 kgCO₂e/kg product on the total production.

Based on the ratio of low-carbon products at **RY - 5**, the company would fall into one of the categories listed in the maturity matrix. The score is then given based on how the company has increased the share of low-carbon products, i.e., if the company has integrated more products emitting less than 5.4 kgCO₂e/kg product.

The increase in the share of low-carbon food product must be calculated as follows:

$$\frac{Share_{RY} - Share_{RY-5}}{Share_{RY-5}}$$

The efforts expected between the RY - 5 and the RY would then be higher if the company started from a relatively low share of low-carbon products. Conversely, if the company already had a high share of low-carbon food products at RY - 5, the expected effort to increase this share is less significant.

Subdimension	Basic	Advanced	Low-carbon aligned
Share of low-carbon products at RY-5	Increase in the share of low-carbon products at RY		
Share < 1/4	No increase or < 50%	Increase between 50% and 100%	Increase of more than 100%
1/4 < Share < 1/2	No increase or < 30%	Increase between 30% and 70%	Increase of more than 70%
1/2 < Share < 3/4	No increase or < 10%	Increase between 10% and 20%	Increase of more than 20%
Share > 3/4	No increase or < 5%	Increase between 5% and 10%	Increase of more than 10%
Share > 95%			Score = 100%

RATIONALE

AG 2.6 INCREASE IN THE SHARE OF LOW-CARBON PRODUCTS

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

As described, this indicator assesses whether the company has tended to shift from highly emissive to low-emissive categories of products in the recent past.

SCORING RATIONALE:

- ◆ The score depends on the share of low-carbon food products at the starting point (i.e., 5 years before the reporting year). The higher the share of low-carbon food product, the less effort is required in selling more low-carbon food products.

• AG 2.7 IMPLEMENTATION OF BETTER FARMING PRACTICES

DESCRIPTION & REQUIREMENTS

AG 2.7 IMPLEMENTATION OF BETTER FARMING PRACTICES

SHORT DESCRIPTION OF INDICATOR

Assesses how the agricultural company implements better farming practices to reduce its GHG emissions footprint.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- ◆ Implementation of better farming practices:
 - Identification of better farming practices implemented;
 - Share of production affected by these farming practices.
- ◆ Specific questions linked to four additional aspects limiting the access to the highest scores.

CDP 2023 Questionnaire mapping to this indicator:

- ◆ C3.5b

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 5.4.2

HOW THE ANALYSIS WILL BE DONE

The analysis assigns a maturity score based on the company's demonstration of implementation of better farming practices. These later are defined in the European Taxonomy ("Detailed activities: climate change mitigation – 19. Agriculture" starting on page 111) [23] for perennial crops, non-perennial crops and livestock. The measures defined in the Taxonomy aim to foster the reduction of GHG emissions and to maintain and increase carbon sinks and sequestration.

The measures to be considered for this indicator assessment are directly drawn from the European Taxonomy [23]:

- ◆ For **perennial crops**:
 - Crop choice and rotation: sowing of cover/catch crops using at least a 6-species cover crop including 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.
 - Soil tillage and management:
 - Reduced and/or zero tillage with adjusted weed and disease control

- Prevent soil compaction
 - Management of carbon-rich soils (avoiding row crops, maintaining a shallower water table (arable/peat))
 - Nutrient management plan to optimise fertilisation and improve nitrogen use efficiency. In addition, a low-emissions N-application technology shall be used (slurry injection, incorporating manure in the soil within 2 hours of spreading) and fertiliser spreaders which have low coefficient of variation combined with calibration of spreaders.
 - Structural elements with mitigation benefit:
 - Plant hedges and/or buffer strips and/or individual trees.
 - Conversion of low productivity land into woodland to increase carbon sequestration and protect against soil erosion.
 - Minimise post-harvest loss.
- ◆ For **non-perennial crops**:
- Crop choice and rotation:
 - At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1
 - Sowing of cover/catch crops using at least a 6-species cover crop including 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.
 - Soil tillage and management:
 - Avoiding deep ploughing on carbon-rich soils
 - Prevent soil compaction
 - Management of carbon-rich soils (avoiding row crops, maintaining a shallower water table (arable/peat))
 - Check and maintain land drainage to avoid water-logging and compaction
 - Nutrient management plan to optimise fertilisation and improve nitrogen use efficiency. In addition, a low-emissions N-application technology shall be used (slurry injection, incorporating manure in the soil within 2 hours of spreading) and fertilisers spreaders which have low coefficient of variation combined with calibration of spreaders.
 - Paddy rice management:
 - Shallow flooding
 - Mid-season drying event
 - Off-season straw
 - Structural elements with mitigation potential:
 - Plant hedges and/or buffer strips and/or individual trees
 - Conversion of low productivity land into woodland to increase C sequestration and protect against soil erosion.
 - Integrating permanent meadows within the farm.

- Minimise post-harvest loss.
- ◆ For **livestock**:
 - Better animal health planning and management (develop a health management plan, improve hygiene & supervision at parturition, etc.)
 - Animal feeding:
 - [Outside of the periods when the livestock is grazing] Feed additives such as dietary fats, nitrate and 3-NOP can be administered with the appropriate dosage.
 - Precision and multi-phase feeding techniques, where nutrient requirements or groups of animals (or individual animals) are targeted in feed formulation.
 - Manure management:
 - Cooling of liquid manure
 - Covering slurry and farm-yard manure
 - Separating solids from slurry
 - Composting and applying solid manure
 - Slurry acidification, possible at different stage: in the livestock house, in the storage tank, or before field application
 - Apply low-emission application technology for slurry and manure
 - Permanent grassland management:
 - Pasture renovation
 - Remove animals from very wet fields to reduce compaction
 - No ploughing of permanent grassland

Additional aspects limiting the access to the highest scores:

1. **Accounting for current and future weather variability:** The company has to mention how the choices of these better farming practices (e.g., crop management, crop species, land use) take into account both current weather variability and future climate change, including uncertainty. If not, the overall score for this indicator cannot exceed 80%.
2. **Use of pesticides:** If the company has no plan to reduce its use of pesticides (when relevant, i.e., for a crop producer), the score cannot exceed 80%.
3. **Off-season production:** For fruits and vegetables producers, if the company does significant fossil fuel-based heated greenhouse production (i.e., if the company produces more than 10% using fossil fuel-based heated greenhouse), the score cannot exceed 80%.

4. **Organic production:** For pulses and fruits only, the company gets a 25% bonus if more than 50% of its production comes from organic farming. No bonus is awarded if the company has already scored 100%.

The assessment requires the calculation of the percentage of measures implemented among those listed for each category (when relevant) multiplied by the share of relevant production affected (share of area or share of livestock affected).

Subdimension	Basic	Standard	Advanced	Next Practice	Low-Carbon Aligned
Percentage of measures implemented x share of production affected	40% or less		Between 40% and 60%	Between 60% and 75%	75% and more

RATIONALE

AG 2.7 IMPLEMENTATION OF BETTER FARMING PRACTICES

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Best farming practices are included in the ACT Agriculture & Agrifood assessment for the following reasons:

- ◆ GHG emissions emitted in the agriculture sector are directly linked to the management of plants and animals to produce food and feed since they are generally the largest emitters of GHG emissions compared to energy use. Assessing the share of farming practices enabling GHG emissions reduction and carbon sequestration by a company allows a judgement to be made about a company's actions to tackle global warming.
- ◆ The farming practices are divided by categories of production, which allows the assessor to understand whether the relevant farming practices are being implemented per type of product, in order to maximise GHG reduction and carbon sequestration.
- ◆ The list of recommended farming practices are directly drawn from the European Taxonomy [23], which could lead to a geographical bias. However, the recommended farming practices align closely with recommendations from the World Resources Institute's report on "Creating a Sustainable Food Future" [8] (specifically from "Course 5: Reduce GHG emissions from agricultural production"). The European Taxonomy [23] was also found to have the list of recommendations most easily applicable for the scoring purpose of the ACT assessment.

There is a score limit on the organic production of pulses and fruits only, because while organic production is recognised for its positive environmental impact compared to conventional agriculture, it does not contribute to GHG emissions reduction for other products [24].

SCORING RATIONALE:

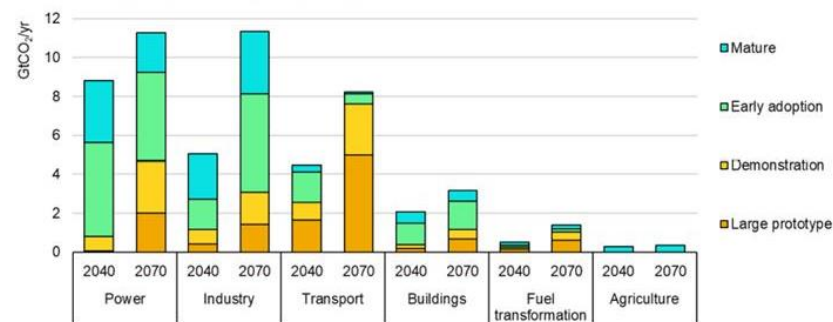
- ◆ Measures should be put in place in the largest share of the farm. The listed practices make sense if they are applied to the largest area or share of livestock as possible.
- ◆ Use of pesticides: the use of pesticides is relatively widely recognized as harmful for biodiversity. While the literature does not seem to find a consensus in removing them totally, limiting their use remains necessary.
- ◆ Off-season production: while process emissions remain negligible in the emissions profile of the food value chain, sustainable production implies avoiding using fossil fuels to heat greenhouses. A company that has an overall production with a significant amount of off-season products produced in greenhouses heated by fossil fuels (i.e., exceeding 10% of overall production) is not aligned with sustainable agricultural models.
- ◆ Organic production: there is no scientific consensus on whether organic production is beneficial for the environment in general. Given the results provided by H. Richie [24], we can reasonably reward a bonus to companies implementing organic production for pulses and fruits.

MODULE 3: INTANGIBLE INVESTMENTS

It is not enough for the company to only invest in its tangible or material assets. Module 3, “Intangible investment”, assesses the company’s investments in intangible assets such as research and development (R&D) in low-carbon and mitigation technologies / solutions, training and patent development. These indicators give an indication of the level of commitment to new technologies and work practices.

The weighting for the intangible investment module in ACT Agriculture & Agrifood is relatively low, it stands at 5 – 6% (depending on the company segment) compared to up to 12% in other ACT sectoral methodologies. The reason for this low weighting is the fact that part of the research and development for agriculture is already considered to be at the mature level as shown in Figure 12 below (NB: this figure does not include all the technologies for reducing emissions in the agriculture sector and may be limited to energy efficiency). This is mainly due to the fact that significant emissions reductions can be achieved through conservation and expansion of carbon sinks, improved agricultural productivity and shift from both the supply and demand sides [25] – measures which are not directly linked to technological improvements.

FIGURE 8: GLOBAL CO₂ EMISSION REDUCTIONS BY CURRENT TECHNOLOGY MATURITY CATEGORY AND SECTOR (IEA, ENERGY TECHNOLOGY PERSPECTIVES 2020 [26])



IEA 2020. All rights reserved.
Notes: GtCO₂ = gigatonnes of carbon dioxide. See Box 2.6 in Chapter 2 for the definition of the TRL categories large prototype, demonstration, early adoption and mature.

• AG 3.1 SHARE OF RESEARCH & DEVELOPMENT IN MITIGATION TECHNOLOGIES

DESCRIPTION & REQUIREMENTS

AG 3.1 SHARE OF RESEARCH & DEVELOPMENT IN MITIGATION TECHNOLOGIES

SHORT DESCRIPTION OF INDICATOR

A measure of the ratio of R&D investments in mitigation technologies. The indicator identifies the ratio between the company’s R&D investment in technologies for mitigation, and total R&D investments.

Technologies for mitigation include:

- ◆ Reducing methane emissions: semen selection for improving both methane and ammonia emission efficiency, feed additives which can reduce enteric fermentation (such as dietary fats, nitrates, 3-NOP), spreading nitrification inhibitors to reduce emissions from manure left on pasture, manure-management technologies consisting of separating solid from liquid (though this technology can already be considered mature).
- ◆ Recommendations for better practices from the literature include possible solutions such as reducing the use of fertilisers and spurring technological innovation. In particular, seed improvements will be necessary to boost yields and keep improving productivity (i.e., increasing yields without increasing the area of land cultivated) but also to increase adaptation capacity: drought-tolerant species, variety selection of rice, etc. Increase nitrogen use efficiency can also limit emissions from fertilisers through the use of “enhanced efficiency fertilisers” (EEFs) or urease inhibitors.
- ◆ New technologies are expected to develop to reduce emissions through, for example, alternative thermal systems.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- ◆ R&D expenditure in mitigation technologies over the last 3 years
- ◆ Total R&D expenditure over the last 3 years

CDP 2023 Questionnaire mapping to this indicator:

- ◆ None

CDP 2024 Questionnaire mapping to this indicator:

- ◆ None

HOW THE ANALYSIS WILL BE DONE

The analysis is based on the ratio of the company’s ‘annual R&D expenditure on mitigation () to the company’s ‘total annual capital expenditure in R&D’ (). Expenditures over the 3 last years are used for the indicator to consider that expenditure for major R&D projects may not be linear over years.

The ratio is defined as the ‘mitigation R&D intensity’ ratio () or:

$$D = \frac{\text{CAPEX R\&D mitigation}}{\text{CAPEX R\&D}}$$

Three years are taken as a reference because some pilots projects require high expenses one year and less expenses other years.

A maturity matrix is then used to assess this indicator, depending on the value of the ratio D.

Basic	Standard	Advanced	Next Practice	Low-carbon aligned
The share of climate mitigation R&D is below 10% of total R&D investments	The share of climate mitigation R&D is between 10% and 15% of total R&D investments	The share of climate mitigation R&D is between 15% and 25% of total R&D investments	The share of climate R&D is between 25% and 40% of total R&D investments	The share of climate R&D is above 40% of total R&D investments

RATIONALE

AG 3.1 SHARE OF RESEARCH & DEVELOPMENT IN MITIGATION TECHNOLOGIES

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Even if R&D is not at the core of the challenges of transitioning the food sector, improvements in developing or non-existing technologies could help significantly reduce GHG emissions, especially at the farm level.

SCORING RATIONALE:

- ◆ Expenditures over the 3 last years are used for the indicator to consider that expenditure for major R&D projects may not be linear over years.

• AG 3.2 TRAINING FOR FARMERS AND TECHNICAL TEAMS

DESCRIPTION & REQUIREMENTS

AG 3.2 TRAINING FOR FARMERS AND TECHNICAL TEAMS

SHORT DESCRIPTION OF INDICATOR

This indicator is an assessment of the level of investment for training of farmers and technical teams about climate related issues.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- ◆ Share of farmers/technical teams receiving specific climate-related training
- ◆ Share of training costs for specific climate-related training, compared to total training costs

CDP 2023 Questionnaire mapping to this indicator:

- ◆ F6.7

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 5.11.8

HOW THE ANALYSIS WILL BE DONE

Each subdimension is equally weighted.

Subdimension	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Share of farmer and technical teams members receiving specific climate-related training	Below 20% of farmers and technical teams members	Between 20% and 40% of farmers and technical teams members	Between 41% and 60% of farmers and technical teams members OR between 60% and 80% of farmers and technical teams members	Between 61% and 80% of farmers and technical teams members receiving climate related specific training	Above 80% of farmers and technical teams members receiving climate related specific training	50%
Share of training costs for specific climate-related training, compared to total training costs	Below 5% of training costs	Between 5% and 10% of training costs	Between 11% and 15% of training costs	Between 16% and 20% of training costs	Above 20% of training costs	50%

Farmers are either the farmers working on the production for agricultural and integrated companies, or the farmers working on the production of inputs for agrifood and integrated companies. Technical teams are the groups of employees having a direct or indirect impact on the company's emissions: supply, R&D teams, etc.

RATIONALE

AG 3.2 TRAINING FOR FARMERS AND TECHNICAL TEAMS

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Human capital on climate change is assessed in the ACT Agriculture & Agrifood Methodology for the following reasons:

- ◆ Training on climate change must be extended to the largest number of farmers involved (directly or indirectly) in the company.
- ◆ The involvement of technical teams, even in the agrifood sector, can foster changes to less emissive agricultural production.
- ◆ As mentioned previously, most of the emissions of the food sector occur at the farm step. Hence, training for employees would be particularly appropriate for the actors at this step of the value chain.
- ◆ In the same vein, the main action levers that have been identified for the food sector would be implemented at the farm step.

• **AG 3.3 INNOVATIVE LOW-CARBON FOOD-PRODUCTS**

DESCRIPTION & REQUIREMENTS

AG 3.3 INNOVATIVE LOW-CARBON FOOD-PRODUCTS

SHORT DESCRIPTION OF INDICATOR

Assessment of R&D projects aimed at reducing GHG emissions.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- ◆ Development of innovative low-carbon food products.
- ◆ Quantification of emissions from innovative low-carbon food products

CDP 2023 Questionnaire mapping to this indicator:

- ◆ None

CDP 2024 Questionnaire mapping to this indicator:

- ◆ None

**HOW THE ANALYSIS
WILL BE DONE**

The concept of innovative low-carbon food products refers to new agricultural or food products which significantly reduce the level of GHG emissions for a given level of nutrition (proteins, fibers, etc.).

Basic	Advanced	Low-carbon aligned
The company does no R&D for innovative low-carbon food products	The company does R&D for innovative low-carbon food products but does not quantify the emissions reduction	The company has estimated the potential emissions reduction from its R&D for innovative low-carbon food products

RATIONALE

AG 3.3 INNOVATIVE LOW-CARBON FOOD-PRODUCTS

**RATIONALE OF THE
INDICATOR**

RELEVANCE OF THE INDICATOR:

Alternative food products still need to be developed and deployed to help incentivise the industry and consumers to reduce their food carbon footprint. To make these alternative products attractive against products with a higher carbon footprint, investments are necessary to increase their production feasibility and decrease production costs.

MODULE 4: SOLD PRODUCT PERFORMANCE

Module 4, “Sold product performance”, assesses action to reduce emissions from the company’s value chain, contributing to the overall decarbonisation of its products and/or services. In this ACT methodology, this module focuses on addressing the company’s efforts to reduce AFOLU indirect emissions and to increase the share of low-carbon products.

Reported indirect AFOLU emissions shall cover at least 67% of the total indirect AFOLU emissions.

• AG 4.1 TREND IN PAST UPSTREAM AFOLU EMISSIONS

DESCRIPTION & REQUIREMENTS	AG 4.1 TREND IN PAST UPSTREAM AFOLU EMISSIONS
SHORT DESCRIPTION OF INDICATOR	<p>This indicator assesses the alignment of the company’s recent upstream AFOLU emissions trend with the trend of its decarbonisation pathway. The recent emissions intensity trend is calculated over a 5-year period to the reporting year (reporting year minus 5 years).</p> <p>This indicator only applies to Agrifood, Integrated and Food & Beverage services companies.</p>
DATA REQUIREMENTS	<p>The questions comprising the information request that are relevant to this indicator are:</p> <ul style="list-style-type: none">◆ Total absolute upstream AFOLU emissions at reporting year and RY-5 (tCO_{2e}) (preferred option) OR Per product: upstream AFOLU emissions intensity (kgCO_{2e})/kg) and activity (t) at reporting year and RY-5 <p>External sources of data used for the analysis of this indicator are:</p> <ul style="list-style-type: none">◆ Forest, Land and Agriculture Science-Based Target-Setting Guidance [10] <p>CDP 2023 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none">◆ C6.5 <p>CDP 2024 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none">◆ C7.8 <p>The benchmark indicators involved are:</p>

PARAMETER	INTENSITY METRIC	METHODOLOGICAL SOURCES
Upstream AFOLU emissions	% of absolute emissions	FLAG Sector approach (absolute contraction approach) [10]
Upstream AFOLU emissions intensity	kgCO ₂ e/kg product	FLAG commodity approach [10]

HOW THE ANALYSIS WILL BE DONE

The analysis is based on the comparison between the company's AFOLU emissions trend gradient and the decarbonization benchmark.

This indicator uses the same calculation as indicator AG 2.1 Trend in past emissions .

To calculate this indicator score, the company must report its past upstream AFOLU emissions over the 5 years before the reporting year, by product or as a whole. Upstream emissions cover all the emissions listed in section 4 Boundariesthat are related to the product used by the agrifood, integrated or food & beverage service company. The assessment of this indicator must be done on the products used by the company throughout this time period (i.e., between the reporting year minus 5 and the reporting year).

RATIONALE

AG 4.1 TREND IN PAST UPSTREAM AFOLU EMISSIONS

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Most of the emissions attributable to agrifood companies come from the upstream AFOLU part of the value chain. Companies can significantly reduce their upstream emissions by engaging their suppliers and change their product mix (i.e. increase the share of low-carbon food products).

SCORING RATIONALE:

- ◆ This indicator focuses on the upstream AFOLU emissions. This choice implies to exclude the upstream non AFOLU emissions from this indicator boundary. Given the global orders of magnitude of the AFOLU emissions compared to the other Scope 3 emissions sources for the companies considered, these emissions can be considered as negligible.
- ◆ This indicator is preferably assessed against the FLAG sector pathway, which encompasses diet shift and food loss and waste reduction. As recommended in the FLAG report [10], the companies assessed in this indicator (agrifood, integrated and food & beverage companies) are considered as demand-side companies and should be assessed against this pathway.

• **AG 4.2 TREND IN FUTURE UPSTREAM AFOLU EMISSIONS**

DESCRIPTION & REQUIREMENTS	AG 4.2 TREND IN FUTURE UPSTREAM AFOLU EMISSIONS								
SHORT DESCRIPTION OF INDICATOR	<p>This indicator assesses the alignment of the company’s future upstream AFOLU emissions with the expected decarbonisation pathway of the sector as a whole.</p> <p>This indicator only applies to Agrifood, Integrated and Food & Beverage services companies.</p>								
DATA REQUIREMENTS	<p>The questions comprising the information request that are relevant to this indicator are:</p> <ul style="list-style-type: none"> ◆ Absolute emissions from agricultural production (upstream AFOLU emissions) only at reporting year and at reporting year + 5 <p>CDP 2023 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none"> ◆ None <p>CDP 2024 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none"> ◆ None <p>External sources of data used for the analysis of this indicator are:</p> <ul style="list-style-type: none"> ◆ Forest, Land and Agriculture Science-Based Target-Setting Guidance [10] <p>The benchmark indicators involved are:</p> <table border="1" data-bbox="521 1011 2074 1181"> <thead> <tr> <th>SOURCE OF EMISSIONS</th> <th>PARAMETER</th> <th>METRIC</th> <th>METHODOLOGICAL SOURCES</th> </tr> </thead> <tbody> <tr> <td>AFOLU emissions</td> <td>MPS'</td> <td>% of absolute emissions</td> <td>FLAG sector approach (absolute contraction approach) [10]</td> </tr> </tbody> </table>	SOURCE OF EMISSIONS	PARAMETER	METRIC	METHODOLOGICAL SOURCES	AFOLU emissions	MPS'	% of absolute emissions	FLAG sector approach (absolute contraction approach) [10]
SOURCE OF EMISSIONS	PARAMETER	METRIC	METHODOLOGICAL SOURCES						
AFOLU emissions	MPS'	% of absolute emissions	FLAG sector approach (absolute contraction approach) [10]						
HOW THE ANALYSIS WILL BE DONE	<p>The analysis is based on the trend ratio (r_a) which represents the ratio between the company’s future (reporting year plus 5 years) upstream AFOLU emissions and the absolute contraction rate for the whole food sector.</p> <p>The company’s future upstream AFOLU emissions, will be compared at RY + 5 to the mitigation potential of the sector.</p>								

This indicator uses the same calculation as indicator AG 2.2 Trend in future AFOLU emissions .

RATIONALE

AG 4.2 TREND IN FUTURE UPSTREAM AFOLU EMISSIONS

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Trend in future upstream AFOLU emissions are included in this ACT methodology for the following reasons:

- ◆ The trend shows the speed at which the company's emissions will change in the coming years. Comparing this to the global emission reduction gap for the food sector gives an indication of the scale of the change that needs to be made within the company for it to be aligned with a low-carbon pathway.
- ◆ ACT aims to be future-oriented. Therefore, this particular indicator, with projected emissions, forms part of a holistic view of company emissions performance in the past, present, and future.

SCORING RATIONALE

With a common percentage of emissions reduction across the sector, using the Absolute Contraction Approach (ACA) has the advantage of adjusting the absolute level of effort required to the company's present emissions. Considering the whole AFOLU emissions instead of breaking them down per product allows to account for key challenges such as diet shift and food lost and waste reduction (which are included in the FLAG sectoral pathway).

• AG 4.3 DOWNSTREAM EMISSIONS ASSOCIATED WITH RUMINANT ANIMAL FEED

DESCRIPTION & REQUIREMENTS

AG 4.3 DOWNSTREAM EMISSIONS ASSOCIATED WITH RUMINANT ANIMAL FEED

SHORT DESCRIPTION OF INDICATOR

This indicator assesses how companies that produce ruminant animal feed integrate the downstream emissions resulting from the ruminant animal production into their emissions reduction activities and try to decrease them.

This indicator only applies to producers or processors of ruminant animal feed.

This indicator only applies to companies for which ruminant feed products weight accounts for more than 10% of the company's overall production.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- ◆ Share of ruminant feed products in company's overall production (in tonnes – revenues can be used as a proxy)

CDP 2023 Questionnaire mapping to this indicator:

- ◆ C6.5

CDP 2024 Questionnaire mapping to this indicator:

- ◆ C7.8

HOW THE ANALYSIS WILL BE DONE

Downstream emissions from ruminant animal feed include emissions from land use change associated with this production, enteric fermentation, manure management, pasture management and energy use.

Each subdimension is equally weighted.

Subdimension	Basic	Advanced	Low-carbon aligned	Weighting
Measurement of downstream emissions associated with ruminant animal feed	The company does not measure these emissions	The company gives a rough estimate of these emissions	The company fully quantifies these emissions	50%
Reduction of downstream emissions associated with ruminant animal feed	The company has taken no action to reduce these emissions in the recent past	The company has decreased these emissions by implementing recipes limiting methane emissions	The company has decreased these emissions by reducing the amount of sold ruminant animal feed	50%

RATIONALE

AG 4.3 DOWNSTREAM EMISSIONS ASSOCIATED WITH RUMINANT ANIMAL FEED

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Animal feed producers are an exception compared to other crop producers in the sense that their scope 3 downstream emissions due to ruminant animals breeding is particularly emissive. The rationale for not including scope 3 downstream emissions for the other companies

is that they remain negligible compared to the rest of the value chain. Furthermore, while downstream emissions are overall excluded from the boundaries for agricultural companies, in this particular case they do have levers to limit emissions from this emissions source.

SCORING RATIONALE:

- ◆ This indicator only applies to ruminant animal feed producers.
- ◆ This indicator is qualitative because of a lack of benchmark for this indirect emissions source.
- ◆ Companies producing ruminant animal feed have levers available to decrease their downstream emissions by estimating these emissions, by reducing the amount of sold ruminant animal feed and diversifying their customer base

• **AG 4.4 ACTION ON DEFORESTATION**

DESCRIPTION & REQUIREMENTS

AG 4.4 ACTION ON DEFORESTATION

SHORT DESCRIPTION OF INDICATOR

Refers to Forest 500 methodology [21] to evaluate the level of company’s commitment to ban deforestation, track progress and incentivise reforestation in the short term.

This indicator only applies to Agrifood, Integrated and Food & Beverage services companies.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- ◆ Commitments and implementation of actions on deforestation

CDP Questionnaire 2023 mapping to this indicator:

- ◆ F1.3
- ◆ F1.7
- ◆ F4.6b
- ◆ F6.1
- ◆ F6.2a
- ◆ F6.12a

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 8.7.1

- ◆ 8.8.1
- ◆ 8.10.1
- ◆ 8.17.1

External sources of data used for the analysis of this indicator are:

- ◆ Global Canopy, *The Forest 500: 2019 Company Assessment Methodology*, 2019 [21]

**HOW THE ANALYSIS
WILL BE DONE**

Subdimension	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Deforestation commitments						
Company has a commitment to procure sustainably produced commodities. Commitment must be active and ongoing.	No commitment to producing or procuring sustainably sourced commodities.		Sustainably produced/procured	Commitment to procuring sustainably produced commodities.	Commitment to procuring commodities from companies that prevent clearing or conversion of any native vegetation (beyond just forests).	8%
Zero deforestation production/procurement commitment apply to all regions and to all company operations	No / No commitment		Commitment applies to all regions OR to all company operations		Commitment applies to all regions AND to all company operations	5%

Progress on implementation of zero deforestation production/procurement is reported and independently verified	No / No commitment			Progress on implementation is reported in a quantifiable way.	Progress is reported in a quantifiable way and independently verified.	25%
Commitments apply to all direct and indirect third-party suppliers of the company	No / No commitment			Commitments apply to direct suppliers	Commitment apply to direct and indirect suppliers – if applicable. The company has no suppliers.	5%
Supply chain traceability system						
Commitment to develop and implement upstream supply chain traceability system. Commitment must be active and ongoing.	No commitment to traceability			Company implemented a traceability system back to production level. Does not check compliance with zero conversion commitment.	Company implemented a traceability system back to production level. Includes statement that suppliers are checked for compliance with zero conversion commitment.	5%

Commitment to develop and implement upstream supply chain traceability system applies to all sourcing regions and to all company operations	No / No commitment		Applies to all sourcing regions OR to all company operations		Applies to all sourcing regions AND to all company operations	5%
Progress on implementation of upstream supply chain traceability system is reported and independently verified	No / No commitment			Progress on implementation is reported in a quantifiable way.	Progress is reported in a quantifiable way and independently verified.	35%
The company monitors and verifies compliance in their supply chain with zero conversion commitment.	No monitoring / No commitment			Non-specific monitoring statement	Time-specific monitoring statement	10%
Reforestation efforts						
Company taking action on reforestation on own land (offsetting cannot be included)	No / No commitment		The company has a commitment to take reforestation actions on their own land		The company reports how many hectares of reforestation or restoration are being or have been conducted on their own land	2%

Guidance: Conversion-free is understood as no conversion of natural ecosystems anywhere (also referred to as zero/zero gross conversion), deforestation-free is understood as no loss of natural forests anywhere (also referred to as zero/zero gross deforestation), while zero net deforestation is understood as a commitment to offset forest loss through forest restoration [21].

Exception: for very specific cases, companies may not be affected by deforestation issues. For example, for pure agricultural companies producing exclusively certain fruits and vegetables with no impact on deforestation, or fishery productions, this indicator may not be relevant. **In these very specific cases only and upon a clear justification**, this indicator can be removed from the company's assessment. In this case, the indicator weighting is equally distributed among the other indicators of Module 4.

Caution: this exception does not apply for companies indirectly affected by deforestation. For instance, food-processing companies, restaurant chains or catering companies must be assessed against this deforestation indicator, even if they operate at the end of the value chain.

RATIONALE**AG 4.4 ACTION ON DEFORESTATION****RATIONALE OF THE INDICATOR****RELEVANCE OF THE INDICATOR:**

Four Forest Risk Commodities (FRC) sectors – cattle, soy, palm oil and timber, are responsible for 80% of deforestation globally [22]. The food sector has consequently a high responsibility in the global issue of deforestation. Food companies may not be directly involved in deforestation but have a strong role to play in tracking their supplies.

• **AG 4.5 INCREASE IN THE SHARE OF LOW-CARBON PRODUCTS**

DESCRIPTION & REQUIREMENTS

AG 4.5 INCREASE IN THE SHARE OF LOW-CARBON PRODUCTS

SHORT DESCRIPTION OF INDICATOR

This indicator quantitatively assesses how the company is switching its production to more low-emissive food products.
This indicator only applies to Agrifood, Integrated and Food & Beverage services companies.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- ◆ Total emissions intensity of each of the main products at reporting year and reporting year – 5
- ◆ Share of each of the main products at reporting year and reporting year – 5 (in tonnes – revenues can be used as a proxy)

CDP 2023 Questionnaire mapping to this indicator:

- ◆ C4.5a

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 7.74.1

External sources of data used for the analysis of this indicator are:

- ◆ Poore & Nemecek, *Reducing food’s environmental impacts through producers and consumers*, 2018 [3] (decarbonisation scenario)

The benchmark indicators involved are:

INTENSITY METRIC	BENCHMARK
kgCO ₂ e/kg product	Poore & Nemecek [3]

HOW THE ANALYSIS WILL BE DONE

“Low-carbon products” are defined as products not exceeding a certain threshold of kilogram of CO₂ equivalent per kilogram of product. Increase in this ratio would be expected over the past 5 years.

For this indicator and given the categories of considered companies, the overall carbon footprint of all sold products shall be considered (i.e. farm-gate and post-farm gate emissions).

For this indicator, companies are required to focus on the main products, both in terms of weight and emissions. The products must be included to ensure that:

- ◆ Products representing individually 10% or more of the total company's emissions at the reporting year are included;
- ◆ The sum of all products reported shall cover at least 80% of the total company's emissions at the reporting year.

The post-farm emissions boundaries are broader for this indicator than the boundaries of the rest of the methodology. It shall encompass all the emissions sources, including transport and packaging emissions.

Proposed threshold for a product to be considered as "low-carbon": **6.3 kgCO₂e/kg product**

This threshold is derived from the median emissions at the global scale for all product categories drawn from the Poore & Nemecek publication and dataset [3]. The threshold chosen corresponds to the mean of the medians.

The first step is to calculate the share of low-carbon food products at RY and at RY – 5, that is the share of products emitting less than 6.3 kgCO₂e/kg product on the total production.

The rest of the computation is conducted as in indicator AG 2.6 Increase in the share of low-carbon products .

RATIONALE**AG 4.5 INCREASE IN THE SHARE OF LOW-CARBON PRODUCTS****RATIONALE OF THE INDICATOR****RELEVANCE OF THE INDICATOR:**

As described, this indicator presents the advantage of assessing the evolution in the products mix of any agrifood company. It assesses, for the overall sold products, if the company has tended in the recent past to shift from highly emissive to low-emissive categories of products.

SCORING RATIONALE:

The scoring depends on the share of low-carbon food products at the starting point (i.e., 5 years before the reporting year). The higher the share of low-carbon food product, the less effort is required in selling more low-carbon food products.

MODULE 5: MANAGEMENT

Module 5, “Management”, assesses whether the company has the expertise, strategy, incentives (linked to climate change management) and plans in place to manage its low-carbon transition. It assesses the quality of the transition plan, and the scenario analysis used to develop it.

• AG 5.1 OVERSIGHT OF CLIMATE CHANGE ISSUES

DESCRIPTION & REQUIREMENTS	AG 5.1 OVERSIGHT OF CLIMATE CHANGE ISSUES
SHORT DESCRIPTION OF INDICATOR	The company discloses that responsibility for climate change within the company lies at the highest level of decision making within the company structure.
DATA REQUIREMENTS	<p>The questions from the information request that are relevant to this indicator are:</p> <ul style="list-style-type: none">◆ Details on the highest level of direct responsibility for climate change within the organisation. <p>CDP 2023 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none">◆ C1.1◆ C1.1a◆ C1.2 <p>CDP 2024 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none">◆ 4.1.1◆ 4.1.2◆ 4.3.1 <p>External sources of data may also be used for the analysis of this indicator.</p>
HOW THE ANALYSIS WILL BE DONE	<p>The benchmark case is that climate change is managed within the highest decision-making structure within the company.</p> <p>The position at which climate change is managed within the company structure is determined from the company data submission and accompanying evidence. For small companies, or for cases in which the corporate structure does not match the structure of the maturity matrix, the assessor should assign a score based on the company’s specific hierarchy (i.e., if responsibility for climate change mitigation lies at the</p>

highest level of decision-making within the organization, award “Low-carbon aligned”. If responsibility lies one level below the highest level, award “Next practice”, etc.).

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
<i>Associated score</i>	0%	25%	50%	75%	100%	
<i>What is the position of the employee/committee with highest responsibility for climate change mitigation issues?</i>	No one in charge of climate change issues	Level 4 (see guidance)*	Level 3 (see guidance)*	Level 2 (see guidance)*	Level 1 (see guidance)*	100%

* Further guidance for each level of seniority is given below:

- ◆ Level 1
 - Highest level of accountability or decision-making within the organization, with responsibility for overall organizational or corporate strategic direction.
 - Examples: Board, sub-set of the Board, Chief Executive Officer (CEO)
- ◆ Level 2
 - Person/committee that is one step in the corporate structure from the highest level of decision-making of the organization (i.e. reports to or is accountable to Level 1). Inputs into organizational strategy but does not make decisions on it. May have responsibility and accountability for business unit strategy formation and implementation of one or more business units.
 - Examples: Vice President, Director, other C-Suite officer (e.g., Chief Financial Officer (CFO), Chief Procurement Officer (CPO), Chief Risk Officer (CRO), Chief Operating Officer (COO), Chief Sustainability Officer (CSO), other committee appointed by the Board, etc.
- ◆ Level 3
 - Person/committee that is two steps in the corporate structure from the highest level of decision-making of the organization. May have responsibility and accountability for business unit strategy formation and implementation for one business unit.
 - Examples: Manager, Senior Manager
- ◆ Level 4

- Person/committee that is three or more steps in the corporate structure from the highest level of decision-making of the organization. No responsibility or accountability for business unit strategy development.
- Examples: Officer, Senior Officer

RATIONALE

AG 5.1 OVERSIGHT OF CLIMATE CHANGE ISSUES

RATIONALE OF THE INDICATOR

Successful change within companies, such as the transition to a low-carbon economy, requires strategic oversight and buy-in from the highest levels of decision-making within the company. Evidence of how climate change is addressed within the top decision-making structures is a proxy for how seriously the company takes climate change, how well integrated it is at a strategic level and how aligned this is with the ISO 14 090 principles about governance subsidiarity, mainstreaming and embedding. High-level governance also increases the likelihood of effective action to address the low-carbon transition in the short, medium and long term.

• **AG 5.2 CLIMATE CHANGE OVERSIGHT CAPABILITY**

DESCRIPTION & REQUIREMENTS

AG 5.2 CLIMATE CHANGE OVERSIGHT CAPABILITY

SHORT DESCRIPTION OF INDICATOR

Company board or executive management has expertise on the science and economics of climate change, including an understanding of policy, technology and consumption drivers that can disrupt current business. This expertise is used by the individual or committee to inform high-level decision-making within the company.

DATA REQUIREMENTS

The relevant data for this indicator are:

- ◆ Environmental policy and details regarding governance
- ◆ The reporter shall identify the position of the individual or name of the committee with this responsibility and outline their expertise regarding climate change and the low-carbon transition

CDP 2023 Questionnaire mapping to this indicator:

- ◆ C1.1
- ◆ C1.1a
- ◆ C1.1d
- ◆ C1.2

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 4.2
- ◆ 4.4

External sources of data may also be used for the analysis of this indicator.

HOW THE ANALYSIS WILL BE DONE

The presence of expertise on topics relevant to climate change and the low-carbon transition at the level of the individual or committee with overall responsibility for it within the company is assessed. The presence of expertise is the condition that must be fulfilled for points to be awarded in the scoring.

The assessor determines if the company has expertise as evidenced through a named expert biography outlining capabilities. A cross check is performed against 5.1 on the highest responsibility for climate change, the expertise should exist at the level identified. To be awarded Low-carbon aligned, the company must provide examples of how the individual or committee’s expertise has informed strategic investment planning and/or decision-making processes.

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Associated score	0%	25%	50%	75%	100%	
Does the individual or committee with oversight of climate change issues (as reported in indicator 5.1) have relevant climate change- and low-carbon transition-related expertise*?	The employee/committee does not meet any of the characteristics of climate change- and low-carbon transition-related expertise*.	The employee/committee meets 1 of the characteristics of climate change- and low-carbon transition-related expertise*.	The employee/committee meets 2 of the characteristics of climate change- and low-carbon transition-related expertise*.	The employee/committee meets 3 or more of the characteristics of climate change- and low-carbon transition-related expertise*.	The employee/committee meets 3 or more of the characteristics of climate change- and low-carbon transition-related expertise*. Expertise systematically informs strategic investment planning/decision-making processes.	100%

* “Characteristics of climate change- and low-carbon transition-related expertise” include:

- ◆ Academic/professional qualification related to climate change and the low-carbon transition, including an understanding of the impacts and risks, and the solutions to implement (e.g., Bachelors, Masters, Doctorate, professional certification, diploma, etc.)
 - A purely energy-related background with no relationship to climate change and the low-carbon transition is not enough to qualify as expertise.
- ◆ Recent (i.e., within last 10 years) professional experience related to climate change and the low-carbon transition (e.g., previous employment in climate change/low-carbon transition-related role, or with a climate change/low-carbon transition-related organisation, etc.)
- ◆ Recent (i.e., within last 10 years)/active membership of organisation(s) driving corporate knowledge and action on climate change and the low-carbon transition (e.g., World Business Council For Sustainable Development, Solar Energy Industry Association, etc.)
- ◆ Technical knowledge related to climate change and the low-carbon transition, evidenced through recently (i.e., within last 10 years) published outputs written by the individual/committee (e.g., statements, reports, etc.)

RATIONALE**AG 5.2 CLIMATE CHANGE OVERSIGHT CAPABILITY****RATIONALE OF THE INDICATOR**

Effective management of the low-carbon transition requires specific expertise related to climate change and its impacts in terms of physical and transition risk, and their likely direct and indirect effects on the business. Presence of this capability within or closely related to the decision-making individuals or bodies that will implement the low-carbon transition indicates company commitment to that transition and increases the chances of success.

Even if companies are managing climate change at the board level or equivalent, a lack of expertise could be a barrier to successful management of a low-carbon transition.

• AG 5.3 LOW-CARBON TRANSITION PLAN

DESCRIPTION & REQUIREMENTS

AG 5.3 LOW-CARBON TRANSITION PLAN

SHORT DESCRIPTION OF INDICATOR

The company has a plan on how to transition the company to a business model compatible with a low-carbon economy.

DATA REQUIREMENTS

The relevant data for this indicator are:

- ◆ Environmental policy and details regarding governance

The reporter should provide a description of the transition plan including the following details:

- ◆ Whether the transition plan exists in a documented form and whether that document is public
- ◆ How the results of scenario testing influenced the transition plan
- ◆ Timescale for implementation of the transition plan
- ◆ Who has responsibility for its implementation (at the strategic, not operational, level)
- ◆ How successful implementation of the plan will be measured and monitored. (Should include details of any linked targets, emissions reduction or energy efficiency targets, or KPIs.)

CDP Questionnaire 2023 mapping to this indicator:

- ◆ C3.1
- ◆ C3.3
- ◆ C3.4

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 5.2
- ◆ 5.3
- ◆ 5.3.1
- ◆ 5.3.2

HOW THE ANALYSIS WILL BE DONE

From the 2021 CDP Transition Plans discussion paper: “A climate transition plan is a time-bound action plan that clearly outlines how an organization will achieve its strategy to pivot its existing assets, operations, and entire business model towards a trajectory that aligns with the latest and most ambitious climate science recommendations, i.e., halving greenhouse gas (GHG) emissions by 2030 and reaching net-zero by 2050 at the latest, thereby limiting global warming to 1.5°C.” [27]. Other initiatives also develop their own definition, which are quite similar (IFRS - International Financial Reporting Standards, TCFD - Task Force on Climate-Related Financial Disclosures, EFRAG - European Financial Reporting Advisory Group, TPT – UK Transition Plan Task Force, GFANZ – Glasgow Financial Alliance for Net Zero).

The assessor evaluates the description and evidence of the low-carbon transition plan for the presence of best practice elements and consistency with the other reported management indicators. The company description and evidence are compared to the maturity matrix developed to guide the scoring and a greater number of points are allocated for elements indicating a higher level of maturity.

Among the best practice elements identified to date are:

- ◆ The plan includes financial projections
- ◆ The plan should include cost estimates or other assessments of financial viability as part of its preparation
- ◆ The description of the major changes to the business is comprehensive, consistent, aligned with other indicators
- ◆ Quantitative estimates of how the business will change in the future are included
- ◆ Costs associated with the plan (e.g., write-downs, site remediation, contract penalties, regulatory costs) are included
- ◆ Potential “shocks” or stressors (sudden adverse changes) have been taken into consideration
- ◆ Relevant region-specific considerations are included
- ◆ The plan’s measure of success is SMART - contains targets or commitments with timescales to implement them, is time-constrained or the actions anticipated are time-constrained
- ◆ The plan’s measure of success is quantitative
- ◆ The description of relevant testing/analysis that influenced the transition plan is included
- ◆ The plan is consistent with reporting against other ACT indicators
- ◆ The scope should cover all business units / operations and the rest of the value chain (upstream and downstream). The plan should cover the short, medium and long terms. From now or the near future <5 years, until at least 2035 and preferably beyond (2050)
- ◆ The plan contains details of actions the company realistically expects to implement (and these actions are relevant and realistic)
- ◆ The plan is approved at the strategic level within the organisation
- ◆ Discussions about the potential impacts of a low-carbon transition on the current business have been included
- ◆ The company has a publicly-acknowledged science-based target (SBT)

The maximum score (100%) is assigned if all of these elements are demonstrated. Each subdimension is equally weighted.

Sub dimension	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
<i>Associated score</i>	<i>0%</i>	<i>25%</i>	<i>50%</i>	<i>75%</i>	<i>100%</i>	
<i>Measure of success</i>	No measure of success		At least one measure of success which is fully SMART* and contains both qualitative and quantitative elements.		More than one measure of success. All measures of success are fully SMART*, contain both qualitative and quantitative elements, and are aligned with a low-carbon scenario.	10%
<i>Financial content in plan</i>	No financial content	Financial projections, cost estimates or other estimates of financial viability are described but not quantified.	Financial projections, cost estimates or other estimates of financial viability are quantified in some detail.	Quantitative estimations of how the business will change in the future are included. Costs associated with the plan (e.g., write-downs, site remediation, contract penalties, regulatory costs) are included.	Description of the major financial changes to the business over all timescales is comprehensive and aligned with other indicators. The transition plan is integrated into the overall business strategy of the organization and linked to the profit and loss statement.	10%

Short-term actions (recent past up to reporting year + 5 years)	Contains no discussion of short-term actions.		Contains examples of short-term actions the company expects to implement.		Contains detailed descriptions of relevant and achievable short-term actions the company expects to implement to make the transition a reality.	10%
Long-term actions and vision (from reporting year + 5 years onwards)	Contains no discussion of long-term actions or vision.		Contains descriptions of long-term actions the company expects to implement to make the transition a reality.		Contains descriptions of long-term actions the company expects to implement to make the transition a reality. Contains a vision of what the far-future company could look like in terms of physical assets and business model.	10%
Scope	Scope of transition plan is not defined.	Transition plan applies only to specific business units / operations (representing less than 50% of company's GHG emissions).	Transition plan applies only to specific business units / operations (representing more than 50% of company's GHG emissions).	Transition plan applies to all business units / operations,	Transition plan applies to all business units / operations and the rest of the value chain (upstream and downstream). Any exclusions from the plan must not be material to the organization in terms of GHG emissions.	10%

Implementation of results of scenario testing	The results of the company's scenario testing (as assessed in Indicator 5.5 – Scenario testing) have not informed the development of the company's transition plan.				The results of the company's scenario testing (as assessed in Indicator 5.5 – Scenario testing) have informed the development of the company's transition plan.	10%
Transition plan timescale†	Covers only short term, from reporting year until (RY + 3 years)	Covers only short and medium term, from reporting year until (RY + 4 to 10 years)	Covers short, medium and long term, from reporting year until (RY + 11 to 20 years)	Covers short, medium and long term, from reporting year until (RY + 21 years to 2049)	Covers short, medium and long term, from reporting year until 2050 or beyond	10%
Review and update process	No transition plan review and update process is in place.	Commitment to review and update transition plan, but no defined timescale or process.	Commitment to review and update transition plan, with either a defined timescale or process.	Commitment to review and update transition plan less often than every 5 years, with a defined process.	Commitment to review and update transition plan at least every 5 years for continuous relevancy and efficacy, with a defined process.	10%

<i>Progress reporting process</i>	No transition plan progress reporting process is in place.	Commitment to report progress against the transition plan and any material changes, but no defined timescale or stakeholder feedback process (e.g., shareholders and AGMs).	Commitment to report progress against the transition plan and any material changes, with either a defined timescale or stakeholder feedback process (e.g., shareholders and AGMs).	Commitment to report progress against the transition plan and any material changes less often than annually, with a defined stakeholder feedback process (e.g., shareholders and AGMs).	Commitment to report progress against the transition plan and any material changes annually, with a defined stakeholder feedback process (e.g., shareholders and AGMs).	10%
<i>The role of a carbon price in the plan</i>	No carbon price is considered.	Internal studies have been conducted regarding a carbon price, but this has not been used to guide decisions.	A carbon price is used only qualitatively by the company.	A carbon price is embedded in cost calculations as a financial indicator.	The carbon price value is aligned with a low-carbon scenario [‡] and is integrated into the financial scenario used for making key business decisions.	10%

* A measure of success is considered “fully SMART” if it meets each of the following SMART elements [28]:

1. Specific: the measure of success is explicit, with no room for misinterpretation.
2. Measurable: the measure of success is measurable, and it will be clear when it has been achieved.
3. Achievable: the measure of success is stretching and ambitious, but not so much that it is unachievable.
4. Relevant: the measure of success contributes to the organisation’s overall objectives, and complements other measures of success.
5. Time-bound: the measure of success has a set deadline.

† Companies aiming to achieve their low-carbon transition (e.g., reach net-zero emissions) any year before 2050 and maintain or improve this low-carbon state beyond this specified year, should score Low-carbon aligned. This indicator aims to penalize companies whose transition plans are neither sufficiently long-term, nor sufficiently ambitious (i.e., do not contain a net-zero commitment).

‡ Refer for instance to International Energy Agency (IEA), World Energy Outlook 2019, Annex B, p 758 [29]. CO₂ prices are displayed by world regions, predicted values in 2030 and 2050.

RATIONALE

AG 5.3 LOW-CARBON TRANSITION PLAN

RATIONALE OF THE INDICATOR

The agriculture & agrifood sector requires substantial changes to its business to align with a low-carbon economy, over the short, medium and long terms, whether voluntarily following a strategy to do so or if forced to change by regulations and structural changes to the market. It is better for the success of its business and transition if these changes occur in a planned and controlled manner.

• AG 5.4 CLIMATE CHANGE MANAGEMENT INCENTIVES

DESCRIPTION & REQUIREMENTS

AG 5.4 CLIMATE CHANGE MANAGEMENT INCENTIVES

SHORT DESCRIPTION OF INDICATOR

The Board's compensation committee has included metrics for the reduction of GHG emissions in the annual and/or long-term compensation plans of senior executives. The company provides financial incentives for the management of climate change issues as defined by a series of relevant indicators.

DATA REQUIREMENTS

The relevant data for this indicator are:

- ◆ Management incentives
- ◆ The reporter shall report whether the company provides incentives for the management of climate change issues, including the attainment of targets
- ◆ The reporter shall provide details on the incentives provided for the management of climate change issues
- ◆ The reporter shall provide details on the activities that are usually rewarded by incentives in the company

CDP Questionnaire 2023 mapping to this indicator:

- ◆ C1.3

- ◆ C1.3a

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 4.5
- ◆ 4.5.1

**HOW THE ANALYSIS
WILL BE DONE**

The assessor verifies if the company has compensation incentives set for senior executive compensation and/or bonuses, that directly and routinely reward specific, measurable reductions of tons of carbon emitted by the company in the preceding year and/or the future attainment of emissions reduction targets, or other metrics related to the company’s low-carbon transition plan. For small companies, or for cases in which the corporate structure does not match the structure of the maturity matrix, the assessor should assign a score based on the company’s specific hierarchy (i.e., if climate change management incentives are awarded to the highest level of decision-making within the organization, award “Low-carbon aligned”. If incentives are available one level below the highest level, award “Next practice”, etc.).

Note: the wording of the “What is the type of incentive” is based on the Executive Compensation Guidebook for Climate Transition developed by Willis Towers Watson, in partnership with the Climate Governance Initiative, a project in collaboration with the World Economic Forum [30].

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
<i>Associated score</i>	0%	25%	50%	75%	100%	

<i>Who is entitled to benefit?</i>	Any other answer	Level 4 (see guidance)*	Level 3 (see guidance)*	Level 2 (see guidance)*	Level 1 (see guidance)*	50%
<i>What is the type of incentive?</i>	No incentives	The company has introduced climate metrics (key performance indicators (KPIs)), including metrics related to GHG emissions reductions, within annual bonuses (or other short-term incentive plans).		The company has introduced climate metrics (key performance indicators (KPIs)), including metrics related to GHG emissions reductions, within its long-term incentive plan (likely to include equity in the company).	The company has introduced climate metrics, (key performance indicators (KPIs)), including metrics related to GHG emissions reductions, within its long-term incentive plan (likely to include equity in the company). This plan aligns with the timescale and content of the company's transition plan and emissions reduction targets.	50%

* Further guidance for each level of seniority: see indicator 5.1 Oversight of climate change issues on page 88.

RATIONALE

AG 5.4 CLIMATE CHANGE MANAGEMENT INCENTIVES

RATIONALE OF THE INDICATOR

Executive compensation should be aligned with overall business strategy and priorities. As well as commitments to action, the company should ensure that incentives, especially at the executive level, are in place to reward progress towards a low-carbon transition. This will improve the likelihood of a successful low-carbon transition plan.

Monetary incentives at the executive level are an indication of commitment to successful implementation of a strategy for low-carbon transition.

• AG 5.5 CLIMATE CHANGE SCENARIO TESTING

DESCRIPTION & REQUIREMENTS

AG 5.5 CLIMATE CHANGE SCENARIO TESTING

SHORT DESCRIPTION OF INDICATOR

Testing or analysis relevant to determining the impact of transition to a low-carbon economy on the current and projected business model and/or business strategy has been completed, with the results reported to the board or c-suite, the business strategy revised where necessary, and the results publicly reported.

DATA REQUIREMENTS

The relevant data for this indicator are:

- ◆ The reporter shall provide the details and supporting documents on the organization's climate change scenario testing

CDP Questionnaire 2023 mapping to this indicator:

- ◆ C2.3a
- ◆ C3.2
- ◆ C3.2a
- ◆ C3.2b

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 3.1.1
- ◆ 5.1
- ◆ 5.1.1
- ◆ 5.1.2

HOW THE ANALYSIS WILL BE DONE

The assessor evaluates the description and evidence of the low-carbon economy scenario testing for the presence of best-practice elements and consistency with the other reported management indicators. The company description and evidence are compared to the maturity matrix developed to guide the scoring and a greater number of points is allocated for elements indicating a higher level of maturity.

Best-practice elements to be identified in the test/analysis include:

- ◆ full coverage of the company’s boundaries
- ◆ timescale from present to long-term (2035-2050)
- ◆ results are expressed in value-at-risk or other financial terms
- ◆ multivariate: a range of different changes in conditions are considered together
- ◆ changes in conditions are specific to a low-carbon climate scenario
- ◆ climate change conditions are combined with other likely future changes in operating conditions over the timescale chosen

Question	Basic	Standard	Advanced	Next practice	Low carbon aligned	Weighting
Associated score	0%	25%	50%	75%	100%	
What is the scope of the scenario testing?	Scope of scenario testing is not defined.	Scenario testing applies only to specific business units / operations (representing less than 50% of company's GHG emissions).	Scenario testing applies only to specific business units / operations (representing more than 50% of company's GHG emissions).	Scenario testing applies to all business units / operations,	Scenario testing applies to all business units / operations and the rest of the value chain (upstream and downstream). Any exclusions from the plan must not be material to the organization in terms of GHG emissions.	25%
What is the timescale of the scenario testing?	Covers only short term, from reporting year until (RY + 3 years).	Covers only short and medium term, from reporting year until (RY + 4 to 10 years).	Covers short, medium and long term, from reporting year until (RY + 11 to 20 years).	Covers short, medium and long term, from reporting year until (RY + 21 years to 2049).	Covers short, medium and long term, from reporting year until 2050 or beyond.	20%

<i>Does the company assess the materiality of climate-related risks/opportunities*?</i>	The materiality of climate-related risks/opportunities* is not assessed.	The materiality of 1 category of climate-related risks/opportunities* is assessed.	The materiality of 2 categories of climate-related risks/opportunities* is assessed.	The materiality of 3 categories of climate-related risks/opportunities* is assessed.	The materiality of 4 categories of climate-related risks/opportunities* is assessed.	10%
<i>How many scenarios are considered?</i>	No scenarios are considered.	Considers 1 scenario.	Considers 2 scenarios.		Considers 3 or more scenarios, including a low-carbon economy scenario.	10%
<i>What parameters/assumptions are considered?</i>	Considers 1-2 different parameters/assumptions.		Considers 3-4 parameters/assumptions together (multivariate)		Considers 5 or more parameters/assumptions together, related to changing climate conditions in combination with changes in operating conditions .	15%
<i>Are the results† expressed in qualitative/ quantitative/ financial terms?</i>	No results available	Expressed only in qualitative terms	Expressed in qualitative and quantitative terms	Expressed in qualitative, quantitative and financial terms	Expressed in qualitative, quantitative and financial terms and results are translated into value-at-risk	10%
<i>Is a carbon price considered?</i>	No carbon price is considered.		A carbon price is used as one of the main parameters/assumptions		The carbon price used is aligned with the parameters/assumptions of a low-carbon economy scenario‡	10%

* Climate-related risk categories [31]:

- ◆ Market and Technology shifts
- ◆ Reputation
- ◆ Policy and Legal
- ◆ Physical Risks

† Results of scenario analysis should be presented as business impacts which can include [31]:

- ◆ Earnings – what conclusions does the organization draw about impact on earnings and how does it express that impact (e.g., as EBITDA (earnings before interest, taxes, depreciation and amortization), EBITDA margins, EBITDA contribution, dividends)?
- ◆ Costs – what conclusions does the organization draw about the implications for its operating/production costs and their development over time?
- ◆ Revenues – what conclusions does the organization draw about the implications for the revenues from its key commodities/ products/ services and their development over time?
- ◆ Assets – what are the implications for asset values of various scenarios?
- ◆ Capital Allocation/ investments – what are the implications for capex and other investments?
- ◆ Timing – what conclusions does the organization draw about development of costs, revenues and earnings across time (e.g., 5/10/20 year)?

‡ Refer for instance to International Energy Agency (IEA), World Energy Outlook 2019, Annex B, p 758 [29]. CO2 prices are displayed by world regions, predicted values in 2030 and 2050.

RATIONALE

AG 5.5 CLIMATE CHANGE SCENARIO TESTING

RATIONALE OF THE INDICATOR

Changes predicted to occur due to climate change could have a number of consequences for the agriculture & agrifood sector, including increased losses. There are a variety of ways of analysing the potential impacts of climate-related changes on the business, whether these are slow and gradual developments or one-off “shocks”. Investors are increasingly calling for techniques such as use of weather and crops predictive models, scenario analysis and stress testing to be implemented to enable companies to calculate the value-at-risk that such changes could pose to the business. As this practice is emergent at this time there is currently no comprehensive survey or guidance on specific techniques or tools recommended for the sector. The ACT methodology thus provides a broad definition of types of testing and analysis that can be relevant to this information requirement, to identify both current and best practices and consider them in the analysis.

Scenario testing is an important management tool for preparing for the low-carbon transition. For businesses likely to be strongly affected by climate change impacts (both direct and indirect), it has even greater importance.

• AG 5.6 WASTE REDUCTION STRATEGY

DESCRIPTION & REQUIREMENTS	AG 5.6 WASTE REDUCTION STRATEGY
SHORT DESCRIPTION OF INDICATOR	This indicator assesses whether the company has a comprehensive strategy for reducing waste within its own operations, in the upstream and downstream phases of its value chain, and from packaging at all phases.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: <ul style="list-style-type: none">◆ Strategy to reduce waste (objectives, implementation, monitoring). CDP 2023 Questionnaire mapping to this indicator: <ul style="list-style-type: none">◆ C4.2b◆ C4.3b CDP 2024 Questionnaire mapping to this indicator: <ul style="list-style-type: none">◆ 7.54.2◆ 7.55.2
HOW THE ANALYSIS WILL BE DONE	The assessor evaluates the description and evidence of the waste reduction strategy for the presence of best practice elements. The company description and evidence are compared to the maturity matrix developed to guide the scoring and a greater number of points is allocated for elements indicating a higher level of maturity. Best-practice elements to be identified in the waste reduction strategy include: <ul style="list-style-type: none">◆ Basing the strategy on an exercise costing the value of waste◆ Commitment to reduce waste in direct operations (covers all operations and whole organisational boundary)◆ Commitment to reduce waste in value chain – both upstream and downstream◆ Using targets with end dates for waste reduction◆ Having interim targets◆ Following a waste hierarchy approach (prevention first) (for example, from the UNEP national waste management strategies report [17])

- ◆ Management at a high level within the organisation
- ◆ Monitoring, reporting and verification processes included to track progress
- ◆ Continuous improvement/learning feedback mechanisms
- ◆ Linking the waste strategy to the development of circular economy business models
- ◆ Linking the waste strategy to the core business strategy
- ◆ Linking the waste strategy to core business operations (procurement, product design)

Each subdimension is equally weighted.

Subdimension	Basic	Standard	Advanced	Next practice	Low-carbon aligned
Scope	Limited scope to one part of the value chain which does not include the major source(s) of waste	Limited scope but has identified the largest source(s) of waste	Strategy covers multiple parts of the value chain that include the major source(s) of waste	Includes both own operations, upstream and downstream parts of the value chain. Upstream engagement goes beyond tier 1 to ensure to address the biggest waste generator	Includes all elements from “next practice” level and also includes a post-consumer recovery element through recycling and upcycling
Commitments	No defined commitments on a defined timescale		Timescale for implementation is mentioned but no clear target, or target is mentioned but no clear timescale		Strategy includes both a clear quantitative target and includes a timescale for its implementation

Method	Strategy implementation has no focus or prioritisation on the largest sources of waste (e.g., it is unclear from the strategy which types of waste are targeted) and has no clear quantification on the cost of waste	Strategy implementation focuses on the largest sources of waste but has no robust method of quantification and verification for this implementation	Strategy implementation focuses on the largest sources of waste. Company quantifies the value of waste through a costing exercise, but does not have clear prioritisation or verification process.	Quantifies the value of waste through a verifiable costing exercise and is linked to circular economy business models	Company has costed the value of waste, links this to circular economy in the core business strategy, and has applied a waste hierarchy approach to prioritise prevention
Monitoring	No monitoring approach in place		Monitoring systems in place for own operations to track progress but not for the parts of the value chain outside of operational boundary	Monitoring systems in place for own operations and the value chain elements under the strategy to track progress	Includes all elements from “next practice”, and there is an organizational learning process in place to continuously improve the strategy after interim evaluation of results

RATIONALE

AG 5.6 WASTE REDUCTION STRATEGY

RATIONALE OF THE INDICATOR

Waste is a significant source of GHG emissions that can be avoided with co-benefits in economic and environmental terms for agricultural, agrifood and food & beverage services companies. As key actors in the food value chain, the challenge in reducing food waste is key at the global level. With 1/3 of total food production wasted, the food industry must take significant action to reduce food waste. This should be addressed in a coherent strategic framework to ensure that (i) GHG impacts are decreased, and (ii) benefits are maximised by prioritising opportunities and scaling up successes. Waste reduction approaches can require cultural shifts and education within organisations, both of which require buy-in from across an organisation that can be enhanced by a specific strategic focus.

MODULE 6: SUPPLIER ENGAGEMENT

Module 6, “Supplier engagement”, assesses the company’s efforts to decarbonise its supply chain. This module assesses the company’s strategy to engage with its suppliers to reduce emissions. It then assesses existing activities, initiatives and partnerships, launched by the company to influence and support suppliers to reduce emissions. AG 6.1 Strategy to influence suppliers to reduce their GHG emissions.

• AG 6.1 STRATEGY TO INFLUENCE SUPPLIERS TO REDUCE THEIR GHG EMISSIONS

DESCRIPTION & REQUIREMENTS	AG 6.1 STRATEGY TO INFLUENCE SUPPLIERS TO REDUCE THEIR GHG EMISSIONS
SHORT DESCRIPTION OF INDICATOR	This indicator assesses the strategic policy and the process which are formalized and implemented into business decision making-processes to influence, enable or otherwise shift suppliers’ choices and behaviours in order to reduce its GHG emissions.
DATA REQUIREMENTS	<p>The relevant data for this indicator are:</p> <ul style="list-style-type: none">◆ Methods of supplier engagement, strategy for prioritizing supplier engagement and measures of success◆ Proportion of total procurement spend and/or supplier-related scope 3 emissions covered by the strategy◆ Data on suppliers’ GHG emissions and climate change strategies◆ Key procurement templates (e.g., New supplier contracts, Supplier Code of Conduct, RFI/RFPs (request for information / proposal), Supplier self-assessments, Performance cards <p>CDP 2023 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none">◆ C12.1a◆ C12.2◆ C12.2a◆ C-AC12.2a/FB12.2a◆ C-AC12.2b/C-FB12.2b◆ F6.7 <p>CDP 2024 Questionnaire mapping to this indicator:</p>

- ◆ 5.11.1
- ◆ 5.11.2
- ◆ 5.11.5
- ◆ 5.11.6
- ◆ 5.11.7
- ◆ 5.11.8
- ◆ 7.68.1
- ◆ 7.68.2

HOW THE ANALYSIS WILL BE DONE

The assessment will assign a maturity score based on the company’s formalized, written strategy regarding its engagement with its suppliers, expressed in a maturity matrix.

A company that is placed in the ‘Low-carbon aligned’ category will receive the maximum score. A company which is at a lower level will receive a partial score, with 0 points awarded for having no engagement at all.

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Associated score	0%	25%	50%	75%	100%	
<i>What is the scope of the supplier engagement strategy?</i>	No strategy applied to any suppliers.	Strategy applied to up to 30% of total procurement spend OR up to 30% of supplier-related scope 3 emissions.	Strategy applied to 31-60% of total procurement spend OR 31-60% of supplier-related scope 3 emissions.	Strategy applied to 61-90% of total procurement spend OR 61-90% of supplier-related scope 3 emissions.	Strategy applied to over 90% of total procurement spend OR over 90% of supplier-related scope 3 emissions.	30%

<p><i>To what extent are GHG emissions reduction requirements integrated in engagement with suppliers?</i></p>	<p>No emissions reduction requirement included in key procurement templates.*</p>	<p>Unquantified emissions reduction requirement included in key procurement templates.*</p>	<p>Quantified emissions reduction requirement included in key procurement templates* but the supplier is not required to report progress to the company.</p>	<p>Quantified emissions reduction target included in key procurement templates* and the supplier is required to report progress to the company.</p>	<p>Quantified, science-based emissions reduction target (that is aligned with the sector/industry pathway) included in key procurement templates* and the supplier is required to report progress to the company.</p> <p>20%</p>
<p><i>To what extent are other low-carbon transition-related requirements/recommendations† integrated in engagement with suppliers?</i></p>	<p>No other low-carbon transition-related requirements/recommendations† included in key procurement templates.*</p>				<p>1 or more other low-carbon transition-related requirements/recommendations† included in key procurement templates.*</p> <p>5%</p>
<p><i>To what extent are suppliers required to publicly report on their GHG emissions and other low-carbon transition-related requirements/recommendations?</i></p>	<p>No requirement included in key procurement templates* for suppliers to publicly report on their GHG emissions or other low-carbon transition-related requirements/recommendations.</p>		<p>Requirement included in key procurement templates* for suppliers to publicly report on their GHG emissions but not any other low-carbon transition-related requirements/recommendations.</p>	<p>Requirement included in key procurement templates* for suppliers to publicly report on their GHG emissions and other low-carbon transition-related requirements/recommendations.</p>	<p>5%</p>

<p>Are GHG emissions reduction/reporting requirements included in selection of new suppliers, renewal of contract with existing suppliers, neither or both?</p>	<p>Requirements included in NEITHER the selection of new suppliers NOR renewal of contracts with existing suppliers.</p>	<p>Requirements included in EITHER the selection of new suppliers OR renewal of contracts with existing suppliers.</p>	<p>Requirements included in BOTH the selection of new suppliers AND renewal of contracts with existing suppliers.</p>	<p>5%</p>
<p>How does the company respond to supplier non-compliance with GHG emissions reduction requirements?</p>	<p>No response to supplier non-compliance.</p>	<p>Company retains/suspends/sanctions and engages non-compliant suppliers, but does not exclude those that fail to show significant improvement after the period of engagement.</p>	<p>Company retains/suspends/sanctions and engages non-compliant suppliers, and permanently excludes those that fail to show significant improvement after the period of engagement.</p>	<p>5%</p>
<p>What action levers[‡] are embedded in the company's strategy to engage suppliers?</p>	<p>No action levers[‡] embedded in strategy.</p>	<p>Strategy includes action lever(s) from one of the three engagement types (Information collection, Engagement & Incentivisation, Innovation & collaboration) used.[‡]</p>	<p>Strategy includes action levers from two of the three engagement types (Information collection, Engagement & Incentivisation, Innovation & collaboration) used.[‡]</p>	<p>Strategy includes action levers from all of the three engagement types (Information collection, Engagement & Incentivisation, Innovation & collaboration) used.[‡] Strategy includes regular audits of the supplier by the company or a representative.</p> <p>30%</p>

* “Key procurement templates” include but are not limited to [32]:

- ◆ New supplier contracts
- ◆ Supplier Code of Conduct
- ◆ RFI/RFPs
- ◆ Supplier self-assessments
- ◆ Performance cards

† “Other low-carbon transition-related requirements/recommendations” refers to key aspects of a supplier’s low-carbon transition, beyond emissions reductions and targets, that companies can engage them on. These may not be specific requirements, but can be general/high-level recommendations. These aspects can include performance indicators from any ACT performance modules, such as:

- ◆ Intangible investment
For example, the company recommends that its suppliers increase their R&D spend in low-carbon technologies.
- ◆ Management
For example, the company requires its suppliers to conduct climate change scenario testing.
- ◆ Policy engagement
For example, the company only selects suppliers not opposed to relevant climate policies.
- ◆ Business model
For example, the company engages with its suppliers to develop new, low-carbon business models.
- ◆ Any other relevant low-carbon transition-related requirement/recommendation

‡ Action levers must be embedded in a strategy document, and not be presented as examples of past/present actions/initiatives (such examples should be scored in indicator 6.2). “Action levers” include, but are not limited to, the following examples, which are grouped into three engagement types (sources: 2022 CDP climate change questionnaire C12.1a [33], [34]):

- ◆ Information collection (understanding supplier behaviour)
 - Collect climate change and carbon information at least annually from suppliers
- ◆ Engagement & incentivization (changing supplier behaviour)
 - Run an engagement campaign to educate suppliers about climate change/GHG emissions reductions/science-based targets/other low-carbon transition-related topics such as scenario testing, policy engagement, etc.
 - Provide climate-related training, support, and best practices

- Directly work with suppliers on climate-related topics, such as defining common GHG emission reduction plans (i.e., both companies commit to reduce together X tCO_{2e}), or exploring corporate renewable energy sourcing mechanisms
- Climate change performance is featured in supplier awards scheme
- Offer financial incentives for suppliers who contribute to reducing the company's operational emissions (Scopes 1 & 2)
- Offer financial incentives for suppliers who contribute to reducing the company's downstream emissions (Scopes 3)
- Offer financial incentives for suppliers who contribute to reducing the company's upstream emissions (Scopes 3)
- Offer financial incentives for suppliers who increase the share of renewable energy in their total energy mix
- ◆ Innovation & collaboration (changing markets)
 - Run a campaign to encourage innovation to reduce climate impacts on products and services
 - Collaborate with suppliers on innovative low-carbon business models/R&D projects (providing resources – experts, financial support, building, laboratories etc.)

RATIONALE

AG 6.1 STRATEGY TO INFLUENCE SUPPLIERS TO REDUCE THEIR GHG EMISSIONS

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Generally, most emissions in the agriculture & agrifood sector come from the agricultural production phase, which means that companies further down the value chain (i.e., processing companies and food & beverage service companies) have a large responsibility when choosing their suppliers, since companies implementing a robust strategy to reduce emissions by collaborating with suppliers could help strongly incentivise agricultural producers to shift to less emitting practices and products.

Agricultural producers also have the potential to influence their own suppliers, especially for animal feed suppliers whose production is highly emitting. This specific case is reflected in the module weighting.

SCORING THE INDICATOR:

Because of data availability and complexity, a direct measure of the outcome of such engagement is not feasible at this time. It is often challenging to quantify the emissions reduction potential and outcome of collaborative activities with the supply chain. Therefore, the

approach of a maturity matrix allows the assessor to consider multiple dimensions of supplier engagement and assess them together to calculate a single score for Supplier Engagement..

- **AG 6.2 ACTIVITIES TO INFLUENCE SUPPLIERS TO REDUCE THEIR GHG EMISSIONS**

DESCRIPTION & REQUIREMENTS

AG 6.2 ACTIVITIES TO INFLUENCE SUPPLIERS TO REDUCE THEIR GHG EMISSIONS

SHORT DESCRIPTION OF INDICATOR

This indicator assesses the extent to which the company implements activities and initiatives that help, influence or otherwise enable suppliers to reduce their GHG emissions. The indicator aims to be a holistic measure of these activities and initiatives, with evidence of implementation and outcomes in the value chain across all products/services.

DATA REQUIREMENTS

The relevant data for this indicator are:

- ◆ List of initiatives implemented to influence suppliers to reduce their GHG emissions, green purchase policy or track record, supplier code of conduct

CDP 2023 Questionnaire mapping to this indicator:

- ◆ C12.1a
- ◆ C12.2
- ◆ C12.2a
- ◆ C-AC12.2a/FB12.2a
- ◆ C-AC12.2b/C-FB12.2b
- ◆ F6.7

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 5.11.1
- ◆ 5.11.2
- ◆ 5.11.5
- ◆ 5.11.6
- ◆ 5.11.7

- ◆ 5.11.8
- ◆ 7.68.1
- ◆ 7.68.2

HOW THE ANALYSIS WILL BE DONE

The assessment will assign a maturity score based on the company’s demonstration of recent and current activities and initiatives with its suppliers, expressed in a maturity matrix.

A company that is placed in the ‘Low-carbon aligned’ category will receive the maximum score. A company which is at a lower level will receive a partial score, with 0 points awarded for having no engagement at all.

This maturity matrix is indicative but does not show all possible options that can result in a particular score. The company’s responses will be scrutinized by the assessor and then placed on the level in the matrix where the assessor deems it most appropriate.

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Associated score	0%	25%	50%	75%	100%	
What action levers* does the company use in practice to engage suppliers?	No evidence of action levers* used in practice.	Evidence of company using action lever(s) from ONE of the three engagement types (Information collection, Engagement & Incentivisation, Innovation & collaboration) used.*	Evidence of company using action levers from TWO of the three engagement types (Information collection, Engagement & Incentivisation, Innovation & collaboration) used.*	Evidence of company using action levers from ALL of the three engagement types (Information collection, Engagement & Incentivisation, Innovation & collaboration) used.*	Evidence of company using action levers from ALL of the three engagement types (Information collection, Engagement & Incentivisation, Innovation & collaboration) used.* Regular audits of the supplier by the company or a representative.	30%

<i>What is the scope of the recent and current activities in supplier engagement?</i>	No suppliers engaged.	Suppliers engaged represent up to 30% of total procurement spend OR up to 30% of supplier-related scope 3 emissions.	Suppliers engaged represent 31-60% of total procurement spend OR 31-60% of supplier-related scope 3 emissions.	Suppliers engaged represent 61-90% of total procurement spend OR 61-90% of supplier-related scope 3 emissions.	Suppliers engaged represent over 90% of total procurement spend OR over 90% of supplier-related scope 3 emissions.	40%
<i>How impactful has the company's supplier engagement been?</i>	No evidence of impact [†] of action levers used.	Some action levers used have qualitative evidence of impact [†] .	Almost all action levers used have qualitative evidence of impact [†] .	Some action levers used have quantitative evidence of impact [†] .	Almost all action levers used have qualitative and quantitative evidence of impact [†] .	30%

* Action levers must be presented as examples of past/present actions/initiatives, and not be theoretical/embedded in a strategy document (such examples should be scored in indicator 6.1). “Action levers” include, but are not limited to: as per 6.1 Strategy to influence suppliers to reduce GHG emissions on page 112.

† The metric used to measure impact depends on the action lever the metric refers to. Examples of “evidence of impact” might include, but are not limited to:

- ◆ Qualitative example: Feedback from suppliers saying that they appreciate and will use this new knowledge to start their journey on the low-carbon transition
- ◆ Quantitative example: Engaged suppliers have reduced their annual GHG emissions by X%
- ◆ Quantitative example: The percentage of engaged suppliers setting science-based targets has increased annually by X%
- ◆ Quantitative example: The percentage of engaged suppliers conducting scenario testing has increased annually by X%

RATIONALE

AG 6.2 ACTIVITIES TO INFLUENCE SUPPLIERS TO REDUCE THEIR GHG EMISSIONS

RATIONALE OF THE INDICATOR

This indicator focuses on the activities already implemented to influence suppliers. This indicator is particularly important for downstream processing companies.

SCORING RATIONALE:

Because of data availability and complexity, a direct measure of the outcome of supply chain engagement activities is not very feasible at this time. Therefore, the approach of a maturity matrix allows the assessor to consider multiple dimensions of supplier engagement and analyse them together towards a single score. This approach has been used before by several institutions that attempt to make measurements of progress in the complex and multidimensional retail and production sectors [15].

MODULE 7: CLIENT ENGAGEMENT

Module 7, “Client engagement”, assesses the company’s engagement efforts to influence client behaviour to reduce its greenhouse gas emissions. This module assesses the company’s strategy to engage with its clients or customers to reduce emissions. It then assesses existing activities, initiatives and partnerships, launched by the company to influence clients to reduce emissions.

• AG 7.1 STRATEGY TO INFLUENCE CLIENTS TO REDUCE THEIR GHG EMISSIONS

DESCRIPTION & REQUIREMENTS

AG 7.1 STRATEGY TO INFLUENCE CLIENTS TO REDUCE THEIR GHG EMISSIONS

SHORT DESCRIPTION OF INDICATOR

The company has a strategy, ideally governed by policy and integrated into business decision making, to influence, enable, or otherwise shift clients’ (i.e. customers’) choices and behaviour in order to reduce clients’ GHG emissions. *Note:* Clients refer to both clients and customers.

DATA REQUIREMENTS

The relevant data for this indicator are:

- ◆ Strategy to influence clients GHG emissions
- ◆ % of clients covered by the strategy
- ◆ Data on clients’ choices and preferences towards reducing GHG emissions

CDP 2023 Questionnaire mapping to this indicator:

- ◆ C12.1b

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 5.11.3

HOW THE ANALYSIS WILL BE DONE

The assessment will assign a maturity score based on the company’s formalized, written strategy regarding its engagement with its customers, expressed in a maturity matrix.

A company that is placed in the ‘Low-carbon aligned’ category will receive the maximum score. A company which is at a lower level will receive a partial score, with 0 points awarded for having no engagement at all.

This maturity matrix is indicative but does not show all possible options that can result in a particular score. The company’s responses will be scrutinized by the assessor and then placed on the level in the matrix where the assessor deems it most appropriate.

For crop producers, special attention should be paid if some or all of the products sold are animal feed. Special attention should also be paid for companies with clients producing animal-based proteins.

As overconsumption is a cause of emissions in the food sector, companies are expected not to encourage overconsumption through food additives, communications or excessive amounts of sugar, known for being particularly addictive.

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Associated score	0%	25%	50%	75%	100%	
What is the scope of the client engagement strategy?	No strategy applied to any clients.	Strategy applied to up to 30% of revenues OR up to 30% of client-related scope 3 emissions.	Strategy applied to 31-60% of revenues OR 31-60% of client-related scope 3 emissions.	Strategy applied to 61-90% of revenues OR 61-90% of client-related scope 3 emissions.	Strategy applied to over 90% of revenues OR over 90% of client-related scope 3 emissions.	30%
To what extent are GHG emissions reduction targets integrated in client engagement strategy?	GHG emissions reduction targets not included in client engagement strategy.		Unquantified GHG emissions reduction target(s) included in client engagement strategy.		Quantified GHG emissions reduction target(s) included in client engagement strategy.	30%
To what extent are other low-carbon transition-related recommendations* integrated in client engagement strategy?	No other low-carbon transition-related recommendations* included in client engagement strategy.				1 or more other low-carbon transition-related recommendations* included in client engagement strategy.	10%

<i>What action levers[†] are embedded in the company's strategy to encourage clients to reduce their emissions?</i>	No action levers [†] embedded in strategy.	Strategy includes action lever(s) from one of the four engagement types (Education/information sharing; Collaboration & innovation; Compensation, Customer motivation via marketing and choice architecture) [†] .	Strategy includes action lever(s) from two of the four engagement types (Education/information sharing; Collaboration & innovation; Compensation, Customer motivation via marketing and choice architecture) [†] .	Strategy includes action lever(s) from three of the four engagement types (Education/information sharing; Collaboration & innovation; Compensation, Customer motivation via marketing and choice architecture) [†] .	Strategy includes action lever(s) from all four of the four engagement types (Education/information sharing; Collaboration & innovation; Compensation, Customer motivation via marketing and choice architecture) [†] .	30%
-------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------

* “Other low-carbon transition-related recommendations” refers to key aspects of a client’s low-carbon transition, beyond emissions reductions and targets, that companies can engage them on. These aspects can include performance indicators from any ACT performance modules, such as:

- ◆ Intangible investment
For example, the company recommends that its clients increase their R&D spend in low-carbon technologies.
- ◆ Management
For example, the company encourages its clients to conduct climate change scenario testing.
- ◆ Policy engagement
For example, the company encourages its clients to support relevant climate policies.
- ◆ Business model
For example, the company engages with its clients to develop new, low-carbon business models.

† Action levers must be embedded in a strategy document, and not be presented as examples of past/present actions/initiatives (such examples should be scored in indicator 7.2). “Action levers” include but are not limited to the following individual action levers, which are grouped into four engagement types (sources: 2022 CDP climate change questionnaire C12.1a [33], [35]):

- ◆ Education/information sharing
 - Run an engagement campaign to educate customers about the quantified climate change impacts of (using) your products, goods, and/or services
 - E.g., highlight that the low-carbon product answers to the purchasing rules of the client
 - E.g., promote the low-carbon product highlighting that their client could use it to answer the purchasing rules of their own clients (e.g., low-carbon aluminium to produce a car door).

- Share environmental information (e.g., quantified GHG emissions) about your products and relevant certification schemes (i.e., Energy STAR)
- Provide documents and tools
- ◆ Collaboration & innovation
 - Run a campaign to encourage innovation to reduce climate change impacts
 - Collaborate with downstream segments of the value chain to foster circular end-of-life treatment of products and downstream logistic efficiency
 - Organize multi-party working group with meetings taking place at least annually
- ◆ Compensation
 - Provide rebates for environmentally friend actions
- ◆ Customer motivation via marketing and choice architecture (“nudging”)
 - Design marketing campaigns/choice architecture aiming to indirectly encourage customers to reduce their emissions

RATIONALE

AG 7.1 STRATEGY TO INFLUENCE CLIENTS TO REDUCE THEIR GHG EMISSIONS

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Research [36] shows that for the agriculture & agrifood sector to transition to a low-carbon economy, efforts also have to be made to influence the demand side. While the objective from the supply side is to limit the purchase of highly emissive products, companies also have a role to play in influencing consumers to shift their diet. For agricultural companies, the strategy should be to influence agrifood companies to change their own product mix in favour of less emissive food products, and for them to influence their own clients in turn.

The objective of this indicator is to assess whether the company has implemented a strategy of engagement with clients to reduce their GHG emissions, which must be part of the company’s strategy for a low-carbon transition. The company’s strategy to influence customer behaviour indicates the company’s willingness to influence demand for low-carbon products.

• AG 7.2 ACTIVITIES TO INFLUENCE CLIENTS TO REDUCE THEIR GHG EMISSIONS

DESCRIPTION & REQUIREMENTS

AG 7.2 ACTIVITIES TO INFLUENCE CLIENTS TO REDUCE THEIR GHG EMISSIONS

SHORT DESCRIPTION OF INDICATOR

This indicator assesses the extent to which the company implements activities and initiatives that help, influence or otherwise enable clients to reduce their GHG emissions. The indicator aims to be a holistic measure of these activities and initiatives, with evidence of implementation and outcomes in the value chain across all products/services.

Note: Clients refer to both clients and customers.

DATA REQUIREMENTS

The relevant data for this indicator are:

- ◆ Activities to influence clients GHG emissions
- ◆ % of clients covered by the activities
- ◆ Data on clients' choices and preferences towards reducing GHG emissions

CDP 2023 Questionnaire mapping to this indicator:

- ◆ C12.1b

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 5.11.3

HOW THE ANALYSIS WILL BE DONE

The assessment will assign a maturity score based on the company's demonstration of recent and current activities and initiatives with its clients, expressed in a maturity matrix.

A company that is placed in the 'Low-carbon aligned' category will receive the maximum score. A company which is at a lower level will receive a partial score, with 0 points awarded for having no engagement at all.

This maturity matrix is indicative but does not show all possible options that can result in a particular score. The company's responses will be scrutinized by the assessor and then placed on the level in the matrix where the assessor deems it most appropriate.

For companies producing and processing crops, a special attention will be paid in case part or total share of the sold products are animal feed for breeders. The activity with clients producing animal-based proteins must also be assessed with this indicator.

As overconsumption is also a factor of emissions in the food sector, companies are expected not to encourage overconsumption by the mean of food additives, communications or excessive amounts of sugar, known for being particularly addictive.

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Associated score	0%	25%	50%	75%	100%	
What action levers* does the company use in practice to encourage clients to reduce their emissions?	No evidence of action levers* used in practice.	Evidence of company responding only to customer demand for more low-carbon products without attempting to change the existing customer demand towards low-carbon alternatives.	Evidence of company using action lever(s) from ONE of the four engagement types (Education/information sharing; Collaboration & innovation; Compensation; Customer motivation via marketing and choice architecture).*	Evidence of company using action lever(s) from TWO of the four engagement types (Education/information sharing; Collaboration & innovation; Compensation; Customer motivation via marketing and choice architecture).*	Evidence of company using action lever(s) from AT LEAST THREE of the four engagement types (Education/information sharing; Collaboration & innovation; Compensation; Customer motivation via marketing and choice architecture).*	30%
What is the scope of the recent and current activities in client engagement?	No clients engaged.	Clients engaged represent up to 30% of revenues OR up to 30% of client-related scope 3 emissions.	Clients engaged represent 31-60% of revenues OR 31-60% of client-related scope 3 emissions.	Clients engaged represent 61-90% of revenues OR 61-90% of client-related scope 3 emissions.	Clients engaged represent over 90% of revenues OR over 90% of client-related scope 3 emissions.	40%

<i>How impactful has the company's client engagement been?</i>	No evidence of impact [†] of action levers used.	Some action levers used have qualitative evidence of impact [†] .	Almost all action levers used have qualitative evidence of impact [†] .	Some action levers used have quantitative evidence of impact [†] .	Almost all action levers used have qualitative and quantitative evidence of impact [†] .	30%
-----------------------------------------------------------------------	-----------------------------------------------------------	----------------------------------------------------------------------------	----------------------------------------------------------------------------------	-----------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------	------------

* Action levers must be presented as examples of past/present actions/initiatives, and not be theoretical/embedded in a strategy document (such examples should be scored in indicator 7.1). Action levers” include but are not limited to: as per indicator 7.1 *Strategy to influence clients to reduce their GHG emissions* on page 120.

† The metric used to measure impact depends on the action lever the metric refers to. Examples of “evidence of impact” might include, but are not limited to:

- ◆ Qualitative example: Feedback from clients saying that they appreciate and will use this new knowledge to start their journey on the low-carbon transition
- ◆ Quantitative example: Evidence that engaged clients have reduced their use-phase GHG emissions by X%

RATIONALE

AG 7.2 ACTIVITIES TO INFLUENCE CLIENTS TO REDUCE THEIR GHG EMISSIONS

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Similarly to indicator 7.1, here the assessment is focused on the actions currently implemented by the company to influence its clients. While indicator 7.1 is more future-oriented, this indicator assesses the activities that the company has undertaken in the past or is currently undertaking to influence its clients. Both indicators complement each other in assessing the company’s willingness to influence its clients, with the ultimate goal of shifting consumers’ diets away from carbon-intensive foods.

SCORING THE INDICATOR:

Because of data availability and complexity, a direct measure of the outcome of such engagement is not very feasible at this time. It is often challenging to quantify the emissions reduction potential and outcome of collaborative activities with the supply chain. Therefore, the approach of a maturity matrix allows the assessor to consider multiple dimensions of supplier engagement and assess them together towards a single score for all the activities related to Client Engagement.

MODULE 8: POLICY ENGAGEMENT

Module 8, “Policy engagement”, assesses how the company influences the policy agenda, whether through membership of trade associations and lobbying organisations, support for/obstruction of climate policies, and engagement with local authorities.

• AG 8.1 COMPANY POLICY ON ENGAGEMENT WITH ASSOCIATIONS, ALLIANCES, COALITIONS OR THINKTANKS

DESCRIPTION & REQUIREMENTS	AG 8.1 COMPANY POLICY ON ENGAGEMENT WITH ASSOCIATIONS, ALLIANCES, COALITIONS OR THINKTANKS
SHORT DESCRIPTION OF INDICATOR	The company has a policy on what action to take when associations, alliances, coalitions or thinktanks of which it is a member or to which it provides support are found to be opposing “climate-friendly” policies.
DATA REQUIREMENTS	<p>The relevant data for this indicator are:</p> <ul style="list-style-type: none">◆ Public climate change policy positions◆ Description of this policy (scope & boundaries, responsibilities, process to monitor and review)◆ Associations, alliances, coalitions or thinktanks that are likely to take a position on climate change legislation◆ External sources of data shall also be used for the analysis of this indicator (e.g. RepRisk database, InfluenceMap, press news, actions in standard development) <p>CDP 2023 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none">◆ C12.3b <p>CDP 2024 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none">◆ 4.11.2
HOW THE ANALYSIS WILL BE DONE	<p>The assessor will evaluate the description and evidence of the policy on associations, alliances, coalitions or thinktanks of which it is a member or to which it provides support for the presence of best practice elements and consistency with the other reported management indicators. The company description and evidence will be compared to the maturity matrix developed to guide the scoring and a greater number of points will be allocated for elements indicating a higher level of maturity.</p> <p>Best practice elements to be identified in the test/analysis include:</p>

- ◆ A publicly available policy is in place
- ◆ The scope of the policy covers the entire company and its activities, and all associations, alliances, coalitions or thinktanks of which it is a member or to which it provides support. (Consideration should be given as to whether these associations, alliances, coalitions and thinktanks in turn are members of or otherwise support other such organisations that have climate-negative activities or positions).
- ◆ The policy sets out what action is to be taken in the case of inconsistencies
- ◆ Action includes option to terminate membership of the associations, alliances, coalitions or thinktanks
- ◆ Action includes option of publicly opposing or actively countering the association, alliance, coalition or thinktank's position
- ◆ Responsibility for oversight of the policy lies at top level of the organization, and implementation lies at senior management level
- ◆ There is a process to monitor and review association, alliance, coalition and thinktank positions

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Associated score	0%	25%	50%	75%	100%	
What is the scope covered by the engagement policy? Is the policy publicly available?	Does not cover the entire company (including all of its subsidiaries and business areas, and all operational jurisdictions, i.e., entities within its reporting boundary) or all associations, alliances and coalitions of which it is a member. Is not publicly available.	Does not cover the entire company (including all of its subsidiaries and business areas, and all operational jurisdictions, i.e., entities within its reporting boundary) or all associations, alliances and coalitions of which it is a member. Is publicly available.	Covers the entire company (including all of its subsidiaries and business areas, and all operational jurisdictions, i.e., entities within its reporting boundary), and all associations, alliances and coalitions of which it is a member. Is not publicly available		Covers the entire company (including all of its subsidiaries and business areas, and all operational jurisdictions, i.e., entities within its reporting boundary), and all associations, alliances and coalitions of which it is a member. Is publicly available	40%

<p><i>Does the company have a review process of associations, alliances, coalitions or thinktanks of which it is a member or to which it provides support?</i></p>	<p>No process to monitor and review association, alliance, coalition and thinktank climate policy positions exists.</p>	<p>A process to monitor and review association, alliance, coalition and thinktank climate policy positions exists.</p> <p>The process is not necessarily implemented.</p>	<p>A process to monitor and review association, alliance, coalition and thinktank climate policy positions exists.</p> <p>The process is implemented, but responsibility for oversight of the process lies below Level 1*, and implementation of the process lies below Level 3*.</p>	<p>A process to monitor and review association, alliance, coalition and thinktank climate policy positions exists.</p> <p>EITHER responsibility for oversight of the process lies at Level 1*, OR implementation of the process lies at Level 3 or above*.</p>	<p>A process to monitor and review association, alliance, coalition and thinktank climate policy positions exists.</p> <p>Responsibility for oversight of the process lies at Level 1*, AND implementation of the process lies at Level 3 or above*.</p>	<p>40%</p>
<p><i>Does the company have an action plan addressing what action to take when associations, alliances, coalitions or thinktanks of which it is a member or to which it provides support are found to be opposing “climate-friendly” policies?†</i></p>	<p>No action plan exists.</p>	<p>Action plan sets out which actions are to be taken when associations, alliances, coalitions or thinktanks are found to be opposing “climate-friendly” policies. Action plan does not include any of the actions listed†.</p>	<p>Action plan includes making public statements challenging associations, alliances, coalitions and thinktanks*. Does not include either of the other actions listed†.</p>	<p>Action plan includes engaging with associations, alliances, coalitions or thinktanks to change their position†. May include making public statements, but does not include withdrawing funding for/suspending or ending membership†.</p>	<p>Action plan includes withdrawing funding for/suspending or ending membership of the association, alliance, coalition or thinktank*. May include both other actions listed†.</p>	<p>20%</p>

* Further guidance for each level of seniority: see indicator 5.1 Oversight of climate change issues on page 88.

† Actions a company can take when associations, alliances, coalitions or thinktanks of which it is a member or to which it provides support are found to be opposing “climate-friendly” policies follow a hierarchy of severity, as follows (source: [37], [38],):

1. Making public statements challenging associations, alliances, coalitions and thinktanks
 - ◆ For example, the company speaks out, publicly distancing itself from statements or lobbying against climate policy by associations, alliances, coalitions or thinktanks of which it is a member or to which it provides support. The company explains how these statements or lobbying are inconsistent with its own emission reduction goals and with its support for climate policy.
2. Engaging with associations, alliances, coalitions or thinktanks to change their position.
 - ◆ For example, the company works to end lobbying against climate policy through transparent and time-bound engagement with those organizations.
3. Withdrawing funding for/suspending or ending membership of the association, alliance, coalition or thinktank.
 - ◆ For example, where attempts to change an association’s position prove ineffective or insufficient, the company discontinues its membership or withdraws funding from the association.

RATIONALE

AG 8.1 COMPANY POLICY ON ENGAGEMENT WITH ASSOCIATIONS, ALLIANCES, COALITIONS OR THINKTANKS

RATIONALE OF THE INDICATOR

Associations, alliances, coalitions and thinktanks are a key instrument by which companies can indirectly influence policy on climate. thus, when associations, alliances, coalitions and thinktanks take positions, which are negative for climate, companies need to take action to ensure that this negative influence is countered or minimized.

A policy to govern such interaction is a specific request of the 2015 UNPRI “investor expectations on corporate climate lobbying” document [39].

- **AG 8.2 ASSOCIATIONS, ALLIANCES, COALITIONS AND THINKTANKS SUPPORTED DO NOT HAVE CLIMATE-NEGATIVE ACTIVITIES OR POSITIONS**

DESCRIPTION & REQUIREMENTS	AG 8.2 ASSOCIATIONS, ALLIANCES, COALITIONS AND THINKTANKS SUPPORTED DO NOT HAVE CLIMATE-NEGATIVE ACTIVITIES OR POSITIONS
SHORT DESCRIPTION OF THE INDICATOR	The company is not on the Board of, providing funding beyond membership to, or otherwise supporting any associations, alliances, coalitions or thinktanks that have climate-negative activities or positions.
DATA REQUIREMENTS	<p>The relevant data for this indicator are:</p> <ul style="list-style-type: none"> ◆ The reporter shall provide details of those associations, alliances, coalitions and thinktanks that are likely to take a position on climate change legislation ◆ The company should attach supporting documentation, if this exists, giving evidence <p>External sources of data shall also be used for the analysis of this indicator:</p> <ul style="list-style-type: none"> ◆ RepRisk database, ◆ Climate Action 100+ ◆ Ellen Macarthur Foundation ◆ Press news ◆ EP100 – Climate Group (www.theclimategroup.org/project/ep100) ◆ Low-carbon Technology Partnerships initiative (www.wbcsd.org/Programs/Climate-and-Energy/Climate/Low-Carbon-Technology-Partnerships-initiative) <p>CDP 2023 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none"> ◆ C12.3b ◆ C12.3c <p>CDP 2024 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none"> ◆ 4.11.2

HOW THE ASSESSMENT WILL BE DONE

The list of associations, alliances, coalitions and thinktanks declared in the CDP data and other external sources relating to the company is assessed against a list of associations, alliances, coalitions and thinktanks that have climate-negative activities or positions (InfluenceMap is usually used for this [40]). (Consideration should be given as to whether these associations, alliances, coalitions and thinktanks in turn are members of or otherwise support other such organisations that have climate-negative activities or positions.) Such activities or positions could include lobbying against climate policies and practices. The results will be compared to any policy described in 8.1 (“Company policy on engagement with associations, alliances, coalitions or thinktanks”).

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
<i>Associated score</i>	<i>0%</i>	<i>25%</i>	<i>50%</i>	<i>75%</i>	<i>100%</i>	
<i>Does the company support associations, alliances, coalitions or thinktanks that have climate negative activities/positions?</i>	The company is on the board or provides funding beyond membership to associations, alliances, coalitions and/or thinktanks that have climate – negative activities or positions		The company is not on the board or providing funding beyond membership of any associations, alliances, coalitions or thinktanks that have climate-negative activities or positions. Company can be member.		The company is not a member of or providing funding for any associations, alliances, coalitions or thinktanks that have climate-negative activities or positions	100%

RATIONALE

AG 8.2 ASSOCIATIONS, ALLIANCES, COALITIONS AND THINKTANKS SUPPORTED DO NOT HAVE CLIMATE-NEGATIVE ACTIVITIES OR POSITIONS

RATIONALE OF THE INDICATOR

Trade associations are a key instrument by which companies can indirectly influence policy on climate. Thus, participating in trade associations which actively lobby against climate-positive legislation is a negative indicator and likely to obstruct low-carbon transition. However, membership in associations that support climate positive policies should also be considered in the analysis

- **AG 8.3 POSITION ON SIGNIFICANT CLIMATE POLICIES (WEIGHTING: 1%)**

DESCRIPTION & REQUIREMENTS	AG 8.3 POSITION ON SIGNIFICANT CLIMATE POLICIES
SHORT DESCRIPTION OF INDICATOR	The company is not opposed to any significant climate relevant policies and/or supports climate friendly policies.
DATA REQUIREMENTS	<p>The relevant data for this indicator are:</p> <ul style="list-style-type: none"> ◆ The company should attach supporting documentation, if this exists, giving evidence on the position of the company on significant climate policies (public statements, etc.). ◆ The company shall disclose details of the issues on which it has been directly engaging with policy makers and its proposed legislative solution. <p>CDP 2023 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none"> ◆ C12.3a <p>CDP 2024 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none"> ◆ 4.11.1 <p>External sources of data shall also be used for the analysis of this indicator (e.g. RepRisk database, press news, actions in standard development)</p>
HOW THE ANALYSIS WILL BE DONE	<p>The assessor evaluates the description and evidence of the company’s position on relevant climate policies for the presence of best practice elements, negative indicators and consistency with the other reported management indicators. The company description and evidence are compared to the maturity matrix developed to guide the scoring and a greater number of points are allocated for elements indicating a higher level of maturity.</p> <p>The following maturity matrix is used to score this indicator.</p>

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Associated score	0%	25%	50%	75%	100%	
What is the position of the company on significant climate policies?	Direct opposition to climate policies (including where third-party claims are found).	No reported direct opposition to climate policies.	Publicly supports significant climate policies.	Publicly supports significant climate policies. Publicly commits to international low-carbon commitments, such as the Paris Agreement.	Publicly supports significant climate policies. Publicly commits to international low-carbon commitments, such as the Paris Agreement. Actively participates in/leads sectoral/cross-sectoral initiatives against climate change*.	60%
Does the company have a monitoring and review process to ensure that its policy positions are consistent with the goals of the Paris Agreement?	No monitoring and review process to ensure that the company's policy positions are consistent with the goals of the Paris Agreement exists.	A monitoring and review process to ensure that the company's policy positions are consistent with the goals of the Paris Agreement exists. The process is not necessarily implemented.	A monitoring and review process to ensure that the company's policy positions are consistent with the goals of the Paris Agreement exists. The process is implemented, but oversight of the process lies below Level 1 [†] , and implementation of the process lies below Level 3 [†] .	A monitoring and review process to ensure that the company's policy positions are consistent with the goals of the Paris Agreement exists. EITHER oversight of the process lies at Level 1 [†] , OR implementation of the process lies at Level 3 [†] .	A monitoring and review process to ensure that the company's policy positions are consistent with the goals of the Paris Agreement exists. Oversight of the process lies at Level 1 [†] , AND implementation of the process lies at Level 3 [†] .	40%

* Examples of sectoral/cross-sectoral initiatives against climate change might include, but are not limited to:

- Science Based Targets initiative (SBTi)

- Leadership Group for Industry Transition (LeadIT)
- Mission Possible Partnership (MPP)

† Further guidance for each level of seniority: see indicator 5.1 Oversight of climate change issues on page 88.

RATIONALE

AG 8.3 POSITION ON SIGNIFICANT CLIMATE POLICIES

RATIONALE OF THE INDICATOR

Policy and regulation that act to promote transition to a low-carbon economy are key to the success of the transition. Companies should not oppose effective and well-designed regulations in these areas, but should support them.

• AG 8.4 COLLABORATION WITH LOCAL PUBLIC AUTHORITIES AND NGOS

DESCRIPTION & REQUIREMENTS

AG 8.4 COLLABORATION WITH LOCAL PUBLIC AUTHORITIES AND NGOS

SHORT DESCRIPTION OF INDICATOR

This indicator evaluates the extent to which the company collaborates with local public authorities and non-governmental organizations (NGOs) to achieve local emissions reductions from the overall food value chain. While indicator 8.3 “Position on significant climate policies” relates to national and international policies, this indicator assesses the company’s engagement with sub-national public authorities, both in terms of climate-related policy engagement and the establishment of climate-related partnerships.

DATA REQUIREMENTS

The relevant data for this indicator are:

- ◆ Participation in meetings/collaborations with public authorities/local actors
- ◆ Contracts with public authorities/local actors

CDP 2023 Questionnaire mapping to this indicator:

- ◆ C12.3
- ◆ C12.3a

CDP 2024 Questionnaire mapping to this indicator:

- ◆ 4.11

◆ 4.11.1

**HOW THE ANALYSIS
WILL BE DONE**

The assessor evaluates the description and evidence of the company's collaboration with local authorities and NGOs for the presence of best-practice elements. Collaboration generally falls into two main categories, policy engagement and collective action/partnerships. Policy engagement could range from dialogue between the company and local authority/NGO around the development of new climate-related policies, to participation in local pilot programs to test these policies, to large-scale support for and implementation of these policies. Collective action/partnerships could range from participation in working groups, roundtables, ongoing initiatives, events and/or platforms for local authorities/NGOs and companies to advance specific issues related to climate change/emissions reduction, to large-scale public-private partnerships (PPPs) with a climate change/emissions reduction focus.

In general, a partnership can only be classed as such if it goes beyond a mere contract between the public authority/NGO and the company. It must be a collaboration that works to improve the current system/process and displays additionality (the collaboration reduces GHG emissions beyond business as usual, meaning the reductions would not have happened had the collaboration not been implemented). For example, a contract between a transport operator and a public authority would not be enough to be classed as a partnership by itself, whereas a partnership to reduce local GHG emissions by increasing the share of electric/hybrid/hydrogen buses and promoting greater uptake of public transport within the local area would be sufficient.

The level of maturity will depend on the level of commitment from the company, and whether there is evidence that the collaboration has been successful in achieving local emissions reductions.

The company description and evidence are compared to the maturity matrix developed to guide the scoring and a greater number of points are allocated for elements indicating a higher level of maturity.

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Associated score	0%	25%	50%	75%	100%	
Does the company collaborate with and support local authorities/NGOs to achieve local emissions reductions?	<p>No evidence that the company is collaborating with and supporting local authorities/NGOs to achieve local emissions reductions, other than respecting its contractual obligations, if any.</p> <p>Or</p> <p>Third-party claims are found showing that the company is not complying with local climate policies</p>	The company engages in dialogue with local authority/authorities to design future climate-related policies/partnerships	The company actively participates in small-scale pilot/short-term/one-off programs with local authority/authorities to test/implement climate-related policies/partnerships.	<p>The company is a significant partner* (alongside local authority/authorities and other stakeholders) in the implementation of long-term, climate-related policies/partnerships.</p> <p>The company has measured and disclosed an emissions reduction as a result of the policy/partnership being implemented.</p>	<p>The company is a significant partner* (alongside local authority/authorities and other stakeholders) in the implementation of long-term, climate-related policies/partnerships.</p> <p>The company has measured and disclosed an emissions reduction as a result of the policy/partnership being implemented.</p> <p>The company has a policy to increase such collaboration in more of its operational jurisdictions, and is taking concrete steps towards this (e.g., engaging in dialogue, participating in pilot programs, implementing policies/partnerships with local authorities/NGOs).†</p>	100%

* A company can be classed as a “significant partner” if the policy/partnership would not exist, or be significantly smaller/less successful, without the company’s involvement. The company must be one of the few largest or most invested stakeholders in the policy/partnership.

† Assessors should take into account the size of the company assessed. For example, companies operating in a single jurisdiction are not expected to be involved in collaboration with public authorities outside of that jurisdiction, and could still score Low-carbon aligned if they met each of the other criteria (for example, if they had demonstrated emissions reductions as a result of the policy/partnership being implemented, and had a policy to become involved in more collaboration within their operational jurisdiction).

RATIONALE

AG 8.4 COLLABORATION WITH LOCAL PUBLIC AUTHORITIES AND NGOS

RATIONALE OF THE INDICATOR

Collaborations with local public authorities and NGOs to implement climate policies or pilot programs and establish climate-related partnerships reveal the company’s ambition to go beyond the existing regulation and the laws of supply and demand.

MODULE 9: BUSINESS MODEL

A company may need to transition and/or replace its existing business model(s) to remain profitable in a low-carbon economy. The company's future business model(s) should enable it to decouple financial results from GHG emissions, in order to meet the constraints of a low-carbon transition while continuing to generate value. This can be done by developing new, low-carbon business models outside the core business of the company, while decarbonizing or terminating existing, high-carbon business models. This should lead to the company's revenue being generated entirely from low-carbon products and services. AG 9.1 Business activities shifting supply from highly emissive to low-carbon products

• AG 9.1 BUSINESS ACTIVITIES SHIFTING SUPPLY FROM HIGHLY EMISSIVE TO LOW-CARBON PRODUCTS

DESCRIPTION & REQUIREMENTS	AG 9.1 BUSINESS ACTIVITIES SHIFTING SUPPLY FROM HIGHLY EMISSIVE TO LOW-CARBON PRODUCTS
SHORT DESCRIPTION OF INDICATOR	An assessment of the company preparedness to be profitable and viable in a low-carbon economy by supplying low-carbon products.
DATA REQUIREMENTS	<p>The questions comprising the information request that are relevant to this indicator are:</p> <ul style="list-style-type: none">◆ Details of business model(s) shifting to supplying low-carbon product. <p>CDP 2023 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none">◆ C2.4◆ C2.4a◆ C4.3◆ C4.3a◆ C4.3b <p>C-AC4.4a/C-FB4.4a CDP 2024 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none">◆ 3.6◆ 3.6.1◆ 7.55

- ◆ 7.55.1
- ◆ 7.55.2
- ◆ 7.67.1

**HOW THE ANALYSIS
WILL BE DONE**

Business model activities should include, but are not limited to:

- ◆ Significant reduction in animal-based proteins and replacement by plant-based proteins
- ◆ Shift of the supply to less-emitting customers (for companies producing and transforming crops into animal feed for breeders / companies raising livestock / animal farms)
- ◆ Reducing packaging and introducing recyclable and/or compostable packaging (for companies selling products with a high use of packaging, such as bottled water or take-away food)

In order to be assessed, the company must have developed at least one new business model aiming at significantly reducing GHG emissions. If several business models are developed by the company, the final score will be the one given to the most mature business model (usually the one that is best scored). The company should not be penalized if it has built a mature business model, and also explores other models (which would have a lower score due to lower maturity) compared to another company having only one mature business model.

Each subdimension is equally weighted.

Subdimension	Basic	Standard	Advanced	Next practice	Low-carbon aligned
Profitability of business model	Not estimated or in a very early stage of development (research or conception stage)		Mature business model but not profitable or in a development stage (prototype / demonstration or test)		Mature and profitable business model including a climate change strategy

Size of business model	Not estimated	Limited size of business for the company (few FTE or time dedicated, small turnover, few revenues expected, etc.)	Substantial size of market for the company (significant number or FTE or dedicated hours, great turnover, great anticipated profitability, etc.)
Growth potential of business model	Not estimated or exploration of the business model interrupted	Scheduling next development steps	Scheduling the expansion of the target or size of the business model
Deployment schedule of business model	Not scheduled	Deployment of activities/projects scheduled with a 2 year horizon or less	Deployment of activities/projects scheduled with a 2 year horizon or more

RATIONALE

AG 9.1 BUSINESS ACTIVITIES SHIFTING SUPPLY FROM HIGHLY EMISSIVE TO LOW-CARBON PRODUCTS

RATIONALE OF THE INDICATOR

In addition to developing sustainable practices, a company may transition its business model to other areas to remain profitable in a low-carbon economy. The company's future business model should enable it to decouple financial results from GHG emissions, in order to meet the constraints of low-carbon transition while continuing to generate value.

This indicator aims to identify both relevant current business activities, and those still at a burgeoning stage. It is recognized that transition to a low-carbon economy, with associated change in business models, will take place over a number of years. The assessment will thus seek to identify and reward projects at an early stage as well as more mature business activities, although the latter (i.e. substantially sized, profitable, and/or expanding) business activities will be better rewarded.

While efforts are required to reduce the emissions from the company's existing business models, there is a crucial need to drastically change people's diets, signalling a need for significant changes in overall business models in the food industry.

• **AG 9.2 BUSINESS ACTIVITIES SHIFTING TO BETTER PRODUCTION PRACTICES**

DESCRIPTION & REQUIREMENTS	AG 9.2 BUSINESS ACTIVITIES SHIFTING TO BETTER PRODUCTION PRACTICES
SHORT DESCRIPTION OF INDICATOR	An assessment of the company’s preparedness to be profitable and viable in a low-carbon economy by developing business models that reduce emissions through better production practices.
DATA REQUIREMENTS	<p>The questions comprising the information request that are relevant to this indicator are:</p> <ul style="list-style-type: none">◆ Details on company business model(s) which reduce emissions through better production practices [<p>CDP 2023 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none">◆ C2.4◆ C2.4a◆ C4.3◆ C4.3a◆ C4.3b◆ C-AC4.4a/C-FB4.4a <p>CDP 2024 Questionnaire mapping to this indicator:</p> <ul style="list-style-type: none">◆ 3.6◆ 3.6.1◆ 7.55◆ 7.55.1◆ 7.55.2◆ 7.67.1
HOW THE ANALYSIS WILL BE DONE	Business model activities should include, but are not limited to:

- ◆ Shifting a share (or the whole) land from conventional to organic agriculture [△] This action cannot be assessed alone if the company only focuses on organic production for products other than fruits and pulses (which are today the only products for which organic production is considered as low-carbon).
- ◆ Shift to seasonal production or practices limiting pesticide use.
- ◆ Business models improving energy efficiency or reducing the need for energy
- ◆ Actions reducing food waste

In order to be assessed, the company must have at least one of new business model in favour of climate mitigation, with a significant emission reduction. If several business models are developed by the company, the final score will be the one given to the most mature business model (usually the one that is best scored too). The company should not be penalized if it has built a mature business model, and also explores other tracks (which would be scored with a lower score) compared to another company having only one mature business model.

The same maturity matrix as per indicator 9.1 is used (see on page 138).

RATIONALE

AG 9.2 BUSINESS ACTIVITIES SHIFTING TO BETTER PRODUCTION PRACTICES

RATIONALE OF THE INDICATOR

This is a secondary aspect of business model as most of the efforts shall be focus on shifting the products mix. However, companies should significantly review their business models in order to reduce their direct emissions.

6. Assessment

→ NOTE

- ACT provides guidelines concerning the scope and boundaries of the sector covered by this methodology to determine which type of GHG emissions are included or excluded. However, it does not provide tools and databases to measure and calculate these emissions. In particular, the choice of emissions factors does not fall under the responsibility of the ACT methodology. ACT recommends using company-specific emissions factors, or if unavailable, standard emissions factors recognized in the sector.
- The assessor should pay high attention to emissions sources reported by the company and especially if they are aligned with the emissions sources listed in the benchmarks.

6.1. SECTOR BENCHMARK

6.1.1. FLAG BENCHMARKS

During the writing of the first version of ACT Agriculture & Agrifood (2020-2022), the existing literature did not provide any decarbonisation scenario for the food sector. In collaboration with Climate Focus, products pathways had been developed by the ACT initiative to be used as a benchmark for the relevant indicators (targets, trend in past emissions, etc.). This work is available in the Annex section (see 11.3).

In the meantime, SBTi published the FLAG (Forest, Land and Agriculture) approach that proposes a framework for assessing targets from companies having significant emissions related to forest, land and agriculture. Over the sectoral methodologies and as a strong reference for companies, ACT refers as much as possible to SBTi for the target approach. Aligning to an already broadly used target-setting methodology ensures the availability of the data in the companies climate reports and avoid duplicating the same methodology for similar sectors.

The complete SBTi FLAG methodology is available online⁴, along with a tool that calculates aligned targets for companies. This section intends to provide the main aspects of it in relation to the use of these pathways in the ACT Agriculture & Agrifood methodology.

The FLAG pathways propose a target-setting approach for companies having significant AFOLU emissions (including in the Scope 3 emissions). The methodology proposes two approaches that are compatible with the global temperature increase of 1.5°C of the Paris Agreement:

- ◆ A sector pathway, using an absolute contraction approach on the AFOLU emissions for the overall sector

⁴ <https://sciencebasedtargets.org/sectors/forest-land-and-agriculture>

- ◆ Commodity pathways, using contraction approaches for 9 food commodities.

The scope of companies required to set a FLAG target in SBTi is a bit broader than ACT Agriculture & Agrifood. It includes companies from the other sectors (like Forest and paper products and Tobacco, for example). The general requirement in SBTi is for any company to set a FLAG target if the FLAG emissions account for more than 20% of Scope 1+2+3 emissions. Consequently, the companies included in ACT Agriculture & Agrifood are also required by SBTi to set a FLAG target, with potential exceptions for companies with FLAG emissions falling under the threshold of 20%.

In the general case, SBTi requires to set a unique FLAG target for both Scope 1 and Scope 3 emissions. In terms of emissions coverage, SBTi requires that the FLAG target covers:

- ◆ 95% of FLAG-related scope 1 emissions
- ◆ 67% of FLAG-related scope 3 emissions

However, and for any sector, SBTi has a general requirement to set a dedicated Scope 3 target if the company's Scope 3 gross emissions account for more than 40% of the company's total emissions. In this case, the company must also separate FLAG and energy/industry emissions, each of these two categories must be covered at 67% minimum.

In ACT, the thresholds are implemented differently. The thresholds are mostly used to define the company's category: if an agricultural company accounts more than 10% of its emissions related to Scope 1 food-processing activities, it falls in the Integrated company category. Similarly, if an agrifood company accounts more than 10% of its emissions related to Scope 1 AFOLU activities, it falls in the Integrated company category.

For the targets, there is no specific threshold in ACT. Targets covering less than 95% of the emissions boundaries are not preferred, but still required and used in the ACT assessment with a score downgrading. In ACT, a target is required for FLAG-related scope 3 emissions for all companies falling in the Agrifood, Integrated, and Food & Beverage services categories.

The FLAG sector pathway corresponds to a rate of mitigation of 3.03%/year compared to the base year. This rate is aligned with the mitigation target of approximately 12 GtCO₂e/year in 2050 that is presented in the review paper Roe et al. [25]. It is usable for near-term target setting (10-year timespan). For years onward, SBTi requires a 72% decarbonisation no longer than 2050 [14].

This will be used to calculate the company's for the ACT A&A methodology as described below:

- ◆ From the company's reporting year to 10 years later (until 2030), an annual linear decrease rate of 3.03% per year is applied.
- ◆ For the following years out to 2050, the benchmark applies whatever on-going annual linear decrease is required to achieve an overall absolute emissions reduction of 72% by 2050 [14].

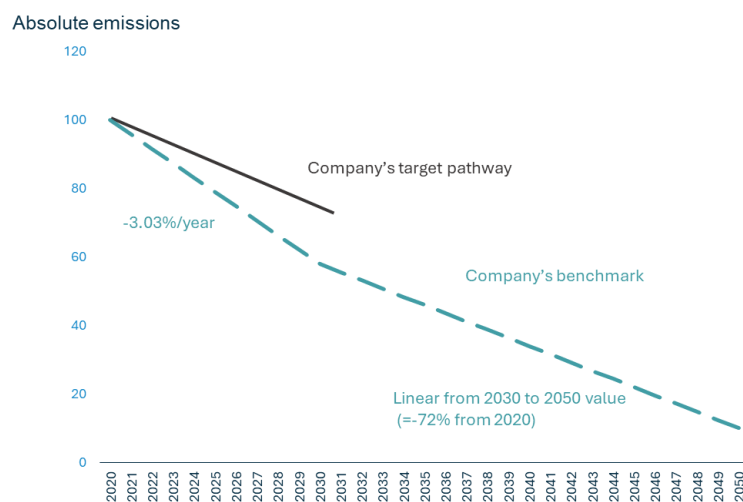


FIGURE 9: UTILISATION OF FLAG SECTORAL BENCHMARK IN ACT A&A

The FLAG commodities pathways are defined for 11 commodities, among which 9 fall in the scope of this methodology: beef, chicken, dairy, maize, palm oil, pork, rice, soy, and wheat. They are each expressed in emissions intensity, in tCO₂e/t fresh wt. Noteworthy, the mitigation target per year for each of these commodities is of the same order of magnitude than the sector pathway, ranging from a reduction rate of 2.80%/year to 3.90%. They are usable for near-term target setting only (10-year timespan).

In practice: the commodities benchmarks are not available as such and must be generated using the SBTi FLAG Target-Setting tool. The tool is downloadable here: <https://sciencebasedtargets.org/sectors/forest-land-and-agriculture#resources>

6.1.2. POST-FARM GATE BENCHMARK

For the post-farm gate emissions, the approach used is as followed:

- ◆ For **Integrated and Food & Beverage companies, and Agrifood companies based outside Europe**, the **SBTi Cross sectoral ACA benchmark** [16] will be used.

This method requires all companies to reduce their absolute emissions at the same rate, as required by the given scenario. To calculate the extent by which a company is expected to reduce its absolute emissions, two different cases can be identified:

- From the company's reporting year to 10 years later (until 2030), an annual linear decrease rate of 4.2% per year is applied. For target settings purpose, should the base year be more than 2020, an overall 42% reduction is required until 2030.
- For the following years out to 2050, the benchmark applies whatever on-going annual linear decrease is required to achieve an overall absolute emissions reduction of 90% by 2050 [14].

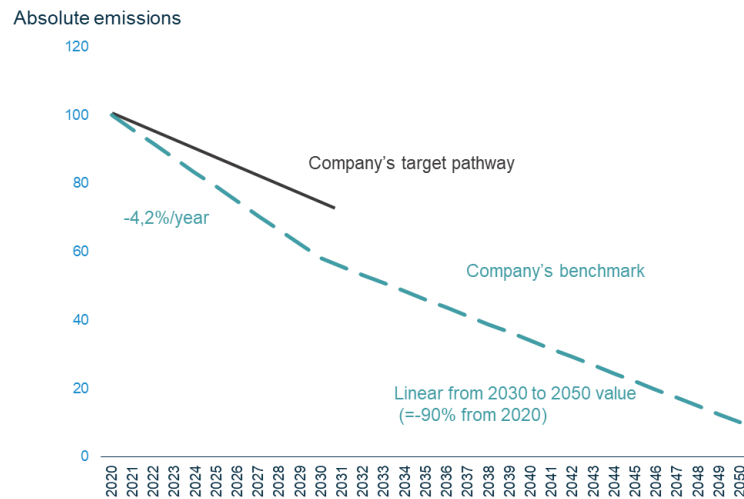


FIGURE 10: ABSOLUTE CONTRACTION MECHANISM ILLUSTRATION

- ◆ For **Agrifood companies based in Europe**, the scenario provided by the **FoodDrinkEurope** report on decarbonising the European food and drink manufacturing sector [18] will be used. The report provides for 3 different scenarios:
 - S1-Baseline, business-as-usual: scenario without the Green Deal, i.e., only with the environmental policies in place in 2020.
 - S2-Faster decarbonisation: full implementation of the Green Deal in Europe with similarly ambitious policies in the majority worldwide regions.
 - S3-Slower decarbonisation: full implementation of the Green Deal with mixed results, while the relevant worldwide regions (China, India, USA, etc.) do not apply similarly ambitious policies to their GHG emissions sources or do it at slower pace than the EU.

As the scenario S2-Faster decarbonisation is the only one compatible with a 1.5°C scenario, this is the chosen scenario for post-farm gate emissions for Agrifood companies in Europe. It implies that, in 2050, the penetration of renewables is higher than 60% and the share of electricity in the total energy mix is equal to 50%. One assumption behind these figures is that a significant number of relevant cleaner technologies become economically viable from 2035.

Figure 11: GHG emission reduction for the European food and drink sector in the fooddrinkeurope study
 Figure 11 shows the decarbonisation rates of the three scenarios, with the orange curve (S2) being the chosen scenario for ACT.

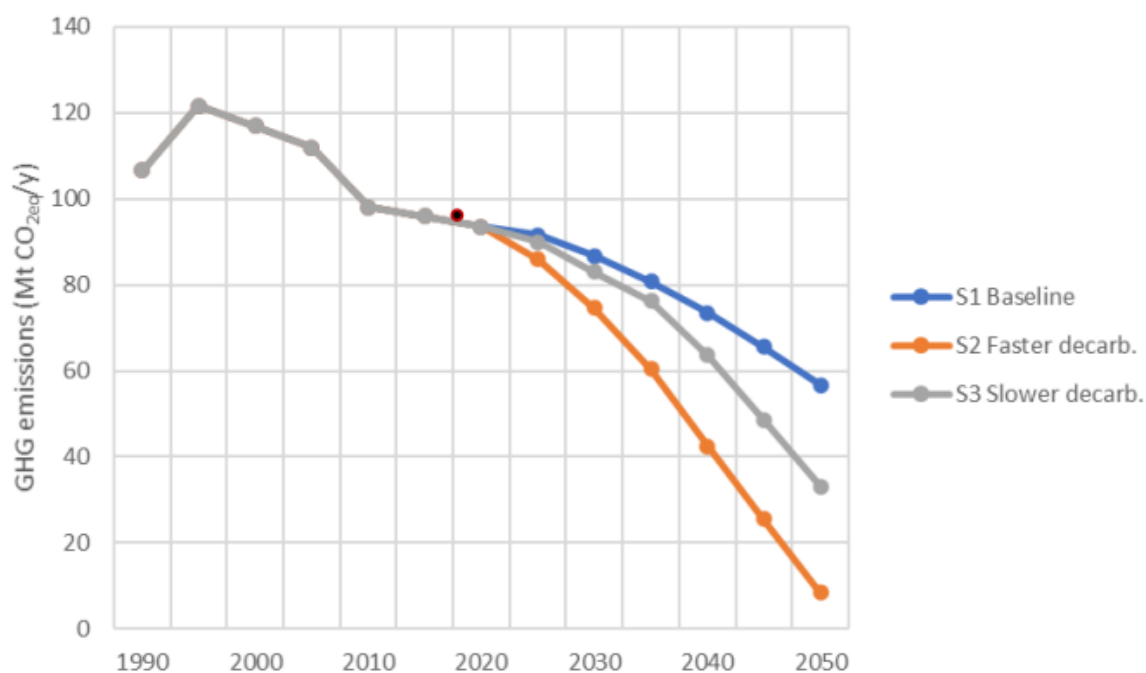


FIGURE 11: GHG EMISSION REDUCTION FOR THE EUROPEAN FOOD AND DRINK SECTOR IN THE FOODDRINKEUROPE STUDY [18]

6.1.3. FOOD WASTAGE BENCHMARK

The benchmark is drawn from the FAO benchmark on food wastage. For the ACT assessment, the breakdown between the two categories “Agricultural production and processing” and “Post-harvest handling and storage” used in the FAO benchmark is not relevant. The benchmark for “Agricultural production and processing” is used for every step of the value chain.

DEVELOPED COUNTRIES ⁵	DEVELOPING COUNTRIES
- 5% between 2011 and 2030	- 15% between 2011 and 2030

It is proposed to adapt this benchmark to do the assessment:

DEVELOPED COUNTRIES	DEVELOPING COUNTRIES
at least - 1% every 3 years	at least - 1% per year

⁵ To view a list of the countries included in each category, please refer to the United Nations 'World Economic Situation and Prospects 2020' at https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP2020_Annex.pdf. Developed countries include countries listed in Tables A.1 and A.2, and developing countries are listed in Table A.3.

6.1.4. LOW-CARBON FOOD PRODUCTS BENCHMARK

The Poore & Nemecek (2018) [3] data was used to propose a threshold to consider a product as 'low-carbon'. The data is open access and published as supplementary information in the journal *Science*. The data covers nearly 40,000 farms from over 1,500 global studies, and includes additional data contributions from nearly 140 authors. It represents a globally reconciled and methodologically harmonized approach.

Poore & Nemecek (2018)	Country-level, open access emissions intensity dataset of 43 agricultural products, based on a <i>Science</i> journal publication. Information provided on the global distribution of emissions per product (e.g., mean, 10 th and 90 th percentiles) and on the contributing life cycle stages to the total emissions. 40,000 farms covered over 1,500 global studies from a highly reputable source.
-----------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Consequently, for indicators 2.5 and 4.4 looking at the increased in the share of low-carbon food products, the mean of the median emissions intensities for each food product is calculated (see 11.3).

- ◆ For indicator 2.5 focusing on farm-gate level emissions, the emissions from processing are excluding, resulting in a mean equal to 5.4 kgCO₂e/kg product.
- ◆ For indicator 4.4, all the emissions within the ACT boundaries are included, resulting in a mean equal to 6.3 kgCO₂e/kg product.

6.2. QUANTITATIVE BENCHMARKS USED FOR THE INDICATORS

The following table lists the benchmarks used for the quantitative indicators and their sources:

TABLE 11: BENCHMARKS FOR THE QUANTITATIVE INDICATORS

BENCHMARK	PARAMETER	SOURCE	INDICATOR RELEVANCE
AFOLU emissions per commodity - FLAG commodities	<i>CB</i>	SBTi [42]	AG 1.1 AG 2.1 AG 2.5 AG 4.1
AFOLU emissions – Sectoral FLAG	<i>CB</i>	SBTi [64]	AG 1.1 AG 2.1 AG 2.2 AG 2.5 AG 4.1 AG 4.2
Post-farm emissions (world) - ACA	<i>CB</i>	SBTi [16]	AG 1.2 AG 2.1
Post-farm emissions (Europe)	<i>CB</i>	FoodDrink Europe [18]	AG 1.2
Low-carbon products	Threshold	Poore & Nemecek database [3]	AG 2.6 AG 4.5
Food wastage	Food wastage ratio	FAO [19]	AG 2.3

6.3. WEIGHTINGS

The selection of weightings for both the modules and the individual indicators was guided by the principles of value of information, impact of variation, future orientation and data quality sensitivity. See the ACT Framework [1] document for more information.

D = Direct emissions → scope 1+2 emissions

I = Indirect upstream emissions → scope 3 upstream emissions

TABLE 12: PERFORMANCE INDICATOR WEIGHTINGS

(see following pages)

MODULE	AG	INDICATOR	AGRICULTURE		RUMINANT ANIMALS FEED PRODUCERS ⁶ (AGRICULTURE)	
			Indicator	Module	Indicator	Module
TARGETS	1.1	Alignment of AFOLU emissions reduction targets	9%	15%		
	1.2	Alignment of post-farm scope 1+2 emissions reduction targets	-			
	1.3	Time horizon of targets	3%			
	1.4	Achievement of past and current targets	3%			
MATERIAL INVESTMENT	2.1	Trend in past emissions intensity	4%	40%	4%	35%
	2.2	Trend in future AFOLU emissions	4%		4%	
	2.3	Decrease in food loss and waste	8%		7%	
	2.4	Low-carbon CAPEX	4%		4%	
	2.5	Action on deforestation	10%		10%	
	2.6	Increase in the share of low-carbon products	5%		3%	
	2.7	Implementation of better farming practices	5%		3%	
INTANGIBLE INVESTMENT	3.1	Share of R&D in mitigation	1%	6%		
	3.2	Training for farmers and technical teams	3%			
	3.3	Innovative low-carbon food products	2%			
SOLD PRODUCT PERFORMANCE	4.1	Trend in past upstream AFOLU emissions	-	0%	-	5%
	4.2	Trend in future upstream AFOLU emissions	-		-	
	4.3	Downstream emissions associated with ruminant animal feed	-		5%	
	4.4	Action on deforestation	-		-	
	4.5	Increase in the share of low-carbon products	-		-	
MANAGEMENT	5.1	Oversight of climate change issues	1%	10%		
	5.2	Climate change oversight capability	1%			
	5.3	Low-carbon transition plan	4%			
	5.4	Climate change management incentives	1%			
	5.5	Climate change scenario testing	2%			
	5.6	Waste reduction strategy	1%			
SUPPLIER ENGAGEMENT	6.1	Strategy to influence suppliers to reduce their GHG emissions	5%	7%		
	6.2	Activities to influence suppliers to reduce their GHG emissions	2%			
CLIENTS ENGAGEMENT	7.1	Strategy to influence clients to reduce their GHG emissions	3%	7%		
	7.2	Activities to influence clients to reduce their GHG emissions	4%			
POLICY ENGAGEMENT	8.1	Company policy on engagement with associations, alliances, coalitions or thinktanks	1%	5%		
	8.2	Associations, alliances, coalitions and thinktanks supported do not have climate-negative activities or positions	1%			

⁶ When modules and indicator weightings are left blank, they are the same as the weightings for Agriculture.

MODULE	AG	INDICATOR	AGRICULTURE		RUMINANT ANIMALS FEED PRODUCERS ⁶ (AGRICULTURE)	
			Indicator	Module	Indicator	Module
	8.3	Position on significant climate policies	1%			
	8.4	Collaboration with local public authorities and NGOs	2%			
BUSINESS MODEL	9.1	Business activities shifting supply from highly emissive to low-carbon products	7%	10%		
	9.2	Business activities shifting to better production practices	3%			

MODULE	AG	INDICATOR	AGRIFOOD DIRECT EMISSIONS < 40%		RUMINANT ANIMALS FEED PRODUCERS ⁷ (AGRIFOOD)	
			Indicator	Module	Indicator	Module
TARGETS	1.1	Alignment of AFOLU emissions reduction targets	7%	15%		
	1.2	Alignment of post-farm scope 1+2 emissions reduction targets	2%			
	1.3	Time horizon of targets	3%			
	1.4	Achievement of previous targets	3%			
MATERIAL INVESTMENT	2.1	Trend in past emissions intensity	3%	8%		
	2.2	Trend in future AFOLU emissions	-			
	2.3	Decrease in food loss and waste	3%			
	2.4	Low-carbon CAPEX	2%			
	2.5	Action on deforestation	-			
	2.6	Increase in the share of low-carbon products	-			
	2.7	Implementation of better farming practices	-			
INTANGIBLE INVESTMENT	3.1	Share of R&D in mitigation technologies	1%	5%		
	3.2	Training for farmers and technical teams	2%			
	3.3	Innovative low-carbon food products	2%			
SOLD PRODUCT PERFORMANCE	4.1	Trend in past upstream AFOLU emissions	5%	30%	4%	30%
	4.2	Trend in future upstream AFOLU emissions	5%		4%	
	4.3	Downstream emissions associated with ruminant animal feed	-		5%	
	4.4	Action on deforestation	11%		11%	
	4.5	Increase in the share of low-carbon products	9%		6%	
MANAGEMENT	5.1	Oversight of climate change issues	1%	10%		
	5.2	Climate change oversight capability	1%			
	5.3	Low-carbon transition plan	4%			
	5.4	Climate change management incentives	1%			
	5.5	Climate change scenario testing	2%			
	5.6	Waste reduction strategy	1%			
SUPPLIER ENGAGEMENT	6.1	Strategy to influence suppliers to reduce their GHG emissions	5%	10%		
	6.2	Activities to influence suppliers to reduce their GHG emissions	5%			
CLIENTS ENGAGEMENT	7.1	Strategy to influence clients to reduce their GHG emissions	3%	7%		
	7.2	Activities to influence clients to reduce their GHG emissions	4%			
POLICY ENGAGEMENT	8.1	Company policy on engagement with associations, alliances, coalitions or thinktanks	1%	5%		
	8.2	Associations, alliances, coalitions and thinktanks supported do not have climate-negative activities or positions	1%			

⁷ When modules and indicator weightings are left blank, they are the same as the weightings for Agrifood.

MODULE	AG	INDICATOR	AGRIFOOD DIRECT EMISSIONS < 40%		RUMINANT ANIMALS FEED PRODUCERS ⁷ (AGRIFOOD)	
			Indicator	Module	Indicator	Module
	8.3	Position on significant climate policies	1%			
	8.4	Collaboration with local public authorities and NGOs	2%			
BUSINESS MODEL	9.1	Business activities shifting supply from highly emissive to low-carbon products	7%	10%		
	9.2	Business activities shifting to better production practices	3%			

MODULE	AG	INDICATOR	AGRIFOOD		RUMINANT ANIMALS FEED PRODUCERS ⁸ (AGRIFOOD)	
			DIRECT EMISSIONS \geq 40%			
			Indicator	Module	Indicator	Module
TARGETS	1.1	Alignment of AFOLU emissions reduction targets	5%	15%		
	1.2	Alignment of post-farm scope 1+2 emissions reduction targets	4%			
	1.3	Time horizon of targets	3%			
	1.4	Achievement of previous targets	3%			
MATERIAL INVESTMENT	2.1	Trend in past emissions intensity	14% x D	27% x D	11% x D	22% x D
	2.2	Trend in future AFOLU emissions	-		-	
	2.3	Decrease in food loss and waste	7% x D		5% x D	
	2.4	Low-carbon CAPEX	6% x D		6% x D	
	2.5	Action on deforestation	-		-	
	2.6	Increase in the share of low-carbon products	-		-	
	2.7	Implementation of better farming practices	-		-	
INTANGIBLE INVESTMENT	3.1	Share of R&D in mitigation and adaptation technologies	1%	5%		
	3.2	Training for farmers and technical teams	2%			
	3.3	Innovative low-carbon food products	2%			
SOLD PRODUCT PERFORMANCE	4.1	Trend in past upstream AFOLU emissions	7% x I	11% + 27% x I	5% x I	16% + 22% x I
	4.2	Trend in future upstream AFOLU emissions	7% x I		6% x I	
	4.3	Downstream emissions associated with ruminant animal feed	-		5%	
	4.4	Action on deforestation	11%		11%	
	4.5	Increase in the share of low-carbon products	13% x I		11% x I	
MANAGEMENT	5.1	Oversight of climate change issues	1%	10%		
	5.2	Climate change oversight capability	1%			
	5.3	Low-carbon transition plan	4%			
	5.4	Climate change management incentives	1%			
	5.5	Climate change scenario testing	2%			
	5.6	Waste reduction strategy	1%			
SUPPLIER ENGAGEMENT	6.1	Strategy to influence suppliers to reduce their GHG emissions	5%	10%		
	6.2	Activities to influence suppliers to reduce their GHG emissions	5%			
CLIENTS ENGAGEMENT	7.1	Strategy to influence clients to reduce their GHG emissions	3%	7%		
	7.2	Activities to influence clients to reduce their GHG emissions	4%			
POLICY ENGAGEMENT	8.1	Company policy on engagement with associations, alliances, coalitions or thinktanks	1%	5%		

⁸ When modules and indicator weightings are left blank, they are the same as the weightings for Agrifood.

MODULE	AG	INDICATOR	AGRIFOOD		RUMINANT ANIMALS FEED PRODUCERS ⁸ (AGRIFOOD)	
			DIRECT EMISSIONS >= 40%		Indicator	Module
			Indicator	Module		
	8.2	Associations, alliances, coalitions and thinktanks supported do not have climate-negative activities or positions	1%			
	8.3	Position on significant climate policies	1%			
	8.4	Collaboration with local public authorities and NGOs	2%			
BUSINESS MODEL	9.1	Business activities shifting supply from highly emissive to low-carbon products	7%	10%		
	9.2	Business activities shifting to better production practices	3%			

MODULE	AG	INDICATOR	INTEGRATED		RUMINANT ANIMALS FEED PRODUCERS ⁹ (INTEGRATED)	
			Indicator	Module	Indicator	Module
TARGETS	1.1	Alignment of AFOLU emissions reduction targets	7%	15%		
	1.2	Alignment of post-farm scope 1+2 emissions reduction targets	2%			
	1.3	Time horizon of targets	3%			
	1.4	Achievement of previous targets	3%			
MATERIAL INVESTMENT	2.1	Trend in past emissions intensity	3% x D	27% x D		
	2.2	Trend in future AFOLU emissions	4% x D			
	2.3	Decrease in food loss and waste	4% x D			
	2.4	Low-carbon CAPEX	4% x D			
	2.5	Action on deforestation	8% x D			
	2.6	Increase in the share of low-carbon products	-			
	2.7	Implementation of better farming practices	4% x D			
INTANGIBLE INVESTMENT	3.1	Share of R&D in mitigation and adaptation technologies	1%	5%		
	3.2	Training for farmers and technical teams	2%			
	3.3	Innovative low-carbon food products	2%			
SOLD PRODUCT PERFORMANCE	4.1	Trend in past upstream AFOLU emissions intensity	7% x I	11% + 27% x I	5% x I	11% + 27% x I
	4.2	Trend in future upstream AFOLU emissions	7% x I		6% x I	
	4.3	Downstream emissions associated with ruminant animal feed	-		5% x I	
	4.4	Action on deforestation	13% x I		11% x I	
	4.5	Increase in the share of low-carbon products	11%		11%	
MANAGEMENT	5.1	Oversight of climate change issues	1%	10%		
	5.2	Climate change oversight capability	1%			
	5.3	Low-carbon transition plan	4%			
	5.4	Climate change management incentives	1%			
	5.5	Climate change scenario testing	2%			
	5.6	Waste reduction strategy	1%			
SUPPLIER ENGAGEMENT	6.1	Strategy to influence suppliers to reduce their GHG emissions	5%	10%		
	6.2	Activities to influence suppliers to reduce their GHG emissions	5%			
CLIENTS ENGAGEMENT	7.1	Strategy to influence clients to reduce their GHG emissions	3%	7%		
	7.2	Activities to influence clients to reduce their GHG emissions	4%			
POLICY ENGAGEMENT	8.1	Company policy on engagement with associations, alliances, coalitions or thinktanks	1%	5%		

⁹ When modules and indicator weightings are left blank, they are the same as the weightings for Integrated.

MODULE	AG	INDICATOR	INTEGRATED		RUMINANT ANIMALS FEED PRODUCERS ⁹ (INTEGRATED)	
			Indicator	Module	Indicator	Module
	8.2	Associations, alliances, coalitions and thinktanks supported do not have climate-negative activities or positions	1%			
	8.3	Position on significant climate policies	1%			
	8.4	Collaboration with local public authorities and NGOs	2%			
BUSINESS MODEL	9.1	Business activities shifting supply from highly emissive to low-carbon products	7%	10%		
	9.2	Business activities shifting to better production practices	3%			

MODULE	AG	INDICATOR	FOOD & BEVERAGE SERVICES	
			Indicator	Module
TARGETS	1.1	Alignment of AFOLU emissions reduction targets	7%	15%
	1.2	Alignment of post-farm scope 1+2 emissions reduction targets	2%	
	1.2	Time horizon of targets	3%	
	1.3	Achievement of previous targets	3%	
MATERIAL INVESTMENT	2.1	Trend in past emissions intensity	3%	8%
	2.2	Trend in future AFOLU emissions	-	
	2.3	Decrease in food loss and waste	3%	
	2.4	Low-carbon CAPEX	2%	
	2.5	Action on deforestation	-	
	2.6	Increase in the share of low-carbon products	-	
	2.7	Implementation of better farming practices	-	
INTANGIBLE INVESTMENT	3.1	Share of R&D in mitigation and adaptation technologies	-	2%
	3.2	Training for farmers and technical teams	-	
	3.3	Innovative low-carbon food products	2%	
SOLD PRODUCT PERFORMANCE	4.1	Trend in past upstream AFOLU emissions intensity	5%	30%
	4.2	Trend in future upstream AFOLU emissions	5%	
	4.3	Downstream emissions associated with ruminant animal feed	-	
	4.4	Action on deforestation	11%	
	4.5	Increase in the share of low-carbon products	9%	
MANAGEMENT	5.1	Oversight of climate change issues	1%	10%
	5.2	Climate change oversight capability	1%	
	5.3	Low-carbon transition plan	4%	
	5.4	Climate change management incentives	1%	
	5.5	Climate change scenario testing	2%	
	5.6	Waste reduction strategy	1%	
SUPPLIER ENGAGEMENT	6.1	Strategy to influence suppliers to reduce their GHG emissions	5%	10%
	6.2	Activities to influence suppliers to reduce their GHG emissions	5%	
CLIENTS ENGAGEMENT	7.1	Strategy to influence clients to reduce their GHG emissions	5%	10%
	7.2	Activities to influence clients to reduce their GHG emissions	5%	
POLICY ENGAGEMENT	8.1	Company policy on engagement with associations, alliances, coalitions or thinktanks	1%	5%
	8.2	Associations, alliances, coalitions and thinktanks supported do not have climate-negative activities or positions	1%	
	8.3	Position on significant climate policies	1%	
	8.4	Collaboration with local public authorities and NGOs	2%	
BUSINESS MODEL	9.1	Business activities shifting supply from highly emissive to low-carbon products	7%	10%
	9.2	Business activities shifting to better production practices	3%	

• RATIONALE FOR WEIGHTINGS

Targets **15%**

This is a fixed weighting defined by the ACT Sector Methodologies Development [4] that seems appropriate to retain for the agriculture & agrifood sector.

Material investment **8 - 40%**

The Material investment module assesses the company's direct emissions. The Material investment module has a variable weighting as the company's main sources of emissions will be either direct or indirect depending on the company's profile: agricultural companies have large direct emissions, while the largest emissions sources for processing companies occur upstream. However, for agrifood companies with high scope 1 & 2 emissions compared with their scope 3 emissions, the methodology allows the weighting of Module 2 to be increased accordingly.

For agricultural companies and certain agrifood companies, this weighting exceeds the maximum of 35% defined in the ACT Sector Methodologies Development [4] to reflect the emissions along the value chain and the scale of the decarbonisation challenge.

Intangible investment **2 - 6%**

The weighting for Intangible investment is relatively small since research & development does not lie at the heart of the challenges for transitioning the agriculture & agrifood sector. The weighting is set at 2% for food & beverage companies as their scope of activities leaves very little room for R&D. R&D for reducing GHG emissions at the farm level is more relevant for the agricultural and agrifood companies, for which the module is assigned a higher weighting.

Sold product performance **0 - 30%**

Sold product performance module assesses the company's indirect emissions. In most cases, agricultural companies are not assessed for this module as the challenge for these companies is to reduce their direct emissions. An exception exists in the methodology for companies producing crops that are dedicated to ruminant animals feed, with an indicator focusing on scope 3 downstream emissions due to cattle breeding. However, this module is key for agrifood and food & beverage companies whose upstream indirect emissions are significantly higher than their direct emissions and, accordingly, the weighting is increased for those companies.

Management **10%**

The Management module weighting is fixed at 10%, as per the ACT Sector Methodologies Development [4], since the challenges are quite similar from one sector to another regarding this aspect.

Supplier engagement **7 - 10%**

All companies within the scope of this methodology have an important role to play with their suppliers and/or subcontracted companies, resulting in low variation in weighting for this module. For agricultural companies, supplier engagement involves in particular seed and fertiliser producers (weighting is equal to 7%), and for all processing companies, supplier engagement is given a higher weighting due to the agricultural production of their supplies (weighting is equal to 10%).

Client engagement**7 - 10%**

All companies within the scope of this methodology have an important role to play in terms of client engagement. However, the weighting for this module is higher for food & beverage services companies since they have the most direct impact on consumers.

Policy engagement**5%**

Policy engagement must be accounted for since it reveals an important part of the company's overall low-carbon strategy, but this element is not easy to assess. The module is therefore set at 5% for all companies.

Business model**10%**

By changing business models, the methodology aims to significantly review the sold products, mainly for companies selling a majority of animal-based proteins. This aspect is important in transitioning the food sector. However, the assessment of these plans and the credibility of the implementation of future actions is difficult. Nevertheless, the 10% fixed weighting defined by the ACT Sector Methodologies Development [4] is retained for the agriculture & agrifood sector since it has similar importance across all sectors.

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 0 (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 13: LOWEST, HIGHEST AND MIDPOINT FOR EACH ACT SCORE TYPE

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

See the ACT Framework [43] for general information and methodology on the ACT rating.

7.1. PERFORMANCE SCORING

A detailed description of the Performance indicators and of their weightings for the agriculture & agrifood sector is presented in 6.3. Performance scoring shall be performed in compliance with the ACT Framework and this Methodology. No additional sector-specific issue impacting the Performance scoring for this sector has been identified to date.

7.2. NARRATIVE SCORING

Narrative scoring shall be performed in compliance with the ACT Framework [43], assessing the company on the 5 following criteria + 1 extra criteria:

- ◆ Business model and strategy
- ◆ Consistency and credibility
- ◆ Data quality
- ◆ Reputation

- ◆ Risk
- ◆ Negative externalities

The information reported in Module 2 and 4 shall be considered with particular attention for the narrative analysis and narrative scoring for the agriculture & agrifood sector: with this information, the assessor can take a holistic view on the company's actions and assess the consistency of actions taken with respect to targets, business model and engagement with other stakeholders.

Having commodity targets alongside global target (see indicator 1.1) should be positively reflected in the Narrative score, in the 'Consistency and credibility' criteria; likewise for scope 3 emissions targets covering non AFOLU emissions.

If packaging is a material issue for the company, the assessor should scrutinize this specific topic to inform the 'Business model and strategy' and 'Consistency and credibility' criteria.

The Negative Externalities dimension is specific to the Agriculture & Agrifood sector. Negative externalities play a particular role for the agricultural production as GHG emissions, biodiversity, water scarcity, and many other aspects might be interlinked.

A non-exhaustive list of negative externalities to be considered includes:

- ◆ Biodiversity loss
- ◆ Water stress
- ◆ Soil carbon loss and soil degradation
- ◆ Additional land use pressure
- ◆ Reduced yields
- ◆ Increase in pesticide use
- ◆ Lost income
- ◆ Air Pollution (including ammonia, hydrogen sulphide, particulate matter)
- ◆ Eutrophication
- ◆ Intensification of production
- ◆ Chemical pollution of water
- ◆ Animal welfare (incl. use of antibiotics).

The 'negative externalities' criteria will be assessed through the following maturity matrix:

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned
How the company consider potential negative externalities that could result from its low-carbon transition plan?	The company does not identify potential negative externalities that could result from its low-carbon transition plan	The company identifies general negative externalities that could result from its low-carbon transition plan.	The company quantifies negative externalities that could result from its low-carbon transition plan.	The company quantifies negative externalities, at the country level, that could result from its low-carbon transition plan and implements measures to reduce them.	The company quantifies negative externalities, at the country level, that could result from its low-carbon transition plan and implements measures to reduce them. Regular monitoring of the measures is carried out and reported on.

7.3. TREND SCORING

Trend scoring shall be performed in compliance with the ACT Framework.

To apply the trend scoring methodology presented in the ACT Framework, the assessor should identify the trends from the existing data infrastructure based on the data points and/or indicators that can indicate the future direction of change within the company.

The table below includes an overview of which indicators/data points could possibly have valuable information about future directions for the agriculture & agrifood sector.

TABLE 14: RELEVANT PERFORMANCE INDICATORS FOR TRENDS IDENTIFICATION FOR THE AGRICULTURE & AGRIFOOD SECTOR

MODULE	INDICATOR
Targets	1.1 Alignment of AFOLU emissions reduction targets
	1.2 Alignment of post-farm Scope 1+2 emissions reduction targets
	1.3 Time horizon of targets
Material investments	2.2 Trend in future absolute emissions
	2.4 Low-carbon CapEx
	2.5 Action on deforestation

Intangible investments	3.1 Share of R&D in mitigation technologies
	3.2 Training for farmers and technical teams
	3.3 Innovative low-carbon food products
Sold product performance	4.2 Trend in future upstream AFOLU emissions
	4.4 Action on deforestation
Management	5.3 Low-carbon transition plan
	5.5 Climate change scenario testing
Suppliers	6.1 Strategy to influence suppliers to reduce their GHG emissions
Clients	7.1 Strategy to influence clients to reduce their GHG emissions
Business model	9.1 Business activities shifting supply from highly emissive to low-carbon products and production
	9.2 Business activities shifting to better production practices

8. Aligned state

The table below presents the response of a low-carbon aligned company of the sector to the 5 questions of ACT:

- What is the company planning to do? [Commitment]
- How is the company planning to get there? [Transition Plan]
- What is the company doing at present? [Present]
- What has the company done in the recent past? [Legacy]
- How do all of these plans and actions fit together? [Consistency]

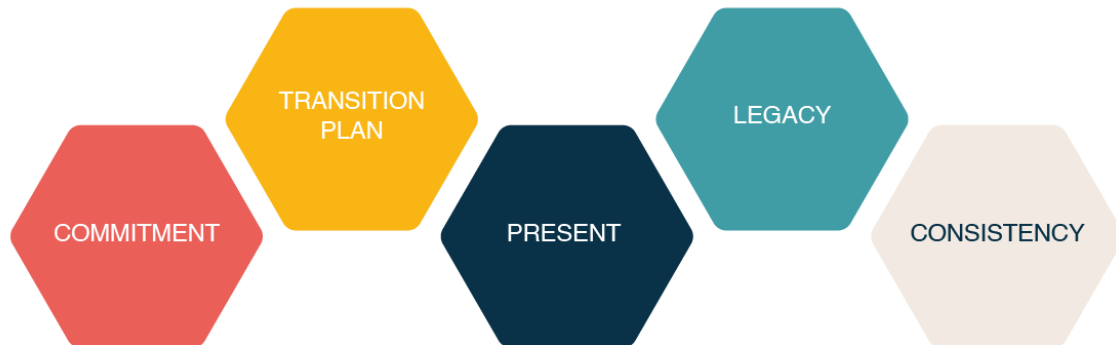


FIGURE 12: ALIGNED STATE FOR COMPANIES IN THE AGRICULTURE & AGRIFOOD SECTOR

<h2>1</h2> <p>The company has science-based targets for its activities and for all agricultural emissions.</p>	<h2>2</h2> <p>The company's strategic planning details the investments and shifts towards a low-carbon food value chain. Actions to tackle deforestation and to incentivise dietary changes are included.</p>	<h2>3</h2> <p>Through new business models, the company is shifting its current product mix towards low-carbon products.</p>	<h2>4</h2> <p>The company is expected to lower its emissions intensity along the entire value chain at the rate required by its company pathway. The company has already implemented actions over the last 5 years to lower its emissions (including tackling deforestation) and reduce food waste.</p>	<h2>5</h2> <p>The company's targets, transition plan, present actions and past legacy show a consistent willingness to achieve the goals of low-carbon transition, especially by developing new food business models.</p>
-----------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

9. Sources

- [1] ACT Initiative , “ACT Framework - Version 1.1,” 2019.
- [2] IPCC, “Summary for Policymakers. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems,” In press, 2019.
- [3] J. Poore and T. Nemecek, “Reducing food’s environmental impacts through producers and consumers,” *Science*, 2018.
- [4] ACT Initiative, “Guidance - ACT Sector Methodologies Development - Version 1.0,” 2018.
- [5] E. Cassidy, P. West, J. Gerber and J. Foley, “Redefining agricultural yields: from tonnes to people nourished per hectare,” *Environmental Reserach Letters*, 2013.
- [6] ACT Initiative, “ACT Sector Methodology - Retail,” 2019.
- [7] ACT Initiative, “Guidance - Multi activity assessment - V1.0,” 2024.
- [8] W. R. I. (WRI), “Creating a Sustainable Food Future,” Washington DC, 2019.
- [9] Food and Agriculture Organization of the United Nations (FAO), “Food Wastage Footprint & Climate Change,” 2015.
- [10] C. Anderson, T. Bicalho, E. Wallace, T. Letts and M. Stevenson, “Forest, Land and Agriculture Science-Based Target-Setting Guidance,” World Wildlife Fund, Washington, DC, 2022.
- [11] ACT Initiative, “ACT Sector Methodology - Oil & Gas (to be published),” 2020.
- [12] ADEME, “Filière agricole et Agroalimentaire - Réalisation d'un bilan des émissions de gaz à effet de serre,” 2024.
- [13] Greenhouse Gas Protocol, “Land Sector and Removals Guidance (Draft for Pilot Testing and Review, September 2022),” 2022.
- [14] SBTi, “The Corporate Net-Zero Standard,” 2023.
- [15] High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities, “Integrity Matters: Net Zero commitments by Businesses, Financial Institutions, Cities and Regions,” 2022.
- [16] SBTi, “Foundations of science-based target setting, version 1.0,” 2019.
- [17] SBTi, “Pathways to net-zero, SBTi Technical summary version 1.0,” October 2021.
- [18] FoodDrinkEurope, “Decarbonisation roadmap for the European food and drink manufacturing sector,” 2021.
- [19] Food and Agriculture Organization of the United Nations (FAO), “Toolkit Reducing the Food Wastage Footprint,” 2013.
- [20] T. Garnett, “Where are the Best Opportunities for Reducing Greenhouse Gas Emissions in the Food System (including the food chain)?,” *Food Policy*, pp. 23-32, 2011.
- [21] Global Canopy, “The Forest 500: 2019 Company Assessment Methodology,” Oxford, UK, 2019.
- [22] CDP, “Zeroing-in Deforestation,” 2020.
- [23] EU Technical Expert Group on Sustainable Finance, “Taxonomy Technical Report,” 2019.
- [24] H. Ritchie, “Is organic really better for the environment than conventional agriculture?,” 2017.
- [25] S. Roe, C. Streck, M. Obersteiner and al, “Contribution of the land sector to a 1.5 °C world,” *Nature Climate Change*, no. 9, p. 817–828, 2019.
- [26] I. E. A. (IEA), “Energy Technology Perspectives 2020,” Paris, 2020.
- [27] CDP, “Climate Transition Plan: Discussion Paper,” London, 2021.

- [28] G. Yemm, *FT Essential Guide to Leading Your Team*, Harlow: Pearson, 2012.
- [29] IEA, "World Energy Outlook 2019," 2019.
- [30] Willis Towers Watson, "Executive Compensation Guidebook for Climate Transition," 2021.
- [31] TCFD, "TCFD Recommendations Technical Supplement: The Use of Scenario Analysis in Disclosure of Climate-related Risks and Opportunities," 2017.
- [32] SME Climate Hub, "1.5°C Supplier Engagement Guide," [Online]. Available: <https://smeclimatehub.org/supply-chain-leaders/supplier-engagement-guide/>. [Accessed 5 July 2022].
- [33] CDP, "2022 CDP climate change questionnaire," 2022. [Online]. Available: <https://www.cdp.net/en/guidance/guidance-for-companies>. [Accessed 5 July 2022].
- [34] C3D, "Les achats au cœur de la stratégie climat," 2022.
- [35] Science Based Targets initiative, "Value Change in the Value Chain: Best practices in scope 3 greenhouse gas management," 2017.
- [36] D. Tilman and M. Clark, "Global diets link environmental sustainability and human health," *Nature*, 27 November 2014.
- [37] "Align," [Online]. Available: <https://www.aaacclimateleadership.org/align/>. [Accessed 5 July 2022].
- [38] Responsible climate lobbying, "Appendix: The 14 indicators of responsible climate lobbying," 2022.
- [39] UNPRI, "INVESTOR EXPECTATIONS ON CORPORATE CLIMATE LOBBYING," 2015.
- [40] "InfluenceMap," [Online]. Available: <https://influencemap.org/>. [Accessed 5 July 2022].
- [41] IPCC, "Special report on global warming of 1.5°C (SR15)," 2018.
- [42] SBTi, "Forest, land, agriculture and sciencebased target-setting guidance," 2022.
- [43] ACT Initiative, "ACT Framework - version 2.0," 2024.
- [44] C. Mbow, C. Rosensweig, C. Barioni, L. Benton, T. Herrero, M. Krishnapillai and al., "Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management,," 2019.
- [45] P. Smith, M. Bustamante, H. Ahammad, H. Clark, H. Dong, E. Elssiddig and al, "Agriculture, forestry and other land use (AFOLU). 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," 2014.
- [46] Dooley and Stabinsky, "Missing Pathways to 1.5°C: The role of the land sector in ambitious climate action.,," 2018.
- [47] J. Ahmed, E. Almeida, D. Aminetzah and N. Denis, "Agriculture and climate change: Reducing emissions through improved farming practices," 2020.
- [48] D. Lobell, K. Cassman and C. Field, "Crop Yield Gaps: Their Importance, Magnitudes, and Causes | Annual Review of Environment and Resources," 2009.
- [49] R. Licker, M. Johnston, J. Foley, C. Barford, C. Kucharik, C. Monfreda and al, "Mind the gap: how do climate and agricultural management explain the 'yield gap' of croplands around the world?," *Global Ecology and Biogeography*, pp. 769-782, 2010.
- [50] R. Fischer, D. Byerlee and G. Edmeades, "Crop yields and global food security: will yield increase continue to feed the world?," *Australian Centre for International Agricultural Research*, 2014.
- [51] J. Feirreira-Filho and L. Stocco, "Closing the yield gap in livestock production in Brazil: New results and emissions insights," in *22nd Annual Conference on Global Economic Analysis*, Warsaw, 2019.
- [52] P. Pradhan, G. Fischer, H. van Velthuis, D. Reusser and J. Kropp, "Closing Yield Gaps: How Sustainable Can We Be?," *PLoS ONE*, 2015.
- [53] P. Gerber, H. Steinfeld, B. Henderson, A. Mottet, C. Opio, J. Dijkman and al, "Tackling climate change through livestock: a global assessment of emissions and mitigation opportunities," 2013.
- [54] FAOSTAT, "Food and Agriculture Data," [Online]. Available: <http://www.fao.org/faostat/en/>. [Accessed 8 February 2021].

- [55] E. Wollenberg, M. Richards, P. Smith and al, "Reducing emissions from agriculture to meet the 2 °C target," *Global Change Biology*, p. 3859–3864, 2016.
- [56] S. Frank, M. Gusti, P. Havlik and al, "Land-based climate change mitigation potentials within the agenda for sustainable development". *Environmental Research Letters*.
- [57] J. Rogelj, K. Shindell, S. Jiang and al, "Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C [...]" 2018.
- [58] S. J. Kraham, "Environmental Impacts of Industrial Livestock Production. In G. Steier & K. K. Patel (Eds.), International Farm Animal, Wildlife and Food Safety Law," *Springer International Publishing*, pp. 3-40, 2017.
- [59] N. Pelletier, R. Pirog and R. Rasmussen, "Comparative life cycle environmental impacts of three beef production strategies in the Upper Midwestern United States," *Agricultural Systems*, pp. 380-389, 2010.
- [60] C. D. Lupo, D. E. Clay, J. L. Benning and J. J. Stone, "Life-cycle assessment of the beef cattle production system for the northern great plains, USA," *Journal of Environmental Quality*, p. 1386–1394, 2013.
- [61] P. L. Stanley, J. E. Rowntree, D. K. Beede, M. S. DeLonge and M. W. Hamm, "Impacts of soil carbon sequestration on life cycle greenhouse gas emissions in Midwestern USA beef finishing systems," *Agricultural Systems*, pp. 249-258, 2018.
- [62] K. R. Stackhouse-Lawson, C. A. Rotz, J. W. Oltjen and F. M. Mitloehner, "Carbon footprint and ammonia emissions of California beef production systems," *Journal of Animal Science*, p. 4641–4655, 2012.
- [63] M. Swain, L. Blomqvist, J. McNamara and W. J. Ripple, "Reducing the Environmental Impact of Global Diets," *Science of The Total Environment* , pp. 1207-1209, January 2018.
- [64] J. W. Casey and N. M. Holden, "Quantification of GHG emissions from sucker-beef production in Ireland," *Agricultural Systems*, pp. 79-98, 2006.
- [65] A. C. Rotz, "Environmental footprints of beef cattle production in the United States," *Agricultural Systems*, pp. 1-13, 2019.
- [66] C. Cebergerb, U. M. Persson, K. Neovius, S. Molander and R. Clift, "Including carbon emissions from deforestation in the carbon footprint of Brazilian beef," *Environmental Science & Technology*, pp. 1773-1779, 2011.

10. Glossary

ACT	The ACT Initiative, founded by ADEME in partnership with CDP in 2015, is now hosted by the World Benchmarking Alliance (WBA). It has been the pioneer international initiative creating a business climate accountability framework with sectoral methodologies to assess companies' strategies and transition plans. Formally launched at COP21, the ACT Initiative has published various methodologies over the last years, including the ACT assessment methodologies related to this ACT Framework for assessing corporate low-GHG emissions transition and adaptation plans. ACT has been renamed Accelerate Climate Transition Initiative in 2024 (ACT website).
ACTION GAP	In relation to emissions performance, the action gap is the difference between a company's actions, past and current, and what it still has to do. For example, companies that have done relatively little in the past and have current actions that point to the continuation of past practices, will have large action gaps.
ACTIVITY DATA	Quantitative or numeric data on the activity of the company resulting in emissions or removals during a given period.
ADEME	Agence de la Transition Ecologique; The French Agency for Ecological Transition (ADEME webpage).
ALIGNMENT	An ACT assessment generates a score to illustrate how a company's transition aligns with a low-GHG emissions economy. Some performance indicators provide a metric of the alignment of a company with its 1.5°C (GHG emissions reduction) pathway.
ASSESS	Under the ACT Initiative, this means to evaluate and determine the low-GHG emissions alignment of a given company. The ACT assessment and performance scoring are based on a range of indicators. Data required for the assessment may be reported directly by companies or collected, calculated, modelled or otherwise derived from different data sources provided by the company.
ASSESSOR	Person undertaking and scoring the ACT assessment.
ASSET	Resource owned by a company which has value because of its ability to generate revenues, cash and profits through time. Tangible assets include: 1) fixed assets, such as machinery and buildings, and 2) current assets, such as inventory. Intangible assets are non-physical, such as patents, trademarks, copyrights, goodwill and brand value.

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	Standard, pathway or point of reference against which things may be compared. This ACT methodology considers quantitative benchmarks for GHG emissions reduction pathways, as well as for other relevant metrics, such as the share of low-carbon products in the company’s portfolio.
BOARD	Also the “Board of Directors” or “Executive Board”; the group of persons appointed with joint responsibility for directing and overseeing the affairs of a company.
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	Company’s core strategy for generating value. It includes sources of revenue, the intended client base, products and details of financing. Under the ACT methodologies, evidence of existing and new business models should be taken from a range of specific financial and other metrics relevant to the sector and an assessment made on their alignment with the low-GHG emissions transition.
CAPITAL EXPENDITURE (CapEx)	Money spent by a business or organisation on acquiring or maintaining fixed assets, such as land, buildings, and equipment.
CARBON CREDITS	Instruments used to convey the mitigation outcome of an intervention to reduce or remove GHG emissions. These credits are usually measured in tonnes of carbon dioxide equivalent (tCO ₂ e) and can be issued for projects that avoid, reduce or remove emissions, where generally one credit is equivalent to one tonne of CO ₂ e.
CDP	CDP is a global non-profit that runs the world’s environmental disclosure system for companies, cities, states and regions. Founded in 2000, it works with more than 680 financial institutions having over USD 130 trillion in assets. Nearly 20,000 organisations around the world disclosed data through CDP in 2022, including more than 18,700 companies worth half of the global market capitalisation, and over 1,100 cities, states and regions (CDP website).
CLIMATE CHANGE	Change in climate attributed directly or indirectly to human activity, caused by the alteration of the composition of the atmosphere, that is in addition to natural climate variability, observed over comparable time periods (UNFCCC).

COMMITMENT GAP In relation to emissions performance, the difference between what a company needs to do (considering the expectations from its GHG emissions reduction pathway) and what it intends to do.

COMPANY Legal entity formed by one or more individuals to engage in and operate a business ([Investopedia](#)).

CONFIDENTIAL INFORMATION Any non-public information pertaining to a company's business.

CONSERVATIVENESS An assessment principle of the ACT Framework, aiming at ensuring that companies' performance is not particularly overestimated when some assumptions are used to get data and information to meet the assessment requirements.

CONSISTENCY An assessment principle of the ACT framework, aiming at ensuring that whenever time series data is used, it is comparable over time. In addition to internal consistency of the indicators reported by the company, data reported against indicators should be consistent with other information about the company and its business model and strategy found elsewhere. The assessor should consider specific, predetermined data points and check that these give a consistent measure of performance when measured together.

DATA Facts and statistics collected together for reference and analysis (e.g. the data points requested from companies to evaluate their performance for the indicators included in the ACT assessment methodologies).

DECARBONISATION Complete or near-complete reduction of GHG emissions over time (e.g. decarbonisation in the electric utilities sector through an increased share of low-GHG emissions power generation sources, as well as emissions-mitigating technologies like carbon capture and storage).

Existing definitions of decarbonisation in literature either focus solely on CO₂ emissions or all GHG emissions resulting from human activities. The ACT Framework considers decarbonisation to include all GHG emissions, and uses this term to define measures that companies take to prevent, reduce or remove sources of GHG emissions within their value chain.

DECARBONISATION 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](#)).

FOSSIL FUEL	Fossil-based fuel such as coal, oil or gas, formed in the geological past from the remains of living organisms.
GREENHOUSE GAS (GHG)	Carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O) and three groups of fluorinated gases, namely sulphur hexafluoride (SF ₆), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), 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 GHG 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 a relevant definition of the long term (depending on sector specificities) and the time-horizon of a company's commitments. Companies with small time horizons do not look far enough into the future to properly ensure the transition of their assets and business models.
INCENTIVE	Certain reward that motivates or encourages an individual or organisation to do something (e.g. a monetary incentive for company board members to set emissions reduction targets).
INDICATOR	<ul style="list-style-type: none"> ◆ Quantitative or qualitative piece of information that can provide insight on a company's current and future ability to transition to a low-GHG emissions economy. Indicators make up the different modules of the ACT performance scoring.
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 methodologies 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 TRANSITION	The low-carbon transition is the transition of the economy according to a low-carbon scenario.
LOW-CARBON SOLUTION	A way to contribute to the low-GHG emissions transition (e.g. energy, technology, process, product, service). In this ACT Framework, 'low-carbon' is not restricted to CO ₂ only and includes any relevant GHG.
MATURITY MATRIX	Scoring tool used in ACT methodologies to assess topics in a qualitative way. Maturity matrices are found in the three components (performance, narrative and trend) of the ACT scoring.
MITIGATION (EMISSIONS)	Action of reducing the severity of something (e.g., climate change mitigation through absolute GHG emissions reductions)
PATHWAY (GHG EMISSIONS REDUCTION)	<p>A way of achieving a specified result; a course of action. The ACT Framework considers GHG emissions reduction pathways, which propose an evolution of GHG emissions (expressed either as absolute emissions or emissions intensities) from a base year to an end point, typically 2050.</p> <p>In the ACT Framework, '1.5°C pathway' is used when speaking about pathways aiming at limiting global warming to 1.5°C.</p>
PERFORMANCE	Outcomes and results. ACT assessment methodologies assess performance using a variety of indicators across various modules.
PLAN	A detailed proposal for doing or achieving something.
POINT	Mark or unit of scoring awarded for success or performance.
RELEVANT / RELEVANCE	An assessment principle of the ACT Framework, aiming at capturing the most appropriate information (regarding core business and stakeholders) to assess companies' transition to a low-GHG emissions economy.
RENEWABLE ENERGY	Energy derived from natural sources that are replenished at a higher rate than they are consumed, such as wind or solar power (UN – Climate Action).
REPORTING YEAR	Specific year for which data is collected for the assessment. Reporting year does not necessarily align with the publication year of a company's report, as companies often release data for the previous year (e.g. data for 2023 is published in 2024).
RESEARCH AND DEVELOPMENT (R&D)	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.

SCENARIO

A plausible representation of future climate that has been constructed for explicit use in investigating the potential impacts of anthropogenic climate change. Climate scenarios often make use of climate projections (descriptions of the modelled response of the climate system to scenarios of GHG and aerosol concentrations), by manipulating model outputs and combining them with observed climate data ([IPCC - Climate Scenario Development](#)).

SCENARIO ANALYSIS

A process of analysing possible future events by considering alternative possible outcomes.

SCIENCE-BASED TARGET

Company goal or emissions reduction target that is aligned with climate science in its ambition to limit the increase in global average temperature to below 2°C, ideally 1.5°C, and is verified by a competent institution, such as the [Science-Based Targets Initiative](#).

**SCOPE 1 EMISSIONS
Direct GHG**

**emissions and
removals**

All direct GHG emissions ([GHG Protocol Corporate Standard](#)).

Category 1 from ISO 14064-1:2018: 'Direct GHG emissions and removals occur from GHG sources or sinks inside organisational boundaries and that are owned or controlled by the [reporting] organisation. Those sources can be stationary (e.g. heaters, electricity generators, industrial process) or mobile (e.g. vehicles)'.

**SCOPE 2 EMISSIONS
Indirect GHG
emissions from
imported energy**

Indirect GHG emissions from consumption of purchased electricity, heat or steam ([GHG Protocol Corporate Standard](#)).

Category 2 from ISO 14064-1:2018: 'GHG emissions due to the fuel combustion associated with the production of final energy and utilities, such as electricity, heat, steam, cooling and compressed air [imported by the reported company]. It excludes all upstream emissions (from cradle to power plant gate) associated with fuel, emissions due to the construction of the power plant, and emissions allocated to transport and distribution losses'.

**SCOPE 3 EMISSIONS
Indirect GHG
emissions**

Other indirect emissions, from sources 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. transport and distribution losses) not covered in scope 2 emissions, outsourced activities, waste disposal, etc. ([GHG Protocol Corporate Standard](#)). Scope 3 emissions also encompass emissions related to the use of sold products.

ISO 14064-1:2018: 'GHG emission that is a consequence of an organisation's operations and activities, but that arises from GHG sources that are not owned or controlled by the [reporting] organisation. These emissions occur generally in the upstream and/or downstream chain.'

SECTOR Classification of companies with similar business activities, e.g., automotive manufacturers, power producers, retailers, etc.

SECTORAL DECARBONISATION APPROACH (SDA) To help businesses set targets compatible with 2-degree climate change scenarios, the Sectoral Decarbonisation 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.

STRESS TEST A test designed to assess how well a system functions when subjected to greater than normal amounts of stress or pressure (e.g., a financial stress test to see if an oil & gas company can withstand a low oil price).

STRATEGY Set of resources and objectives established by the company, structured around a number of strategic pillars. It sets out the broad guidelines to be followed over the long term for the company's development.

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 GHG emissions targets:
 - metric tonnes of carbon dioxide equivalent (CO₂e) or % reduction from base year
 - metric tonnes of CO₂e or % reduction in supply chain relative to base year
- ◆ The following are examples of GHG emissions intensity targets:
 - metric tonnes of CO₂e or % reduction per kilowatt-hour (kWh) of electricity generated by the company, relative to base year
 - metric tonnes of CO₂e or % reduction per kWh of electricity retailed by the company, relative to base year

TRADE ASSOCIATION Also referred to as industry association or industry body; association of people or companies in a particular business or trade, organised to promote their common interests. Their relevance in this context is that they present an 'industry voice' to governments to influence their policy development. Most organisations 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.

TECHNOLOGY 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 Process or 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-GHG emissions energy). This ACT Framework particularly considers the global transition to a low-GHG economy and assesses how companies contribute to it.

TRANSITION PLAN Aspect of a company's overall long-term strategy that lays out a set of short-, mid- and long-term targets, actions and resources, with accountability mechanisms, to align the company's business activities with a net-zero GHG emissions pathway that delivers real-economy GHG emissions reductions with the objective of limiting global warming to 1.5°C and minimising the company's systemic climate transition risks ([ATP-Col framework and 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.

VERIFIABLE / VERIFIABILITY An assessment principle of the ACT Framework, aiming to prove the truth of, confirm or substantiate, by evidence or testimony, the data required for the assessment.

WORLD BENCHMARKING ALLIANCE Founded in 2018, the World Benchmarking Alliance (WBA) is a non-profit organisation holding 2,000 of the world's most influential companies accountable for their part in achieving the UN Sustainable Development Goals. It does this by publishing free and publicly available benchmarks on company performance and showing what good corporate practice looks like. WBA's benchmarks provide companies with a clear roadmap of what commitments and changes they must make to put our planet, society and economy on a more sustainable and resilient path. They also equip everyone – from governments and financial institutions to civil society organisations and individuals – with the insights they need to collectively incentivise leading companies to keep on track and pressure the laggards to catch up ([WBA website](#)).

WEIGHTING Relative importance given to each element within the ACT scoring components (e.g., modules and indicators), to reflect more important/significant aspects and the decarbonisation potential of different actions.

11. Appendix

11.1. TWG MEMBERS LIST

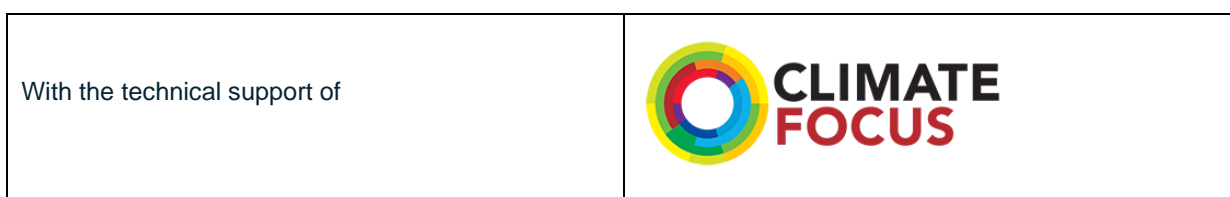
Nestlé	Nestlé Waters
Bimbo QSR	InVivo
Saveol	IFPEN
INRA	WBA
I4CE	IDDR
CDP Sustainable Food Systems & CDP Japan	FAO
Agrial	Terrena
Aragex	Réseau Action Climat
FAIRR Initiative	Roquette
Agrosolutions	O2M
Cooperl	IDELE
I Care & Consult	Asahi Group Holdings, Ltd
AB Sugar	Diageo Plc
General Mills Inc.	ITC Limited
Yara International ASA	

11.2. VOLUNTEER COMPANIES INVOLVED IN THE ROAD TEST

Lecofruit	Kirène
Bel - Boursin	Hennessy
Cooperl	Labeyrie Fine Foods
Léa Nature	Tereos Brésil
Agrial	Tendriade
Royal Canin	Fiée des Lois
Lactinov	Restoria

McDonalds	Coteaux Nantais
Nestlé	Greenyard Group
Terrena	Aqualande
LDC	Groupe Butard
Vignerons de Buzet	Triballat

11.3. ROADTEST DECARBONISATION SCENARIOS



During the methodology development of ACT Agriculture & Agrifood, the existing literature did not provide any decarbonisation scenario per product expressed in reduction of emissions intensity (kgCO₂e/kg product). To this end, ACT and Climate Focus have created new decarbonisation curves especially for this ACT methodology. These scenarios provide mitigation ambition per category of product between 2020 and 2050 to be used as benchmarks for companies.

These scenarios have been replaced by the SBTi's scenarios (published in 2022) in the version 2.0 of the methodology, in order to harmonise practises to assess decarbonisation of the Agriculture and Agrifood sectors.

The methodology followed to develop the road-test scenarios is detailed below and kept here for transparency sake.

11.3.1. INTRODUCTION

In this work, decarbonisation pathways were estimated that will give agriculture & agrifood companies a benchmark against which they can compare their progress towards individual commitments as they transition to a low-carbon business model.

Global decarbonisation pathways have been developed for 43 agricultural products. In order to provide more location-specific guidance, regionally disaggregated pathways have been developed for 19 of these products. Table 15 provides a full list of products covered.

All product decarbonisation curves are disaggregated for agricultural producers and agrifood companies. The benchmark for agricultural producers incorporates emissions from land-use change (LUC), production of feed, and on-farm emissions. In addition to these three pre-farm gate activities, agrifood benchmarks also include processing, transportation and packaging.

The decarbonisation pathways reflect the best available literature and data (at December 2021). They are also designed to be consistent, comparable, and easily used by companies, so that they effectively aid the adoption and successful realisation of carbon reduction targets in the agriculture & agrifood sector.

11.3.2. APPROACH OVERVIEW

The decarbonisation pathways are modelled on the emissions intensity of a given product in 2020 compared to a proposed reduction for that product by 2050. The median emissions intensity reported corresponds here to all the emissions considered in the boundaries (i.e., on-farm gate and post-farm gate levels).

Global decarbonisation pathways were developed for 43 products based on life-cycle assessment (LCA) data. Where the data supported additional granularity, global scenarios were disaggregated for one or more regions. A discussion of the criteria used to produce regional curves is included in the ‘Applicability and uptake’ section. There are three ‘Other’ product categories covering fruit, pulses and vegetables, but no general ‘Other’ category for products falling outside of the listed categories. Companies will not be assessed for emissions reduction targets associated with products that fall outside the products listed in Table 15.

Five key principles guided the evaluation of appropriate methods for developing the decarbonisation pathways: availability of data; consistency for the sector; appropriate ambition level; scientific robustness; and ease of adoption. Each of these factors are discussed in the following sections.

TABLE 15: PRODUCTS COVERED BY DECARBONISATION PATHWAYS

Products	Median Emissions Intensity (kg CO2e/ kg)	Global Curve Produced	Regional Curve(s) Produced			
			Americas	Asia	Europe	Oceania
1. Bovine Meat (Beef herd)	60.4	X	X*		X	
2. Land & Mutton	40.6	X			X	X
3. Bovine Meat (Dairy herd)	34.1	X			X	
4. Cheese (Cow's Milk)	18.6	X	X		X	
5. Crustaceans	14.7	X		X		
6. Pig Meat	10.6	X			X	
7. Coffee	8.2	X	X			
8. Fish (Farmed)	7.9	X	X	X	X	
9. Poultry Meat	7.5	X			X	
10. Pam Oil	7.2	X		X		
11. Olive Oil	5.1	X			X	
12. Dark Chocolate	5.0	X				
13. Eggs	4.2	X			X	
14. Soybean Oil	3.9	X	X			
15. Rice	3.7	X		X		
16. Sunflower Oil	3.5	X			X	
17. Rapeseed Oil	3.5	X	X		X	
18. Groundnuts	3.3	X		X		

19. Cane Sugar	3.2	X	X	X		
20. Milk (Cow)	2.7	X	X	X	X	
21. Oatmeal	2.6	X				
22. Tofu	2.6	X				
23. Beet Sugar	1.8	X				
24. Wine	1.6	X				
25. Other Pulses	1.4	X				
26. Berries & Grapes	1.4	X				
27. Wheat & Rye (Bread)	1.3	X				
28. Maize (Meal)	1.2	X				
29. Barley (Beer)	1.2	X				
30. Cassava	1.1	X				
31. Soymilk	0.9	X				
32. Bananas	0.8	X				
33. Peas	0.8	X				
34. Other Fruit	0.7	X				
35. Tomatoes	0.7	X				
36. Potatoes	0.4	X				
37. Other Vegetables	0.4	X				
38. Apples	0.4	X				
39. Onions and Leeks	0.4	X				
40. Root Vegetables	0.4	X				
41. Brassicas	0.4	X				
42. Citrus Fruit	0.3	X				
43. Nuts	-1.3	X				

*Note: In the case of Bovine meat (beef), North America and South America curves were produced, as both sub-regions met all criteria set for regional curve production.

• TECHNICAL MITIGATION POTENTIAL

The Intergovernmental Panel on Climate Change (IPCC) defines technical mitigation potential in the agriculture sector as “the maximum amount of GHG mitigation achievable through technology diffusion.” [44] A variety of supply-side practices can reduce carbon dioxide (CO₂), methane (CH₄) and nitrogen oxide (N₂O) emissions from agricultural activities. [45] [46] Wide scale adoption of efficient farming technologies and practices could achieve at least 20% of the agriculture sector’s required emissions reductions by 2050. [47]

In order to produce product-level decarbonisation pathways, the technical mitigation potential for each product was estimated. The technical mitigation potential is defined as the difference between median GHG emissions

intensity and the top 10th percentile of the emissions distribution for the product – or the top 10% of performers in terms of emissions efficiency. The difference between median and top emissions performance is based on 2020 data, and results in an emissions reduction curve for the product over the 2020 to 2050 period.

An emissions intensity gap between highly efficient and less efficient operators can in part be attributed to the use of emissions-efficient practices and technologies. This concept is similar to the “yield gap”, widely used in agricultural research, which estimates the difference between potential yield and the average producer’s yield. In these models, potential yield is often defined as the 10th percentile of producers [48] [49] [50] [51] [52] [53]. The concept of an emissions intensity gap is applied to agricultural products for the ACT Agriculture & Agrifood Methodology.

This approach has been used by the UN Food and Agriculture Organisation (FAO) to estimate the mitigation potential of the livestock sector. [53] FAO stresses the importance of closing the large emissions intensity gap between high and low emissions intensity producers. The Organisation estimates that if producers in a given system were to apply the practices of the 10% of producers with the lowest emissions intensity (10th percentile), it would reduce livestock emissions by nearly 30%. For a given commodity produced in a specific geographical region and production system, FAO calculates the average emissions intensity and emissions intensity of different percentile producers. The mitigation potential is then estimated by benchmarking the baseline average intensity to top performing percentiles. This approach relies on existing and already applied technologies that are already demonstrating substantial mitigation potential. [47]

Further, this approach represents a clear, realistic pathway for product-specific GHG mitigation that addresses the important concern of technological feasibility. The decarbonisation curves would allow thirty years for widespread adoption of best practices. Meanwhile, regionally disaggregated curves allow producers to set locally-appropriate targets, particularly for products in which there is great regional variation in emissions intensity.

Finally, producers will not be able to meet this benchmark by increasing productivity only; instead, they must reduce emissions intensity by unit of product to decarbonise their products in-line with the trajectory.

• **APPLICABILITY AND UPTAKE**

With this study, decarbonisation pathways are presented that are relevant and applicable to a wide variety of companies in the agriculture & agrifood sector. However, the applicability of any given emissions reduction technology or practice is highly context- and location-specific. There is no one-size-fits-all approach to decarbonising the agriculture sector, just as there is no one example of best practice for a given product. A production system that results in significant emissions reductions in one location may not drive reductions in another. For this reason, where there is sufficient supporting data and variation in regional emissions intensity ranges, regional curves have been developed to provide more relevant benchmarks. Particularly in high emissions intensity products, such as livestock, regional emissions pathways can vary significantly and therefore provide a useful, more applicable benchmark.

Regionally disaggregated pathways are valuable because tailored, locally-appropriate benchmarks for companies have the potential to drive increased engagement with the methodology. Provision of full regional curves is limited by the availability of regional studies in the underlying data (see further discussion of data sources in Section 11.3.3 Data sources; and the development of regional curves in Paragraph Regional pathways). However, additional data on typical sources of emissions by region is available from FAO [54], and could be used to guide corporate action based on a company’s unique activity and location. The additional FAO data was considered, but not used to inform the development of these curves, because it does not cover all life cycle stages, including land-use change; and because it provides complete on-farm regional data for only eight products. See Section Data sources for further discussion of data sources.

Just as appropriate approaches to decarbonisation may vary by region, not all regions will be equally suited to a given production model or set of practices. A company's unique set of decarbonisation options depend on a host of factors including the emissions intensity of the life cycle stages of the company's product portfolio. Factors influencing the emissions profile are highly context-specific and include: the intensity of emissions embedded in products through their inputs (e.g., land use change related to livestock); the type of on-farm activities included in production (e.g., row-crop production vs grazing); requisite processing and transportation; and packaging.

While agricultural producers have control over on-farm activities and the selection of inputs, agrifood companies have a wider set of options for reducing supply chain emissions. As part of their GHG mitigation strategy, agrifood companies have three distinct levers for reducing their emissions across the supply chain:

1. Reduce emissions from agriculture - Influencing agricultural suppliers to e.g., reduce on-farm emissions through adjusted feed and other inputs, and shift on-farm practices.
2. Reduce emissions in operations - Improving the efficiency of the supply chain stages over which agrifood have more control, e.g., processing, transportation, and packaging.
3. Shift the product portfolio - For example, choosing to switch from a reliance on high-emissions intensity products (e.g., beef) to lower emissions intensity ones (e.g., chicken or plant-based sources of protein). In this case, the decarbonisation curve may serve less as a benchmark for emissions reductions on any given product, than a screen for evaluating whether a company's current portfolio of products is compatible with a low-carbon future.

• ALIGNMENT WITH PARIS AGREEMENTS GOALS

The approach presented here aims to support the ambitions of the agriculture sector in reducing emissions to contribute to the Paris Agreement target of limiting warming to 1.5°C. The mitigation potential and contribution of the land use sector to meeting climate targets have been evaluated in numerous academic papers. Wollenberg et al. (2016) estimate that to stay within 2°C, mitigation from agriculture would need to be 0.92-1.37 GtCO₂e/yr, an 11-18% reduction from business as usual in 2030 [55]. According to Roe et al. (2019), meeting the 1.5°C target would require emission reductions of about 85% in the land sector and 25% in the agriculture sector by 2050, or approximately 1 GtCO₂e/yr from agriculture between 2030 and 2050 compared to business as usual. [25] [56] find the agriculture sector has potential to reduce emissions by 1.4 GtCO₂e/yr by 2050 to limit warming to 1.5°C. These agriculture sector estimates focus specifically on direct, on-farm emissions reductions, i.e., excluding deforestation or post-farm gate stages.

There are no current studies that provide a rate of reduction in line with a 1.5°C pathway for life cycle emissions for agriculture products including pre- and post-farm gate. Therefore, it is difficult to provide an exact estimate of alignment between the trajectories and the 1.5°C goal. To align with the Paris Agreement pathway of 1.5°C, the total emissions reductions from the product curves were calculated and compared to the 25% (agriculture) – 85% (land sector) benchmark recommended by Roe et al (2019). For the lifecycle emissions of agriculture products, total emissions reductions are expected to be in between the agriculture and land sector benchmark.

To calculate total agriculture sector emissions, FAO's latest data on global production of crops and animal products (2017) [54] and Poore & Nemecek (2018) dataset on emissions factors [3] were used to approximate the total GHG emissions that are currently emitted for the identified list of agricultural products. Using the category names from the two data sets, categories for 31 products were able to be matched (78% of Poore & Nemecek (2018) product items), including the most significant products from an emissions standpoint. The remaining products that did not match were excluded from this validation test. From the FAO data, the total

global production (in tonnes, for year 2017) of each of the 31 products was extracted and matched to the respective products in Poore & Nemecek (2018).

Then, using the end point of the ACT methodology decarbonisation curves – i.e., top 10th percentile of 2020 emissions intensity for each product -- it was estimated that reductions in line with the curves would result in approximately 48% (47.8%) of aggregate reduced emissions from the agriculture sector over the 2020-2050 period. See Table 19 for detailed calculations. As expected, the 48% reductions represented by the proposed decarbonisation pathways are between the 25% (agriculture) and 85% (land sector) targets. These estimates are in line with the initial results of intensity reductions of 44-48% by 2050 across all commodities in the forest, land-use and agriculture (FLAG) methodology of SBTi (Science-based Targets initiative) which also aims to support a 1.5°C pathway.

11.3.3. DATA SOURCES

To select the data used for the decarbonisation pathways, the following criteria were developed:

1. The global dataset must be available for all products.
2. The data must cover a product's on-farm emissions sources. Emissions from land use change and post-farm gate activities should also be included to represent the broad set of pre-farm, on-farm and post-farmgate emissions sources for producers and agrifood companies.
3. The data should be consistent across products and should have undergone a process of harmonisation to align the methodological differences across individual LCA studies.

Finally, the data should include a distribution of each product's emissions intensity to project the level of variation within each product.

TABLE 16: DATASETS CONSIDERED TO INFORM GHG REDUCTION TRAJECTORIES

Data Source	Description & comment
Poore & Nemecek (2018)	Country-level, open access emissions intensity dataset of 43 agricultural products, based on a <i>Science</i> journal publication. Information provided on the global distribution of emissions per product (e.g., mean, 10 th and 90 th percentiles) and on the contributing life cycle stages to the total emissions. 40,000 farms covered over 1,500 global studies from a highly reputable source.
Emission intensity data from FAO (2017)	Country-sourced data that is widely used. For some products it offers a high data resolution (e.g., country scale); however complete on-farm regional data is only available for eight products, meaning this dataset is not complete enough to inform the required curves. The emissions intensity data does not cover all the relevant life cycle stages, including only on farm-level emissions. This dataset is therefore less useful, particularly in relation to disaggregating the curves for agrifood actors. Additionally, the underlying methodology is simple and relies on the reporting quality of countries.
Clune, et al. (2017)	The paper, published in <i>Journal of Cleaner Production</i> , reviewed 369 published studies that provided 1,718 global warming potential (GWP) values for 168 varieties of fresh produce.

	Despite the variety of products considered, it does not provide complete information on the distribution of GHG emissions within a product category. The dataset is also not open access, methodology is not detailed enough and the data quality is not sufficient to ensure the development of robust curves.
Tilman and Clark (2014)	<p>The paper, published in <i>Nature</i>, presents life cycle GHG emissions for 22 different food types.</p> <p>The data is not open access, and the paper focuses more on dietary change considerations. It is, therefore, less suitable for our goals.</p> <p>The dataset does not provide the distribution of the GHG emissions intensity data, and as such does not provide the necessary percentile information.</p>

The Poore & Nemecek (2018) [3] data was selected from the datasets considered (Table 16) to inform the development of decarbonisation curves. The data is open access and published as supplementary information in the journal *Science*. The data covers nearly 40,000 farms from over 1,500 global studies, and includes additional data contributions from nearly 140 authors. It represents a globally reconciled and methodologically harmonized approach.

The dataset provides broad coverage, including GHG intensity data for 43 products, which collectively represent approximately 90% of calorie and protein consumption. In addition, it provides information on the contribution of different life cycle stages to the total emissions. This means that for each product it is possible to estimate the contribution of farm-level emissions, land use change, or post-farm gate processing stages to the total product's emissions, consistently, and at a global scale.

An important characteristic of the Poore & Nemecek (2018) data was the availability of regional emission intensities which enabled the development of both global and regional curves. However, there is some incongruency between the global and regional datasets which needs consideration. The global data were processed (randomisation and resampling) to include sources of variance in the underlying raw dataset, and at least in part, to provide more complete geographic coverage. The regional data, however, did not have interpolated data to provide more geographic coverage. In order to understand what affect the randomisation and resampling would have on our results, we calculated the median and 10th percentile figures for a handful of products using both the interpolated global dataset (provided by the authors), and a global dataset we created by aggregating the raw regional data.

In comparing the figures generated from the global interpolated data provided by Poore & Nemecek (2018) to those generated from the aggregate raw data, we found that the interpolated data provided a higher median emissions intensity, and greater difference between median and 10th percentile performance. (See figures in Table 17.) This is likely because the interpolated data represented a greater share of studies from higher emitting regions that are underrepresented in the raw data. Therefore, the interpolated global data, which we used as the basis of the global decarbonisation curves, captures a more robust global median and, in most cases, provides a more ambitious emissions reduction pathway.

TABLE 17: COMPARISON OF MEDIAN AND 10TH PERCENTILE EMISSIONS INTENSITY, AND TOTAL REDUCTIONS, CALCULATED USING INTERPOLATED AND RAW DATA

Product	Global Interpolated Data			Global Raw Data			Difference - 10th percentile	Difference - Median
	10th percentile	Median	Mitigation reduction	10th percentile	Median	Mitigation reduction		

Bovine (beef herd)	Meat	40.37	60.36	33%	43.46	55.77	22%	-8%	8%
Bovine (dairy herd)	Meat	17.94	34.14	47%	17.94	29.9	40%	0%	12%
Rice		1.46	3.73	61%	1.73	3.54	51%	-18%	5%
Pig Meat		7.41	10.57	30%	7.34	10.27	29%	1%	3%
Milk		1.7	2.65	36%	1.76	2.34	25%	-4%	12%

11.3.4. EMISSIONS BOUNDARIES

The decarbonisation trajectories cover emissions from the agriculture sector (pre-farm, on-farm and post-farm gate). Therefore, emissions from forestry and non-agriculture driven land use change, or other land uses are not included.

The boundaries of the sources of GHG emissions included in the trajectories reflect those included in the underlying data source, Poore & Nemecek (2018). The data excludes food loss and waste. The following land-use types are covered in the data: seed; on- and off-farm arable and permanent crops; fallow land; temporary pasture; and permanent pasture.

Hydrofluorocarbons (HFCs) are excluded from the trajectories. HFCs are primarily emitted in cooling and refrigeration – typically in the retail stage, which is not included in the boundary of these curves. Although HFCs may be relevant in other parts of the supply chain in specific situations, they are excluded in the agriculture literature we reviewed to inform the scenarios, and therefore we adhered to that approach in the development of the curves. HFCs were not considered in Roe et al., who look at the agriculture, forestry, and other emissions factor (AFOLU) sector as a whole. Similarly, they were not included as part of the boundaries of analysis in Tilman and Clark (2014) nor Poore and Nemecek (2018), who look at product GHG emissions pre-farm gate and over the entire life cycle, respectively.

11.3.5. METHODOLOGY OF PATHWAYS AND CURVES

• GLOBAL PATHWAYS

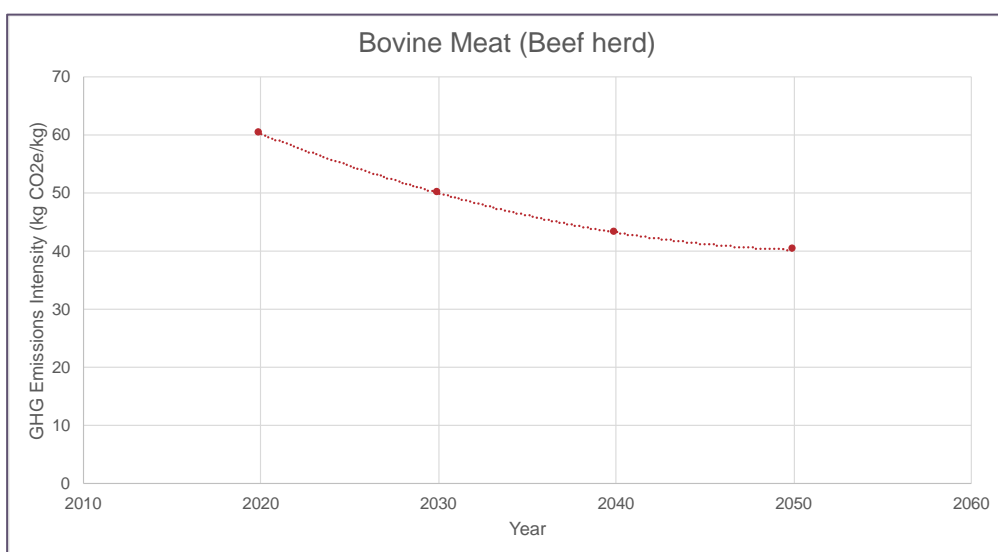
A global mitigation trajectory was developed for each agriculture product outlined in Table 15. This trajectory represents the technical mitigation potential for the product, calculated as the difference between the median GHG emissions intensity and the top 10th percentile of the emissions distribution for the product – or the top 10% of performers in terms of emissions efficiency. This difference between median and top emissions performance is based on 2020 data, and results in an emissions reduction curve for the product over the 2020 to 2050 period.¹⁰

This mitigation curve represents a global benchmark for a product; the starting point for an individual producer will vary depending on its current emissions intensity. In the case of beef production, the proposed global GHG mitigation curve progresses from 60.2 kg CO₂e/kg in 2020 (the median) to 40.3 kg CO₂e/kg in 2050 (the 10th percentile), representing a reduction potential of 33.1% (see Figure 13).¹¹

¹⁰ The median was chosen as the starting point for the mitigation trajectory because it controls for outliers in the underlying data.

¹¹ These exact values are taken from the Poore & Nemecek dataset, after excluding the retail component (0.3%).

FIGURE 13: GLOBAL BEEF DECARBONISATION PATHWAY



In this example, producers emitting more than 60.2 kg of CO₂e/kg would face steeper GHG emission reductions (i.e., >33%), whereas lower emitting producers would face a less steep curve (i.e., <33%), reflecting the higher and lower reduction required, respectively, to meet the 40.3 kg CO₂e in 2050 benchmark.

The global mitigation curves provide consistent, comparable emission reduction pathways for the sector. Particularly for downstream agrifood companies – including those who engage with producers located in various regions and who employ different production models – the global mitigation trajectories provide clear, easily understood emissions intensity targets that can be adopted across the supply chain.

An exception to note is the “nuts” product category. The global trajectory methodology resulted in negative emissions intensity for both the nuts farm gate and post-farm gate curves, due to carbon sequestration at the farm stage. Because an agrifood company would not be able to produce negative emissions from sourcing or processing nuts, we decided to use raw regional data provided by Poore & Nemecek to produce the global curves for nuts. Due to very uniform emissions intensity levels for all underlying post-farm gate activities for this product, the agrifood curve for nuts resulted with no slope. While we did deliver this curve based on the raw dataset, we suggest that the data is not sufficient to determine how much post-farm gate actors in nuts supply chains should reduce their emissions.

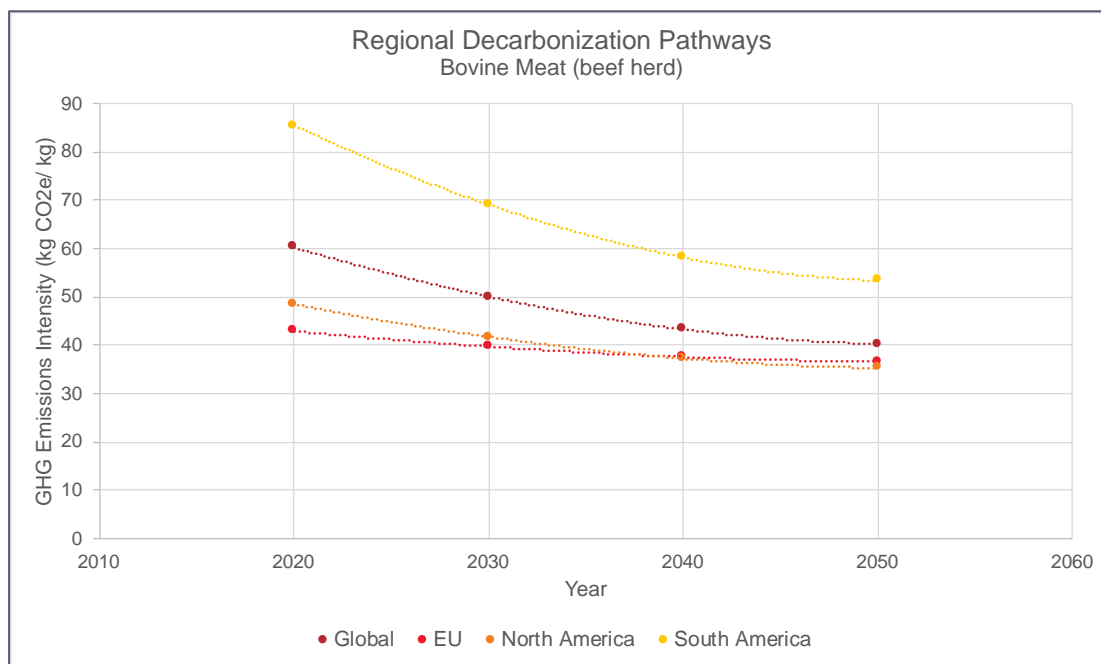
• REGIONAL PATHWAYS

While the global approach provides a consistent method for producing mitigation curves across the sector, there is a trade-off between consistency and specificity. As outlined in the ‘Applicability and uptake’ section, agricultural emissions generated in the production of the same commodity can vary significantly from one region to another – especially when production systems vary.

1. Therefore, we have supplemented the global curves with regionally disaggregated curves, to the extent possible and based on the availability of underlying data. In order to do this, we use country-specific emissions intensity data for agricultural commodities from Poore & Nemecek (2018). We grouped

country-level data into one of five regions (Africa, Americas, Asia, Europe and Oceania)¹², and calculated the percentile distribution of the region's emission intensities, with the median of this distribution representing the starting point of the curve, and the 10th percentile representing the final target – employing the same methodology as the global curves. Continuing the example for beef, the regional pathways are illustrated in Figure 14

FIGURE 14: REGIONAL BEEF DECARBONISATION PATHWAYS



The following criteria were applied to produce regionally disaggregated curves:

1. There is sufficient data to support a product curve for a given region (minimum of ten data points). The underlying data from Poore & Nemecek (2018) covers 40,000 farms over 1,500 global studies. However, these studies are not evenly distributed across all products and all regions. The number of studies per product varies significantly – from only 19 studies for the cocoa sector, to more than 150 for maize. To ensure regional curves are significantly robust and meaningful – with median and top 10th percentile emissions intensities that represent demonstrated performance in the field -- we applied a threshold of at least ten studies based in a given region in order to produce a curve for that region.
2. The region produces a significant volume of the product to be relevant. While regional decarbonisation curves can provide locally-appropriate benchmarks for producers, they also have the potential to introduce complexity into a company's process for assessing their

¹² The data were grouped into five regions: Africa, Americas, Asia, Europe and Oceania. Because of the scarcity of study data from Africa, there were no Africa regional curves produced. Meanwhile, for the Bovine meat (beef) product category, both North America and South America met the criteria for having sufficient data to support separate regional curves.

targets – particularly for downstream companies with complex supply chains containing many of the listed products. To avoid producing extraneous curves, we applied a threshold of 10% of global production¹³ from a given region in order to merit its own curve.¹⁴

3. The product has a high emissions intensity. While it is critically important to incentivise action across the full agriculture sector, the opportunities for reductions are greater for those operating in high emissions intensity supply chains. Further, low emissions intensity products display less variation in the median and top 10th percentile performance between regions. For these reasons, we narrowed down products to highest emissions intensity products (e.g., animal-based and oil products) for developing regional curves. However, after applying the first two criteria, all products that would merit regional curves fell in the top half of emissions intensity.

Of the 43 total listed products, 19 met the criteria to merit one or more regional curves. Given the significant number of studies focused on beef production in the underlying dataset, we were able to create three regional curves to supplement the global beef curve. Two of those are sub-regional curves, as North and South America met the criteria laid out above for meriting separate regional curves. The full list of products, including which include regional curves, is in Table 19. A table showing the application of the above criteria to all products is provided on Table 19.

Regionally disaggregated pathways are valuable because they capture regional variation that makes the benchmarks more specific to the activities of individual companies. However, the regional data is slightly less robust than the global data. Whereas the global dataset has been put through a process of randomisation and resampling, the regional data is presented raw. This process of randomisation and resampling addresses sources of variance, incomplete global data and provides better geographic coverage. (See section Data sources for more detail on the underlying data.)

As mentioned in section Data sources, the global data in Poore & Nemecek (2018), which underwent randomisation and resampling, provided more ambitious global curves than those generated using only raw data. This is likely because the randomisation and resampling process provided better geographic coverage, including from the global South, but in so doing also included more data from higher emitting producers -- thus generating a steeper curve from the median to the 10th percentile.

However, when comparing the ambition level of specific regional curves for high-emitting products – for example the South America trajectory for bovine meat – the regional curves were more ambitious than the global (Table 18). This pattern holds for coffee in the Americas and palm oil in Asia; though not for cocoa or rice.

¹³ For crops, FAOSTAT 2018 Crops (Production) data was used. For livestock products, FAOSTAT 2018 Livestock Primary (Production) data was used. For fish and seafood, FAO 2018 Fisheries and Aquaculture (Production) data was used. [54]

¹⁴ Countries were grouped based on FAO Definitions and Standards (Country group).

TABLE 18: COMPARISON OF MEDIAN AND 10TH PERCENTILE EMISSIONS INTENSITY, AND TOTAL PRODUCT PATHWAY REDUCTIONS, CALCULATED USING RAW AND INTERPOLATED DATA

Emissions intensity reduction (2020-2050)			
Product	Region	Regional (raw) data	Global (interpolated) data
Beef	S. America	38%	33%
	N. America	30%	
Coffee	Americas	40%	36%
Cocoa	Americas	81%	102%
Palm oil	Asia	86%	50%
Rice	East Asia	32%	61%
	South Asia	33%	

There is a clear rationale for utilising regional curves: they drive more locally-appropriate benchmarks and in so doing may help drive uptake of the ACT methodology. Additionally, in some key high-emitting regions and supply chains the regional curves represent more ambitious reduction scenarios than the global curves. However, overall, the global curves provide a more robust set of benchmarks, and are therefore strong default options, especially where a regional curve is not available.

• **AGRIFOOD PATHWAYS**

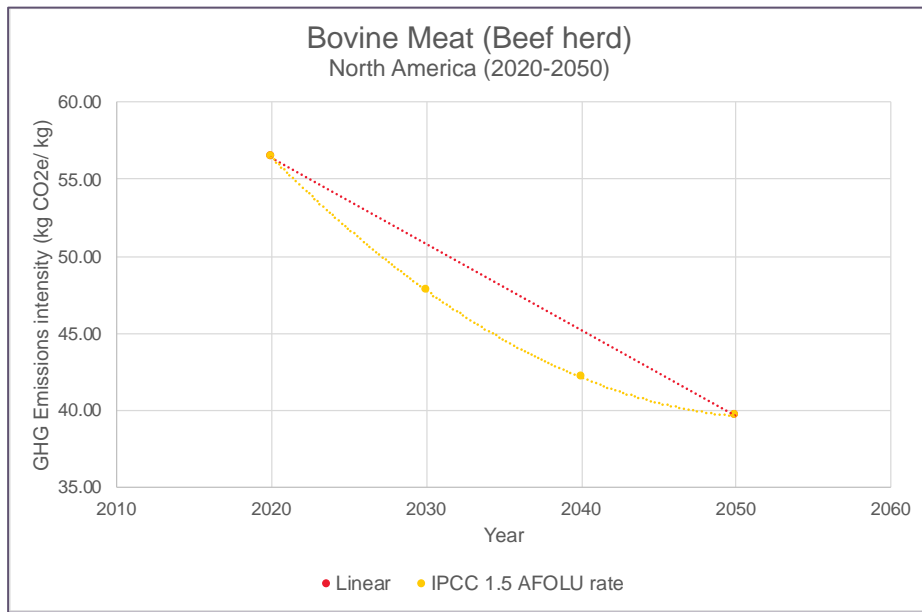
Each global and regional trajectory was further disaggregated for agricultural producers and agrifood actors, to provide a benchmark that reflects the emissions profile of actors at different stages of the supply chain. The agricultural producers' benchmark includes emissions from land-use change (LUC), feed production, and on-farm emissions. Agrifood company benchmarks will include those three farm gate stages, as well as processing, transportation, and packaging.

• **RATE OF CHANGE**

The methodology detailed above results in a median emissions intensity for each product in 2020 and 2050. However, it does not estimate the slope of the curve (i.e., emissions reductions per year) over that time. Benchmarks for 2030 and 2040 are important, as they will provide interim targets over the thirty-year reduction period and will allow the sector to measure progress along the way.

To set an appropriate level of ambition for the sector, we used the slope from the AFOLU (Agriculture, forestry and other Land-use) emissions trajectory in a 1.5°C pathway reported in the IPCC Special Report on 1.5°C [57]. This decarbonisation pathway results in 51% reductions in the first decade (2020-2030); 34% reductions in the second decade (2030-2040); and 15% reductions in the third decade (2040-2050) (Figure 15). The calculations for the rate of reduction are included in Table 19.

FIGURE 15: NORTH AMERICA DECARBONISATION CURVE FOR BEEF, WITH LINEAR AND IPCC 1.5°C SLOPE FOR AFOLU APPLIED



11.3.6. ADDITIONAL CONSIDERATIONS

The goal of this work is to provide benchmarks against which to evaluate the robustness of agriculture & agrifood companies' emissions reduction targets, on a product-by-product basis. The approach presented here results in benchmarks that are consistent, comparable, and simple – all of which are likely to ease and improve adoption of the ACT methodology. While the global curves provide a robust set of benchmarks, there is also value in tailoring the pathways to regional contexts where possible, to improve their accuracy and relevance.

Another approach to refining the global benchmarks would be to disaggregate by production system. While the underlying data includes some non-conventional production models (e.g., organic, pasture-raised), there was not sufficient data on these systems to build customized pathways for them. Disaggregating global curves by production system would provide context-specific pathways for companies, while also demonstrating that there may be multiple ways to achieve high emissions performance. (I.e., agricultural intensification, with its associated negative environmental impacts [58] should not be presented as the sole path to achieving emissions reduction targets.)

For example, beef production systems vary globally, and so do the emission intensities of beef produced in various regions and production models around the globe. Cattle production systems can be distinguished between grazing systems (where animals feed mostly from rangelands and pastures), mixed systems (combining crop and livestock production), and feedlot systems, in which cattle are intensively raised to produce only beef. [53] Cattle in feedlot systems are fed mostly purchased grain and are processed using standardized and mechanized equipment. Higher feed conversion ratios and daily weight gain of cattle in this system make this system more resource efficient than grazing or mixed systems [59], but have high associated negative environmental impacts. [60] [61]

While some studies find that grass-fed beef has higher emissions intensity compared to intensive feedlot beef, [60] [62] [63] [59] grass-fed systems with well-managed grasslands provide a much larger reduction in emissions than other systems through soil organic carbon (SOC) sequestration, in addition to reducing other environmental impacts (freshwater eutrophication, terrestrial acidification) [60] [61]. Integrated dairy-beef systems, where dairy cows produce calves for beef production can also reduce GHG impacts, as emissions are allocated between milk and meat production [64] [65] [53].

The most significant distinction in emissions profile is between those products -- and production models -- that drive significant land-use change, and those that do not. In the case of beef, emissions intensity is highest when beef is produced on newly deforested land [66]. The applications of these decarbonisation trajectories should emphasise that distinction and utilise the decarbonisation scenarios to drive context to realise the ambitions of the sector.

11.3.7. EXTENSION TO THE DEFINITION OF LOW-CARBON FOOD PRODUCTS

The results obtained here are reused in order to define the threshold to consider a product as a high-carbon or a low-carbon food product. Consequently, for indicators 2.5 and 4.4 looking at the increased in the share of low-carbon food products, the mean of the median emissions intensities for each food product is calculated. For indicator 2.5 focusing on farm-gate level emissions, the emissions from processing are excluding, resulting in a mean equal to 5.4 kgCO₂e/kg product. For indicator 4.4, all the emissions within the ACT boundaries are included, resulting in a mean equal to 6.3 kgCO₂e/kg product.

This definition is currently used in the methodology.

TABLE 19: ESTIMATED REDUCTIONS IN LINE WITH THE ACT METHODOLOGY DECARBONISATION CURVES FOR EACH PRODUCT OVER THE 2020-2050 PERIOD.

<i>Product as listed in Poore & Nemecek</i>	<i>Comparable FAO Categories</i>	<i>On Farm Emissions (% of LC Total)</i>	<i>2020 Farm Emissions (kg CO₂e/kg)</i>	<i>2050 Farm Emissions (kg CO₂e/kg)</i>	<i>Production Global Mill. Tonnes</i>	<i>Total Co2e 2020 Tonnes</i>	<i>Total Co2e 2050 Tonnes</i>	<i>Projected Reduction %</i>
Apples	Apples	58.3	0.24	0.17	86142197	21089217	14561602	31.00
Bananas	Bananas	37.8	0.31	0.23	115737861	36347944	26713550	26.50
Barley (Beer)	Barley	16.7	0.20	0.12	141423028	27838275	16514231	40.70
Beet Sugar	Sugar Beet	34.9	0.61	0.42	274886306	168826006	116067879	31.30
Berries & Grapes	Berries	61.5	0.86	0.47	79125982	67676179	37489682	44.60
Meat (Beef)	Meat, cattle	96.6	58.31	39.00	67353900	3927212723	2626600027	33.10
Brassicas	Cabbages, etc.	64.1	0.22	0.15	69381555	15559250	10224650	34.30
Cane Sugar	Sugar Cane	64.8	2.05	0.60	1907024730	3918564693	1137249059	71.00
Cassava	Cassava	82.0	0.86	0.29	277808759	239092857	79697619	66.70
Citrus Fruit	Fruit, Citrus	66.3	0.23	0.05	13898418	3133298	737247	76.50
Coffee	Coffee, Green	85.4	6.96	4.44	10303118	71724196	45762677	36.20
Dark Chocolate	Cocoa Beans	96.4	4.77	-0.10	5252377	25070969	-506484	102.00
Groundnuts	Groundnuts	74.6	2.46	1.22	45950901	112854088	55912512	50.50
Lamb & Mutton	Meat, Goat	91.5	37.17	22.44	5977020	222157390	134136892	39.60
Maize (Meal)	Maize	80.0	0.94	0.58	1147621938	1082806853	669872036	38.10
Milk	Milk, Cow	78.7	2.09	1.34	683217055	1425113144	914223526	35.80
Oatmeal	Oats	87.0	2.25	0.74	23051204	51969708	17055696	67.20
Olive Oil	Olives	67.6	3.44	1.93	21066062	72468053	40718788	43.80
Onions & Leeks	Onions, Dry	54.7	0.22	0.16	96773819	21696935	15875806	26.80
Palm Oil	Oil Palm Fruit	68.4	4.92	2.47	272055131	1338259759	671921798	49.80
Peas	Peas, Dry	80.0	0.64	0.45	13534166	8664283	6064998	30.00
Pig Meat	Meat, Pig	84.7	8.95	6.28	120881269	1082425696	758824447	29.90
Potatoes	Potatoes	52.0	0.24	0.08	368168914	90017796	30644356	66.00
Poultry Meat	Meat, Chicken	81.9	6.16	3.42	114266750	703424012	390998986	44.40
Rapeseed Oil	Rapeseed	66.7	2.35	1.67	75001457	176210320	125149375	29.00
Rice	Rice, Paddy	92.0	3.43	1.34	782000147	2684176516	1050642819	60.90
Soybean Oil	Soybeans	75.4	2.92	1.83	348712311	1018149307	639303053	37.20
Sunflower Oil	Sunflower Seed	63.2	2.23	1.56	51954777	115978993	80823887	30.30

Tomatoes	Tomatoes	75.4	0.49	0.29	182256458	89327377	53596426	40.00
Wheat & Rye	Wheat	65.7	0.83	0.52	734045174	612650097	381097305	37.80
Total/AVG	NA	NA	NA	NA	NA	19431349708	10148452938	47.80

Variables	Derived from	Description
On farm emissions	Poore & Nemecek 2018 data	The percentage of farm-stage GHG emissions in the life-cycle of a commodity (based on Poore & Nemecek (2018) data)
On farm 2020	Poore & Nemecek 2018 data	This represents the starting point of the simple decarbonisation curve. This number refers to the median emissions intensity of the product.
On farm 2050	Poore & Nemecek 2018 data	This represents the end point of the simple decarbonisation curve. This number refers to the 10 th percentile of emissions intensity of the product.
Production Global	FAOSTAT data	This represents the amount (in tonnes) of global production in 2017
Total CO₂e 2020	Production * on farm_2020	Total initial CO ₂ emissions produced. This is the estimated emissions produced (based on 2017 production volumes) should all producers produce at the median producer's emissions intensity level.
Total CO₂e 2050	Production * on farm_2050	Total final CO ₂ emissions produced. This is the estimated emissions produced (based on 2017 production volumes) should all producers produce at the 10% best performers' emissions intensity level.
Projected Reduction	TOTAL_CO2_F - TOTAL_CO2_I	Percentage reduction in CO ₂ emissions. The difference between initial and final CO ₂ emissions represents the potential mitigation reduction between 2020 and 2050