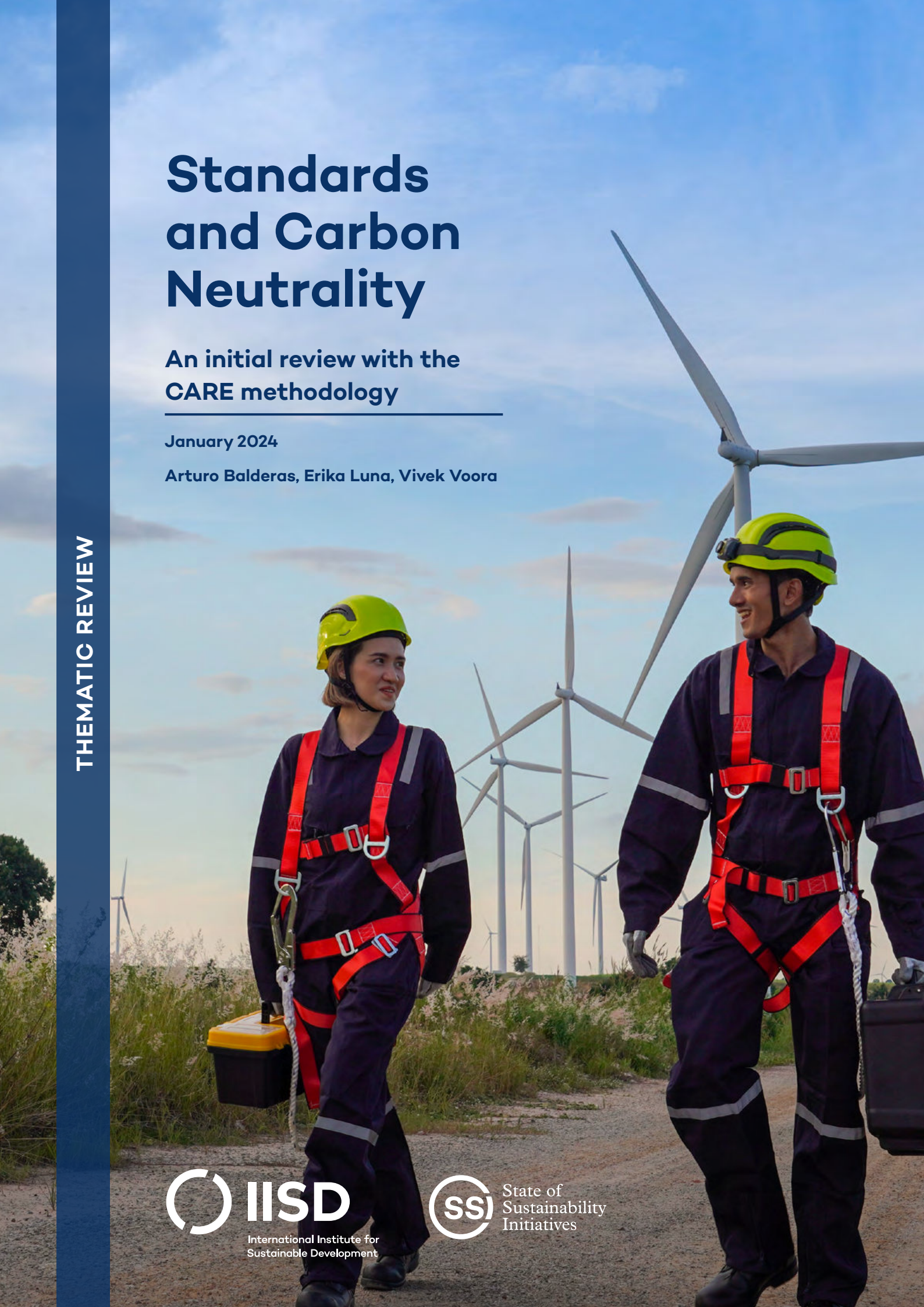# Standards and Carbon Neutrality

An initial review with the CARE methodology

January 2024

Arturo Balderas, Erika Luna, Vivek Voora

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Standards and Carbon Neutrality: An initial review with the CARE methodology

January 2024

Written by Arturo Balderas, Erika Luna (corresponding author), and Vivek Voora

Preferred citation:

Head Office

111 Lombard Avenue, Suite 325
Winnipeg, Manitoba
Canada R3B 0T4

Tel: +1 (204) 958-7700
Website: www.iisd.org/ssi
X: @IISD_ELP

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Executive Summary

This thematic review of Standards and Carbon Neutrality presents an analysis of different standards and initiatives to achieve carbon or climate neutrality. Our goal is to show commonalities and divergences among nine voluntary carbon neutrality standards and initiatives (VCNSIs), using our CARE methodology to examine aspects related to Coverage, Assurance, Responsiveness, and Engagement. The State of Sustainability Initiatives team at the International Institute for Sustainable Development developed this methodology to assess key elements of the design, operation, and governance of voluntary certification standards promoting different sustainable initiatives. We sought to identify best practices among VCNSIs by benchmarking and analyzing their potential to contribute to ambitious climate action. This document complements the International Institute for Sustainable Development report, *Voluntary Standards and Initiatives for Carbon Management: Navigating the Landscape*.

VCNSIs define systematic approaches to measuring, reducing, and compensating for the impacts that specific products, activities, facilities, or services have on greenhouse gas (GHG) emissions. Organizations can use these standards to advance their climate agenda and communicate these actions and results to stakeholders. Information about the actual impacts generated by certified entities must be aligned with the messages that are communicated to end consumers and other stakeholders through logos and labels.

These standards have proliferated and quickly evolved since the emergence of the concepts of carbon and climate neutrality in the span of almost 3 decades. The standards covered in this report were identified through a review of the literature and a participatory survey with experts in the summer and fall of 2022. We prepared a questionnaire and selected indicators to characterize each standard. The analysis of Coverage describes the extent to which each VCNSI includes specific and relevant elements to ensure ambitious, coherent, and effective climate action. Assurance refers to the methods and procedures used to ensure and verify that the practices and requirements defined are actually met. Responsiveness describes a standard's ability to respond to different context-specific conditions and promote progress among participants on reducing GHG emissions. Engagement considers an initiative's inclusiveness, transparency, access to information, and dispute-resolution mechanisms. Public information available for each standard was used to fill out the questionnaire, and we also interviewed representatives of each initiative. The collected data were then coded under the CARE dimensions and indicators.

VCNSIs performed better in the Coverage and Assurance aspects. This could be expected, as most of the initiatives analyzed originated in for-profit private organizations with specialized technical skills. However, the lens of the CARE methodology includes other aspects usually not considered in the design or governance of such schemes, which were mainly uncovered when assessing Responsiveness and Engagement. These dimensions are also relevant as they examine the commitment of the VCNSIs in reducing GHGs and their progress, and the different ways they engage and involve different stakeholders.

As a first step, we assessed how each VCNSI uses and defines carbon or climate neutrality. While there are some similarities, each standard has its own definitions and procedures for

granting certification. Given this heterogeneity, to understand what is included in each case and how implementation contributes to net-zero targets, one should look at the concepts described in the standards themselves and not necessarily at definitions created by actors like the Intergovernmental Panel on Climate Change (IPCC) or those included in policies. The latter hinders the straightforward comparison and evaluation of results among standards.

While Coverage scored highest, key aspects must be addressed to ensure the implementation of ambitious mitigation actions consistent with net-zero targets. We used the goals set by the IPCC's *Global Warming of 1.5°C* report as a benchmark to assess the potential contribution to these objectives: emissions should be reduced consistently via 1.5°C pathways, and global net-zero emissions should be achieved as soon as possible by 2050. However, we found that not all certification modalities require the inclusion of all emission sources, particularly Scope 3 emissions. This exclusion weakens mitigation and compensation strategies under those modalities, as their approaches are incomplete. We also identified a lack of clarity in requiring ambitious mitigation strategies that are aligned with or can result in real contributions to 1.5°C pathways: criteria for setting targets were sometimes vague, with suggestions such as "reduce as possible" or "reduce emissions that can be reduced" and no requirement for technical justification of these reductions. Finally, we found no formal procedures to ensure the management of offsets to verify retirement, prevent double counting, and address potential reversals.

In assessing Assurance, we found that the VCNSIs examined have not integrated a common or standard way to present their complying requirements and verification guidelines in a formal, public, official, and controlled document that is to be updated periodically. We found most information about the initiatives on their websites, and some specific issues were addressed verbally during interviews. This is a weakness, as the requirements and guidelines for compliance are dispersed and not presented systematically and homogeneously to users or participants. Another area of opportunity is the means required to evaluate compliance, as there is limited use of third-party assessments among the standards examined. As a benchmark, standards should be independent, objective, and transparent; require third-party certification to assess compliance with their criteria and required practices; publicly disclose any potential conflicts of interest; and specify provisions to prevent them (e.g., particularly when they have different income sources).

VCNSIs need to be responsive to consider different and complex contexts, processes, and elements. There are many ways to enhance responsiveness, including translating information into languages other than English, periodically updating the standards, and including provisions for small companies or participants in the Global South. However, the biggest challenge faced by carbon-neutral standards to enhance responsiveness to the public and stakeholders is synthesizing all the information[1] and processes behind certification into one discrete metric related to carbon neutrality and a homogenous logo for communicating compliance. Some standards grant carbon-neutral labels to companies that have just enrolled

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[1] Elements that can vary among participants, according to the selected certification modalities, are whether GHG inventories include emissions from the three scopes, whether third parties verify such inventories, the ambition of the mitigation plans, results after implementation, and the type of offsets for compensation, among others. Fully implementing a comprehensive mitigation strategy will usually take time, so there will be a transition period.

in their programs on the promise that they plan to reduce emissions in the coming years, even if not all emission scopes and processes are included; in these cases, companies are allowed to use offsets to fill the gap in emissions still to be reduced. However, we can argue that this level of recognition should not be the same as granting carbon-neutral certification to other organizations that, over time, have already reduced their emissions to be consistent with 1.5°C pathways, in addition to offsetting residual emissions. Defining different performance levels and correspondent labels based on the actual progress of users of the standard can help address some of these issues. Such performance levels should include clear criteria, with the highest level of recognition being reserved for the most comprehensive and ambitious (already implemented) actions that reduce GHG emissions to prevent greenwashing. The basic levels of recognition may acknowledge early actions but should also include information about their limitations.

The Engagement dimension had the lowest scores, as the different boards that govern and manage the standards score low on inclusiveness (i.e., geographic, gender, and sectoral). Furthermore, the stakeholders are more often consulted in participatory processes with regards to the design of the standard, but less so for assessing participants' results and claims, which undermines the accountability of the schemes. We also found that the VCNSIs examined do not have public statistics or consolidated reports on the uptake of their different certification modalities or results of the uptake of their standards or initiatives. It is critical to disclose such information to improve the transparency of their progress and limitations in achieving carbon neutrality. Finally, while there are periodic reports, public information about the impacts of compliant participants is usually incomplete—in some cases, to protect client confidentiality.

To address many of the identified issues and include the missing elements of Responsiveness and Engagement, the standards need to shift their focus from a service offered mostly by private organizations to one that considers and prioritizes the needs of consumers and other relevant actors through providing transparent and verifiable information on meaningful climate action. This is not a minor task, and it is made even tougher by the weak governance overlooking VCNSIs as a whole and a lack of coordination among the standards and initiatives. Ideally, standards should agree on what carbon and climate neutrality are and how they are achieved, including bottom lines for preparing GHG inventories, reducing emissions, and deciding the roles and types of offsets allowed. It may be a time to form an oversight body to ensure that VCNSIs are effective, credible, and include common elements to certify carbon- and climate-neutral initiatives. As the governance of these standards and initiatives evolves and improves, it will be complementary to promote and increase their uptake to contribute effectively and credibly to climate action.

Finally, we recommend rethinking the use of carbon and climate neutrality as a process approach rather than a static state where certified participants are recognized for their progress (but with a lot more to do) in addressing the climate emergency by managing their carbon emissions. VCNSIs should shift to a certification and labelling system that can show the dynamic progress made by participants. This can make the initiatives more transparent and provide a systematic approach to understanding the progress made by complaint organizations and their impacts in different stages. This approach can facilitate more accurate communication by VCNSIs and their participants of their carbon neutral or climate neutral claims.

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Abbreviations and Acronyms

ACA   Airport Carbon Accreditation by Airports Council International Europe

AFOLU   agriculture, forestry, and other land use

BSI   British Standards Institution

CARE   Coverage, Assurance, Responsiveness, and Engagement

CIP   Carbon Neutral Standard by Climate Impact Partners

CNG   Climate Neutral Certification by Climate Neutral Group

CN   Climate Neutral Certified by Climate Neutral

CP   Climate Neutral by ClimatePartner

CNN   Climate Neutral Now

CO$_2$ carbon dioxide

CO$_2$e   carbon dioxide equivalent

CP   Climate Neutral by ClimatePartner

GHG   greenhouse gas

ICROA   International Carbon Reduction and Offset Alliance

IISD   International Institute for Sustainable Development

IPCC   Intergovernmental Panel on Climate Change

ISO   International Organization for Standardization

PAS   Carbon Neutrality Standard and Certification PAS 2060 by BSI

SCS   Carbon Neutral Standard by Scientific Certification Systems Global Services

SME   small and medium-sized enterprise

SP   South Pole

UNFCCC   United Nations Framework Convention on Climate Change

VCNSI   voluntary carbon neutrality standards and initiatives

1.0 Introduction

This document analyses and benchmarks different standards and initiatives that certify carbon or climate neutrality. Our objective is to shed light on commonalities and divergences among standards and initiatives that have emerged to promote the voluntary carbon management of different activities and processes, particularly those conducted by private sector actors using a common framework. We offer an initial analysis of nine voluntary carbon neutrality standards and initiatives (VCNSIs) by examining four dimensions of these standards, following our CARE methodology (Coverage, Assurance, Responsiveness, and Engagement). The International Institute for Sustainable Development's (IISD's) State of Sustainability Initiatives team has used this methodology in the past to analyze the elements of different voluntary certification standards across sectors (e.g., agricultural, mining, and fisheries). The benchmarking results and discussion of findings are presented in this paper and in an accompanying Excel file. These documents complement the report, *Voluntary Standards and Initiatives for Carbon Management: Navigating the Landscape.*[2]

1.1 Historical Background and Definitions

"Carbon neutrality" and "climate neutrality" are often used interchangeably and are sometimes regarded as synonyms for achieving net-zero emissions. However, they are not equivalent concepts and are distinct from net-zero emissions. The confusion stems from the different and changing definitions of these terms in recent decades. Below, we present an essential background on the appearance and evolution of these terms.

"Carbon neutrality" as a concept emerged in the late 1990s, and by 2006, it had become so widely used that the New Oxford American Dictionary selected "carbon neutral" as the Word of the Year (Oxford University Press, 2006). The popular definition at the time involved estimating carbon emissions, reducing them as much as possible, and balancing them by buying offsets from emission reductions or carbon removal projects (i.e., by planting trees or through technologies such as wind and solar power). The first carbon-neutral certification schemes were created in the early 2000s and are one voluntary tool to mitigate climate change.

Along with carbon neutrality, other concepts began to appear and were commonly used in the context of carbon management and climate change mitigation. These concepts are mainly climate neutrality, net-zero carbon (or net-zero greenhouse gas [GHG]) emissions), and net carbon (or net GHG emissions).[3] These concepts were initially derived from definitions and conventions first adopted to prepare GHG inventories and, later on, to define the criteria for setting emission reduction and mitigation goals. It is important to define these concepts to determine how they interact with and complement each other (Box 1). However, in this section, we show that the different definitions of carbon and climate neutrality can create an initial barrier to the direct comparability of different VCNSIs.

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[2] Read the report here: https://www.iisd.org/system/files/2024-01/voluntary-standards-initiatives-carbon-management.pdf

[3] In general, when concepts refer only to "carbon" as in "carbon emissions," it means only carbon dioxide (CO_2) emissions are being considered. When reference is made to GHG emissions, it means that, in addition to CO_2, other non-CO_2 GHGs are considered (e.g., methane, nitrous oxide). Non-CO_2 and CO_2 emissions can be summarized when the global warming potential of non-CO_2 GHGs is used to generate values in CO_2 equivalent (CO_2e).

Box 1. Definition of gross and net GHG/carbon emissions and net-zero GHG/carbon emissions

The concepts of "gross" and "net" emissions[4] were first used in GHG inventories to refer to the processes they were describing. Thus, gross emissions consider only the processes and amounts of GHG emissions produced. On the other hand, net emissions refer to the figure obtained when considering GHG emissions minus removals by sinks (e.g., carbon removed in forests and soils). Net emissions contribute to the accumulation of carbon and other GHGs in the atmosphere: when more GHGs are emitted than are removed in any given year, they build on the existing stock. Atmospheric concentration of CO_2 will stop increasing when global carbon removals are at least equal to carbon emissions in any given year—this is when net emissions reach zero. However, there are limits on the pace at which natural carbon sinks can absorb carbon and the amount of carbon they can remove. Furthermore, many processes are potentially reversible, so additional efforts are required to foster the permanence of carbon stocks.

The concept of "net-zero emissions" became more prominent as a policy or mitigation goal after the Intergovernmental Panel on Climate Change's (IPCC's) 2018 *Special Report on Global Warming* (IPCC, 2018b). When analyzing the effort required to achieve the 1.5°C goal established by the Paris Agreement, the IPCC[5] reported that net-zero carbon emissions should be achieved globally by 2050—which is to say that by that time, anthropogenic carbon emissions should be balanced out by anthropogenic removals. In this report, the IPCC does not provide any details on *how* this balance could be achieved or the role that specific policies and instruments, such as offsets or carbon markets, could play. However, it refers specifically to the balance of emissions and *removals*. In Article 4, the Paris Agreement also establishes the need to reach a balance between carbon emissions and removals, thus achieving net-zero emissions.

As measures to remove GHG traditionally focus on carbon (e.g., photosynthesis or carbon direct removal) at molecular levels, net-zero goals focus on carbon emissions. However, more carbon can be removed to account for the equivalent contribution of non-CO_2 GHGs emitted, thus contributing to net-zero GHG emissions. There is also growing interest in how to foster processes that remove other GHGs from the atmosphere.

"Reaching net-zero" has been globally adopted as an objective for climate action to limit global temperature increase (United Nations, 2022). The Science Based Targets initiative (SBTi) has been key in addressing emission reductions among private sector actors by engaging more than 4,000 businesses and providing them with a defined emissions reduction pathway in line with the Paris Agreement, to limit warming to 1.5°C in their operations and through the value chain (SBTi, 2023)..

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[4] When we refer to net emissions or net-zero emissions, we refer to net GHG and net-zero GHG emissions.

[5] The IPCC is an intergovernmental body of the United Nations established in 1988 to advance scientific knowledge about climate change in relation to human activities. Its primary objective is to provide policy-makers with scientific information to develop climate policies (IPCC, 2023).

It is important to recognize how these concepts first appeared and how they have evolved. Figure 1 shows the evolution of the global level of interest in these concepts, as documented by Google Trends for the period 2004–2022.

Figure 1 depicts the evolution in searches of these terms online and indicates which has received more public attention. The first concept to emerge was "carbon neutral," which also has been, by far, a more commonly used term than climate neutral, net emissions, or net-zero carbon.[6] The highest level of interest in carbon neutrality was in 2007, when interest in climate change generally built up following the publication of *The Economics of Climate Change* (Stern, 2006) and Al Gore's documentary *An Inconvenient Truth*. The first carbon-neutral certification schemes (e.g., the Carbon Neutral Protocol) were developed at this time. In 2018, the increase in interest in all terms is linked to the publication of the IPCC's special report, along with public attention on social initiatives such as Extinction Rebellion and School Strike for Climate.

Since the early 2000s, various definitions of carbon neutrality have emerged and evolved, each with distinct characteristics that shape prospects for climate change mitigation. In general, each carbon neutrality certification scheme has its own definition or interpretation of carbon neutrality (we discuss this issue in Section 3.1). While the broad definitions of carbon and climate neutrality agree in the generalities of the elements included (e.g., GHG inventories, emission reductions, and offsetting), they are not entirely equivalent, especially when it comes to the actual steps and actions required to grant the different certification modalities under each standard. Specific technical terminology, such as

Figure 1. Evolution of the global level of interest in carbon-neutral, climate-neutral, net-zero carbon, and net emissions
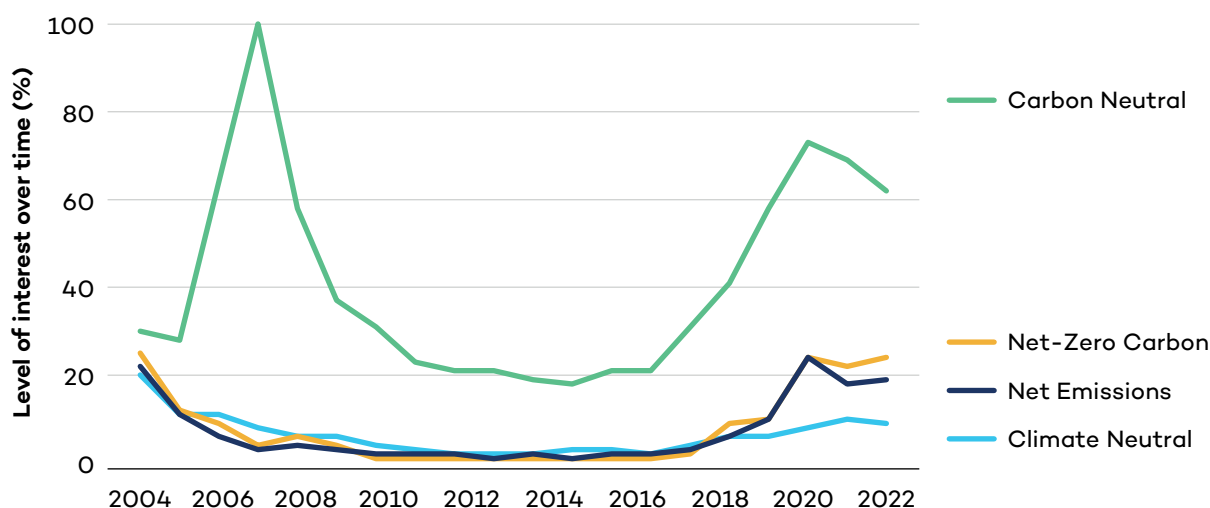
Source: Based on data from Google Trends, 2023.

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[6] These terms were selected because they depicted public Google searches more accurately, although they are not the specific terms mentioned in the definitions in Box 1.

net-zero carbon emissions, stem from the IPCC's *Global Warming of 1.5°C* report, and thus, naturally, were not included in the initial definitions and standards for carbon neutrality that emerged before 2018.

According to the IPCC's glossary, the first IPCC document containing a definition of carbon neutrality was published in 2018 (IPCC, 2018a). It defined it as a "condition in which anthropogenic carbon dioxide (CO_2) emissions associated with a subject are balanced by anthropogenic CO_2 removals."[7] The IPCC then indicated that countries, organizations, or events— which usually consider direct and indirect emissions—can attain carbon neutrality (thus referring de facto to Scope 1 and Scopes 2 and 3 emissions, respectively). However, it acknowledged that carbon neutrality can also be limited to processes

under the subject's control (i.e., only Scope 1), can cover only a given period, and is limited under the guidelines of specific schemes (IPCC, 2018c). Thus, the IPCC recognized that there already were different modalities of carbon neutrality.

The IPCC also clarified that at the global level, carbon neutrality and net-zero carbon emissions are equivalent, as global net-zero emissions can only occur when global removals equal global emissions— thus, they are balanced, as required by carbon neutrality. However, while these two concepts overlap partially at any sub-global scale (e.g., country or company), they are not exactly equivalent. This is because net-zero carbon emissions apply in general to emissions and removal processes under the control of the reporting entity, while carbon neutrality includes processes

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Box 2. Scopes of emissions

Three different scopes identify the level of influence and control that each company has over its GHG emissions:

Scope 1: Direct emissions that occur within the control of the reporting entity or company. These usually include emissions from the combustion of fuels in mobile and fixed sources and fugitive or unintentional emissions.

Scope 2: Indirect emissions from the generation of purchased energy electricity, heat, steam, and cooling.

Scope 3: All indirect emissions (not included in Scope 2) that occur in the value chain of the reporting company, including upstream and downstream emissions. Upstream emissions are associated with the extraction of raw materials, production, processing, and the transport of goods, materials, and services used by the reporting entity. Downstream emissions from all the activities occur outside the control of the company after delivering their goods or services to consumers. They include emissions from the distribution, storage, transport, packaging, sale, use, and disposal of products; emissions from the management of any waste produced as part of the operations of the reporting company; transport emissions from clients and workers; and business trips.

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[7] Similarly, GHG neutrality implies a balance in anthropogenic GHG emissions and anthropogenic removals.

Figure 2. The sources of Scopes 1, 2, and 3 emissions
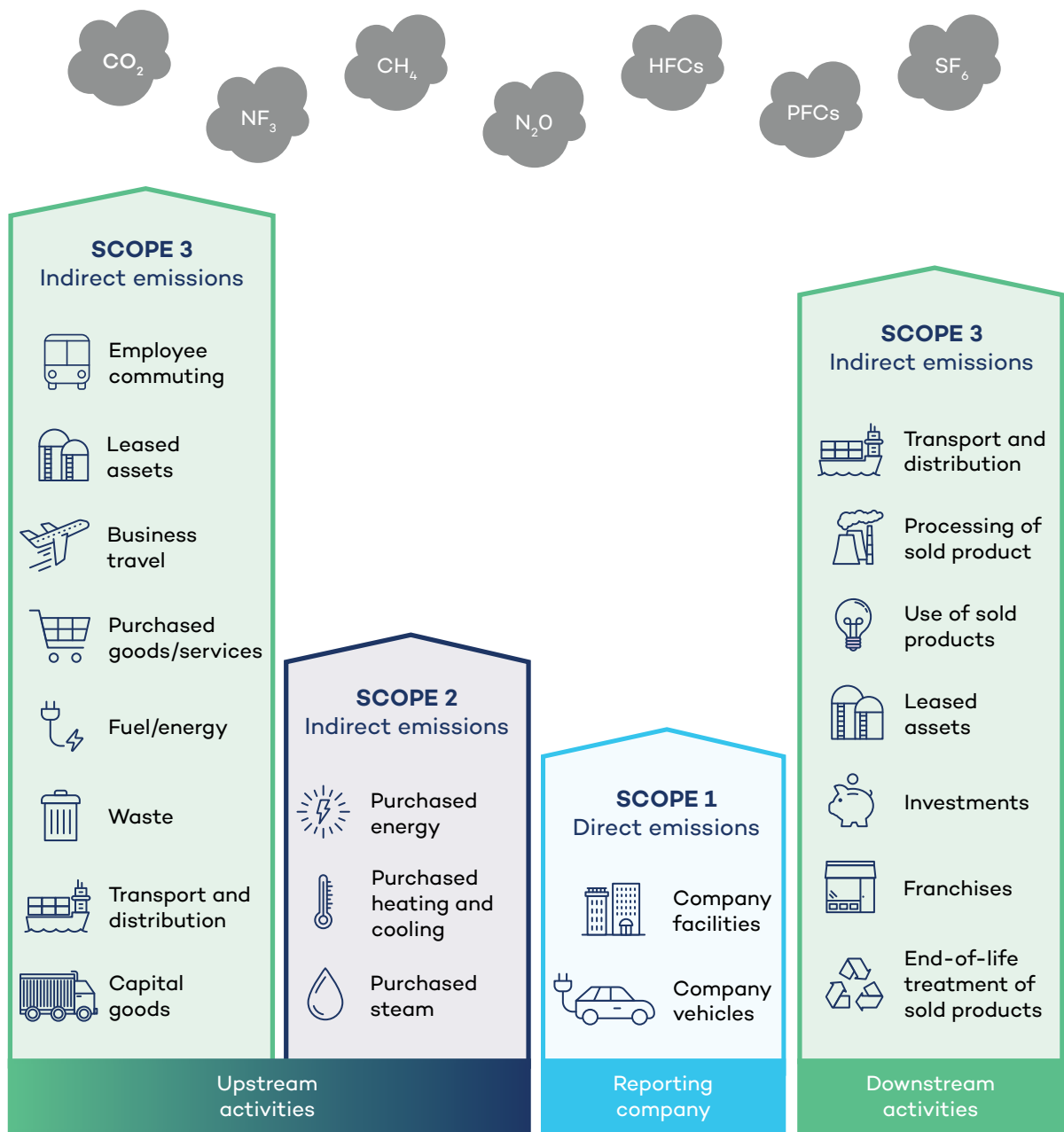
Source: Adapted from Greenhouse Gas Protocol, 2016.

beyond its control (i.e., Scope 2 and 3 emissions and offsets). Finally, the IPCC notes that in some cases, entities require the supplementary use of offsets to achieve carbon neutrality (though it does not indicate which type of offsets can be used).

The more recent concept of "climate neutrality" is distinct from carbon neutrality. In 2018, the IPCC defined it as a state in which human activities have no negative impact on the climate system by balancing residual (CO_2) emissions with emission removals (IPCC, 2018a). The subtle use of the term "residual" implies that before

balancing unabated emissions, there is a phase during which actions to reduce emissions should be taken. Importantly, it indicates that residual emissions should be balanced using carbon removals.

The United Nations Framework Convention on Climate Change's (UNFCCC's) Climate Neutral Now (CNN) initiative offers a definition presenting specific guidelines to implement and distinguish between carbon and climate neutrality at the sub-global level.[8] Based on the IPCC's definitions, CNN indicates that to achieve climate neutrality, after taking GHG emission reduction actions, entities' residual emissions must be compensated for by offsets from projects removing GHGs in the long term (CNN, n.d.). This follows the rationale in the definition of net-zero emissions that the balance is between anthropogenic residual emissions and removals. To emulate this process, offsets should then correspond effectively to projects removing carbon and GHG emissions in the long term. On the other hand, for CNN, carbon neutrality implies that a stakeholder (individual, organization, company, or country) will

also reduce and compensate for residual emissions with offsets. In this case, offsets can come from projects producing emission reductions or the temporary capture of GHGs. It is important to note that while CNN mentions three types of offsets— emission reductions, temporary removals, and long-term removals—there is no official list of definitions, methodologies, or activities for any of them.[9] Such a list would be particularly important to distinguish between temporary and long-term removals.

The world of voluntary climate action is constantly evolving due to new scientific information and policy developments and goals. Carbon neutrality standards emerged at a time when international climate action gravitated around the first commitment period of the Kyoto Protocol from 2008 to 2012. Since then, the level of ambition and participation of all countries seems to have increased. Under the Kyoto Protocol, the goal was for developed Annex I countries to reduce their GHG emissions by 5.2% using 1990 as a baseline. This goal was clearly inadequate to mitigate climate change. Furthermore, even if all Annex I countries had complied with the goal—which did

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8 At the time of writing this report and documenting the different VCNSIs (August 2022 to February 2023), CNN was fully operational. In June 2023, however, the UNFCCC announced it was going to phase out CNN as it did not align with the recommendations made by the Secretary General's High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities. We decided to retain the original analysis on CNN, as it enriches the discussion about specific characteristics of other VCNSIs.

9 To our knowledge, there are no official definitions of the different types of offsets or carbon certificates. Considering the types of projects that generate the offsets under different standards, in theory it would be easy to differentiate emission reductions from carbon removals. Emission reductions refer to projects such as energy efficiency, renewable energy generation, methane flaring and avoidance, management of hydrofluorocarbons/ chlorofluorocarbons, reduced emissions from deforestation, or forest degradation; carbon removals can refer to reforestation/afforestation projects or the enhancement of carbon stocks in forests/forest management leading to increasing stocks, carbon sequestration soils, mineralization, direct air capture, etc.

The second step for offsets based on carbon removal projects would be to categorize them into two classes: temporary removals for those with potential for reversal (e.g., forest fires in reforestation/afforestation or forest management projects) and those where carbon ends in a stable form without the risk for reversals (e.g., mineralization).

It is difficult to classify carbon capture and storage as emission reductions or carbon removals. Because it prevents carbon emissions from entering the atmosphere, it can be labelled as an activity producing emission reductions. These captures could be reversible if they are not properly stabilized.

not happen—it implied that 94.8% of their emissions levels from 1990 would have been allowed and thus would continue building up atmospheric concentrations of GHGs, in addition to the emissions of non-Annex I countries. Currently, under the Paris Agreement, all countries (including non-Annex I countries) are communicating their nationally determined contributions (NDCs) to the UNFCCC. Evaluations of these contributions indicate that the current level of ambition is not yet enough to achieve the Paris Agreement goals (UNFCCC, 2021).

To assess the potential contribution of VCNSIs to these global goals, we used the objectives set out by the IPCC's *Global Warming of 1.5°C* report as a benchmark: emissions should be reduced consistently via 1.5°C pathways, and global net-zero emissions—anthropogenic emissions balanced by anthropogenic removals—should be achieved as soon as possible before 2050 (IPCC, 2018). One critical first step is understanding how these concepts appear and are used in the selected standards and how they relate to other strategies, particularly net-zero emissions.

1.2 VCNSIs

VCNSIs define a systematic approach to measuring, reducing, and compensating for the impact that a given product, activity, facility, or service has on GHG emissions. These standards also regulate the use of certain labels or claims that compliant entities can use to publicly communicate their participation and results in the initiative.

Companies can usually choose what they would like to certify (e.g., entire operations, a specific product, facility, or event). To achieve carbon or climate neutrality,

GHG emissions are first estimated via an inventory, and mitigation strategies are then implemented to lower those emissions. Residual emissions (which cannot be reduced or are cost-prohibitive to reduce) are addressed by purchasing carbon offsets of certified projects. Each standard defines how carbon or climate neutrality is understood according to specific rules about which emissions are included (i.e., Scopes 1, 2, and 3), how they are reduced and compensated, and what process is used to assess compliance and grant certification.

Different organizations created and managed the standards and initiatives that specify how compliant companies can use the labels associated with the certification. Organizations offering carbon-neutral certification services are mostly private but can also be non-profit or multilateral. Compliant firms typically pay a registration fee to these crediting organizations. Depending on their guidelines, the crediting organizations (known as second-party certification) or accredited third parties (known as independent third-party certification) assess and verify the carbon management operations of different entities.

1.2.1 Logos and Labels

Participating entities can earn the right to use carbon- or climate-neutrality logos or labels to communicate their actions and achievements to stakeholders, including other businesses, customers along supply chains, investors, regulators, and end consumers. These labels are used to demonstrate compliance with the targets and requirements of each VCNSI. They are used to distinguish the participants from their competitors.

1.2.2 Participants

Firms in the private sector or organizations that want to advance their climate agenda (particularly in carbon management) and communicate their actions and results to various stakeholders use these standards. Certifications are granted to individual organizations for different things (e.g., products, facilities, services). While the certification of a product can consider Scope 3 emissions across the supply chain in specific cases, the process does not require the participation of other supply chain members.

1.3 Objective of the Report

The objective of this thematic review is to benchmark and analyze the criteria and characteristics of nine different VCNSIs to identify their strengths and opportunities for improvement, as well as best practices for carbon management. In addition, this thematic review serves as a complementary document to the report *Voluntary Standards and Initiatives for Carbon Management: Navigating the Landscape*.

2.0 Methodology

2.1 Identification and Selection of Standards

The standards presented in this report were identified through a review of the literature and a participatory survey with experts in carbon markets and climate change mitigation during the summer and fall of 2022. As this field is quickly evolving, the list presented here is just a snapshot of some of the most widely used initiatives, especially in the Global North. However, many initiatives in other regions with similar scopes are gaining momentum, and we encourage the reader to keep an eye out for these. Experts consulted were asked to list five main schemes based on their perceived frequency of use. The list below presents the different VCNSI developed by standard-setting organizations included in this report: [10]

1. Carbon Neutrality Standard and Certification PAS 2060 by the British Standards Institution (BSI)[11]

2. Carbon Neutral by Climate Impact Partners (CIP)

3. Climate Neutral Now (CNN) by UNFCCC

4. Climate Neutral by South Pole (SP)

5. Carbon Neutral Standard by Scientific Certification Systems Global Services (SCS)

6. Climate Neutral Certification by Climate Neutral Group (CNG)

7. Climate Neutral by ClimatePartner (CP)

8. Climate Neutral Certified by Climate Neutral (CN)

9. Airport Carbon Accreditation by Airports Council International Europe (ACI)

2.1.1 Basic Concepts

As noted in Section 1.2, VCNSIs follow a general shared approach requiring participants to measure, reduce, and compensate for their emissions. However, each initiative has its own specifications and requirements (outlined in a protocol document). The first part of our methodology was to review the public information about each standard to identify how carbon and climate neutrality are defined and conceptualized. We then used the CARE methodology to examine each initiative in more detail.

2.2 CARE Methodology

As part of its State of Sustainability Initiatives Reviews, IISD has developed an analytical framework to analyze four key dimensions of voluntary sustainability standards: Coverage, Assurance, Responsiveness, and Engagement (CARE). The following sections describe this analytical framework and the aspects included in each dimension of CARE. Each aspect is broken down into several indicators and their specific elements used to examine the carbon neutrality standards. In addition, we prepared a questionnaire to collect the data and assigned a scale of values to assess each indicator. Appendix A presents the complete analytical framework organized by dimension, with indicators, their specific elements, questions formulated to collect the data, scale of values and detailed result of the analysis.

To assess and summarize the coverage of each indicator for each standard and initiative, we present the assigned scores as

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[10] We also approached The Carbon Trust and AENOR to request interviews and gain more information about their programs to include in this report. However, we did not receive a response.

[11] The acronyms at the end of each standard indicate how they are identified in the rest of this document.

a percentage in reference to the maximum value possible in each of the indicators. Thus, high coverage is represented by scores closer to 100, and lower coverage is represented by scores closer to 0.

The following paragraphs present a brief description of the type of information gathered for each dimension of analysis used to examine each VCNSI.

2.2.1 Coverage

The different standards and guidelines that VCNSI designed define the requirements and conditions that users of each scheme should meet. These rules and guidelines institutionalize the standards, and while they do not determine the results of the initiatives, they guide the actions of participants and their potential results. Additionally, these VCNSIs make the organizations running them accountable for enforcing what each standard covers. Coverage refers to the definitions and rules that form the parameters, requirements, and practices ensuring that participants

are achieving carbon or climate neutrality. The analysis of coverage describes the extent to which each standard includes specific and relevant elements to ensure ambitious, coherent, and effective climate action in the context of climate and carbon neutrality efforts.

The analytical framework disaggregates each dimension of CARE into different aspects, which are then more clearly described through specific indicators and elements. For instance, indicators explore whether standards requirements are optional or compulsory (e.g., the inclusion of emissions from Scopes 1, 2, and 3), whether they are subject to third-party verification (e.g., GHG inventories), and whether they provide some flexibility to achieve a certain level of performance. Table 1 presents the aspects included in the Coverage dimension with its description. Table 5 illustrates the indicators used to assess each aspect, with the corresponding scale of values.

Table 1. Aspects included in the Coverage dimension

Aspect	Description
Scopes included in GHG inventory	The standard requires participants to develop a GHG inventory of Scope 1, 2, and 3 emissions.
Methodology for GHG inventory	The standard requires or suggests a specific methodology to develop a GHG inventory for Scope 1, 2, and 3 emissions.
GHGs included	The standard requires that specific GHGs are considered in the GHG emissions inventory. These GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and nitrogen trifluoride NF_3, as well as compounds such as black carbon. Emissions from certain GHGs may not be included if there are no processes that generate them.
Frequency of GHG inventories	The standard establishes the timeline for elaborating and updating the GHG inventory by the participant.

Aspect	Description
Revision of GHG inventories	There is an established process to review the information in the GHG inventory.
Ambition of mitigation strategy	The standard requires participants to develop a strategy to reduce Scope 1, 2, and 3 emissions. The benchmark is that standards require a high ambition commitment for net-zero or net removals consistent with the Paris Agreement.
Results of mitigation strategy	The standard verifies progress toward the reduction of Scope 1, 2, and 3 emissions.
Ambition of compensation strategy	The standard requires participants to compensate for Scope 1, 2, and 3 residual emissions.
Eligible offsets	The standard defines criteria for eligibility of offsets, as well as the type of eligible offsets (i.e., carbon removal from agriculture, forestry, and other land use [AFOLU] projects or other projects, emission reductions from AFOLU or non-AFOLU projects).
Consideration for reversal of offsets	The standard specifies contingency actions in the case that projects producing the offsets used for compensation with the certification by participants are reverted.
Retirement of offsets	The standard requires proof of retirement of compensations.
Double counting of offsets	The standard requires participants to issue a statement assuring that offsets are not being simultaneously used to ensure compliance with another initiative, such as an emissions trading system or carbon tax.

Source: Authors' elaboration.

2.2.2 Assurance

According to the CARE methodology, the trustworthiness of these standards is critically based on the mechanisms formally set to verify the claims made by participants. The Assurance dimension refers to the methods and procedures used to ensure and verify that practices and requirements defined by the VCNSIs are actually met. When an interested actor assesses a product or an activity (e.g., a consumer buying a specific product), they cannot know the GHG emissions or mitigation efforts associated with the production process. As a result, assurance mechanisms are vital to verify if the certified product, activity, or event complies with the practices and requirements the standard defines and can back up related claims. In this context, independent and third-party assessment and verification is the preferred best practice and acts as the benchmark assurance mechanism. Other voluntary sustainability standards and initiatives include different chain of custody models to enable actors downstream in the supply chains to trace compliant products back to their origin. We explore if considerations for supply chains and traceability are also considered in VCNSIs. Aspects describing the Assurance dimension of our analytical framework are presented in Table 2.

<div style="background:#d9ece0;padding:8px;">Table 2. Aspects included in the Assurance dimension</div>

Aspect	Description
Availability of the standard protocol and verification guidelines	The standard and verification guidelines are publicly available.
Role of self/second-party/third-party assessment	The type of evidence the standard uses for conformity assessment and how it is evaluated: by the participating company or organization (self), by the standard (second party), or by an external (third) party.
Role of the standard-setting organization (or managing organization	The role of the standard-setting organization in carrying out the audit, reviewing audit reports, issuing certificates, determining membership, and providing formal accreditation to audit bodies.
Site audit considerations	The standard and verification guidelines established frequency of second- or third-party site audits if required.
Auditor competence	The standard and verification guidelines set specifications for auditor qualifications or training.
Independent accreditation and other oversight mechanism	The standard and verification guidelines meet the International Social and Environmental Accreditation and Labelling (ISEAL)[12] or another assurance code.
Frequency of verification/certification	The standard and verification guidelines establish the frequency of how often organizations need to be verified/certified.
Consideration for certification of supply chains	The standard has its own assurance program to trace certified products across the supply chain and verify claims

Source: Authors' elaboration.

2.2.3 Responsiveness

Climate action in general, and carbon management in particular, are important elements of global sustainability (i.e., Sustainable Development Goal 13: Climate Action). Sustainability and prospects for sustainable development are linked to geographical and temporal contexts. Thus, the study of responsiveness describes the ability of VCNSIs to respond to different context-specific conditions and promote progress among participants on implementation. Aspects describing the Responsiveness dimension of our analytical framework are presented in Table 3.

[12] ISEAL is a global membership organization for credible practices of sustainability standards. ISEAL's mission is to strengthen sustainability standards systems with the aim of benefiting people and the environment (ISEAL, 2023).

Table 3. Aspects included in the Responsiveness dimension

Aspect	Description
Performance levels defined by the initiatives	The standard explicitly identifies different levels of performance (through, for example, a system of ratings or scores) of the participating companies or organizations related to the development of GHG inventories, mitigation strategies, and the offsetting of residual emissions.
Continuous improvement	The standard explicitly requires participants to improve their performance over time.
Incentives for exceeding compliance	The standard provides the participant with concrete incentives for exceeding basic compliance over time (e.g., reduced fees, special services).
Adaptation of the standard (e.g., regional differences, engagement with local auditors and actors)	The standard allows for the adaptation of indicators and, or standards to local and regional contexts.
Revision period of the standard	The standard has an established revision period to respond to changing needs and conditions (e.g., scientific or policy advancements, carbon market development).
Mechanisms for capacity building (e.g., funding, technical assistance materials)	The standard body has a dedicated fund and offers discounts, tools, and technical assistance to participants to aid in compliance with certification requirements and continual improvement.
Mechanisms for cost reduction (e.g., separate standards for small and medium-sized enterprises [SMEs], group certification, mutual recognition)	The standard has set compliance processes specifically for SMEs or group certifications. In addition, the standard recognizes compliance with other standard systems as full or partial compliance with its own requirements.

Source: Authors' elaboration.

2.2.4 Engagement

One of the principles of climate action is the need to ensure an equitable approach in the design and implementation of interventions. Thus, minimum levels of equity are required in different institutional, political, and economic processes associated with climate action. In this context, the configuration of a plural and participative governance system is one approach that can be implemented to promote equity in the long term for initiatives such as VCNSIs.

The Engagement dimension considers the inclusiveness, transparency, access to information, and dispute-resolution mechanisms considered by the different VCNSIs. The aspects considered for this fourth dimension are grouped under four main topics: board diversity, stakeholder engagement, access to information about the development of the standard, and public information (Table 4).

Table 4. Aspects included in the Engagement dimension

Aspect	Description
Board diversity	The standard-setting body board has equal participation of men and women; board members are from developed and developing countries; the board includes at least one representative from each of the following: government, academia, private sector, SMEs, NGOs, civil society, and the financial sector.
Stakeholder accessibility	The standard-setting body is founded on a membership system that has a role in decision making; stakeholders (business, civil society) are formally consulted on the content of the standard where there is a multistakeholder committee vote required for approval of the final draft of the standard. In addition, there is a committee that reviews results and claims made by the organizations participating in the scheme, and there are established policies and procedures for complaints available online to the general public.
Access to information about the standard development	The standard-setting body keeps the following elements available online to the general public: annual reports, financial statements, board membership, committee membership, minutes, standard-setting procedures, comments, a list of applicants, compliant participants, and the impact assessment reports of compliant participants.
Public information	The results of the inventories (initial and subsequent), mitigation goals and strategies, and information about the compensation practices of each certified company or participating organization are publicly available.

Source: Authors' elaboration.

2.3 Indicators Included in the Analytical Framework by Dimension and Questionnaire Design

We broke each aspect of the analytical framework down into a number of indicators. We produced an exhaustive questionnaire to collect the data and assess the indicators accordingly. As mentioned above, each indicator has a maximum value. Appendix A presents the indicators, their embedded elements, and assessment values. In total, we produced 38 indicators considered in 57 questions. Table 5 presents a summary of this appendix.

Table 5. Indicators selected for the analysis of VCNSIs using CARE

Indicator ID	Dimension and indicator	Question	Maximum value
Coverage			
1.1	Emission scopes included in GHG inventory (Scope 1, 2, 3)	1 to 3	6
1.2	Proposed methods required for GHG inventory (Scope 1, 2, 3)	4 to 6	9
1.3	Frequency of GHG inventory	7	2
1.4	Criteria for the revision of GHG inventory	8	2
1.5	Criteria for the ambition of mitigation strategy	9 to 11	9
1.6	Verification of results of mitigation strategy	12 to 14	9
1.7	Criteria for the ambition of the compensation strategy (of Scopes 1, 2, 3 residual emissions)	15 to 17	9
1.8	Criteria for eligibility of offsets	18 to 20	10
1.9	Criteria for handling offsets (i.e., in case of reversals, to prevent double counting)	21 to 23	6
Assurance			
2.1	Standard availability	24	2
2.2	Conformity assessment for inventories	25	3
2.3	Conformity assessment for mitigation	26	3
2.4	Conformity assessment for compensation	27	3
2.5	Site audits considerations	28	3
2.6	Auditor competency and independent oversight mechanisms	29 to 30	2
2.7	Compliance with an external assurance code (e.g., ISEAL, International Organization for Standardization [ISO]).	31	4
2.8	Frequency of verification/certification (1 year, 2 years, etc.)	32	3
2.9	Supply chain considerations	33 to 35	3

Indicator ID	Dimension and indicator	Question	Maximum value
Responsiveness			
3.1	Revision period for standard	36	1
3.2	Performance levels (for GHG inventories, reduction of emissions, and offsetting residual emissions)	37 to 39	1
3.3	Requirements for continuous improvement	40	1
3.4	Incentives for exceeding basic compliance	41	1
3.5	Technical assistance materials	42	1
3.6	Specific considerations for SMEs	43	1
3.7	Recognition of compliance with other standards	44	1
Engagement			
4.1	Availability of standard-setting procedure	45	1
4.2	Geographical representation in the board of the standard-setting organization	46	2
4.3	Gender representation in the board of the standard-setting organization	47	2
4.4	Multi-sectoral representation in the board of the standard-setting organization	48	7
4.5	Stakeholder consultation in standard setting	49	1
4.6	Stakeholder evaluation of results and claims made by compliant companies	50	1
4.7	Availability of public complaints procedures	51	1
4.8	Independent dispute-resolution body	52	1
4.9	Availability of annual reports	53	1
4.10	Availability of information about board membership	54	1
4.11	Availability of list of applicant companies	55	1
4.12	Availability of list of compliant companies	56	1
4.13	Availability of impact reports of compliant companies	57	1

Source: Authors' elaboration.

2.4 Data Gathering and Coding

We used the questionnaire to gather the data from public information available on the websites of each standard or initiative, along with official documents or standards protocols. We also interviewed representatives of each initiative and had a follow-up and revision process of the draft benchmark with each standard body. The data collected was coded as per the scale of values presented in Appendix A by three different members of the research team. The indicators are not prepared to rank or qualify standards as better or worse but to present how each aspect or indicator of the CARE methodology is defined or incorporated into each standard. VCNSIs are different, and claims made under each of them should be interpreted within their own frameworks.

3.0 Benchmarking

3.1 General Information and Key Definitions of Each Standard

In this section, we present general information and summarize important concepts that each standard defines, including the underlying definitions of carbon neutrality and/or climate neutrality. This section includes key definitions and extrapolates on how the different VCNSIs conceptualize carbon and climate neutrality, along with basic guidance on the role of offsets.

3.1.1 PAS 2060:2014 by the British Standards Institution (BSI)

Latest version: 2014
Organization type: Private
Headquarters: United Kingdom

Carbon (or Climate) Neutrality as Defined by the Standard

This standard only uses **carbon neutrality** as the main concept. According to PAS 2060, carbon neutrality is the "state of being carbon neutral. Where carbon neutral is a condition in which during a specified period there has been no net increase in the global emission of GHG to the atmosphere as a result of the GHG emissions associated with the subject during the same period" (BSI, 2014).

Offsets Approach and Requirements to Grant Carbon-Neutral Certification

"Achieving carbon neutrality solely through reduction of direct GHG emissions will not be practicable in most instances and hence carbon offsets are likely to play a role in achieving carbon neutrality. However, this specification does not make provision for a declaration of the achievement of carbon neutrality solely through offsetting other than the first application period (to facilitate initiation of the process)" (BSI, 2014). PAS 2060 does not limit participants to considering only offsets endorsed by the International Carbon Reduction and Offset Alliance (ICROA),[13] as long as the company can provide carbon credits following PAS 2060 requirements detailed below (BSI, 2014, Section 9.1.2, pp. 1–3):

- Credits shall represent genuine, additional GHG emission reductions.
- Additionality, permanence, leakage, and double counting.[14]
- Third-party verification of the offsets is required.
- Credits from carbon offset projects shall only be issued after the emission reduction has taken place.
- Credits from carbon offset projects shall be retired within 12 months of the date of declaration of achievement.
- Documentation of the offsets issued must be publicly available.

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[13] ICROA is a non-profit membership organization that promotes best practices for carbon offsetting across the voluntary carbon market to enhance integrity and in support of the Paris Agreement objectives (ICROA, 2023a).

[14] Additionality refers to projects where the reduced GHGs are additional—that is, they would not have occurred in the absence of the offset credits project. Permanence refers to when emission reductions are permanent. Sometimes projects carry a risk of reversal; therefore, adequate measures must be in place to minimize this risk. In the event of any reversal occurring, a mechanism must be in place to guarantee the reductions will be replaced. Leakage refers to unintended increases in GHG emissions caused by a project outside of its boundaries. Double counting can happen if a project's offset credits are claimed by another entity (e.g., a government or private company) that counts the same GHG reductions toward its own GHG reduction goal (Broekhoff et al., 2019).

- Offset credits shall be stored and retired in an independent and credible registry.

Key Highlights

- It is an internationally recognized certification standard for organizational carbon neutrality.

- It provides a standard definition and methodology to achieve carbon-neutral status, which is a reference for other carbon-neutral standards included in this report.

3.1.2 Carbon Neutral by CIP

Latest version: 2023
Organization type: Private
Headquarters: United Kingdom

Carbon (or Climate) Neutrality as Defined by the Standard

This standard uses **carbon neutrality** as the main concept. Carbon neutrality is achieved when the GHG emissions associated with an entity, product, or activity generated during a given period are reduced and offset to zero. Offsetting is defined as the action taken immediately by an entity to compensate fully for the global warming impact of its GHG emissions. The entity is offset when its unabated emissions are equal to the number of carbon credits retired or cancelled (CIP, 2023).

Offsets Approach and Requirements to Grant Carbon-Neutral Certification

The standard provides the following criteria for the consideration of offsets, as well as levels of ambition to reduce emissions and the type of offsets required. Criteria include the following:

- additionality,
- legally attributable (credits must have a clear record of ownership),
- measurable (verified methodology),
- permanent,
- unique and retired on a registry, and
- third-party verified.

Key Highlights

- The CarbonNeutral Protocol provides a framework and a standardized process (updated annually) to a diverse range of actors for making carbon-neutral claims.

- The certification can be granted to organizations, products, or activities.

3.1.3 Climate Neutral Now (CNN) by the UNFCCC

Latest version: 2015
Organization type: Multilateral initiative
Headquarters: Germany

Carbon (or Climate) Neutrality as Defined by the Standard

This initiative differentiates between **carbon neutrality and climate neutrality**, where carbon neutrality is a step toward climate neutrality.

The initiative defines climate neutrality as achieving a balance between emissions and removals of GHGs from the atmosphere. This applies at the global/planetary level

and at the stakeholder level (individual, organization, company, country, etc.). At the stakeholder level, balance is achieved when "GHG emissions are reduced or avoided, and the remaining ones compensated with carbon credits from projects that capture GHGs in the long term" (CNN, n.d.). For the initiative, climate neutrality and net-zero are synonyms. In contrast to climate neutrality, carbon neutrality is not applicable at the global level (because the use of carbon credits at this level is impossible), and to achieve carbon neutrality, projects that reduce, avoid, or temporarily capture GHGs are accepted. However, the initiative does not provide details on which type of projects provide temporary or long-term carbon capture or removals (CNN, n.d.).

CNN grants a higher level of performance to participants that reduce emissions before offsetting, have a pathway to become net-zero by 2050, and show 5% yearly reductions.

Offsets Approach and Requirements to Grant Carbon-Neutral Certification

Offsetting is optional under the CNN initiative. Moreover, the initiative does not provide detailed guidance on the requirements for carbon offset projects. The documentation states that "projects need to be certified under a recognized standard that follows best international practices. In particular those recognized under the UNFCCC and the Paris Agreement are recommended" (CNN, n.d.). CNN recommends obtaining at least 10% of the carbon credits to be used through the UN Carbon Offset Platform (i.e., Clean Development Mechanism projects). However, participants can obtain carbon credits from any platform they choose.

Key Highlights

- This initiative promotes voluntary action for climate mitigation (i.e., pledges to net-zero, measurement of GHG, and reduction measures) and the use of carbon market mechanisms (i.e., trading and crediting of emissions).

- It is not a certification scheme per se. Thus, the participation of the members is recognized based on their progress, but they cannot claim carbon neutrality. In addition, by following this scheme, members can advance on their journey to complying with carbon/climate-neutral certifications, such as the others presented in this report.

3.1.4 Climate Neutral by SP

Latest version: 2022
Organization type: Private
Headquarters: Switzerland

Carbon (or Climate) Neutrality as Defined by the Standard

This standard only refers to **climate neutrality**, which is defined as follows: "Following the IPCC definition of carbon neutrality as a state in which human activities result in no net effect on the climate system, the South Pole Climate Neutral label requires an organization to take responsibility for all of the emissions it could not avoid by buying carbon action credits" (SP, 2022).

Offsets Approach and Requirements to Grant Carbon-Neutral Certification

The standard states that carbon credits used must be recognized by ICROA. Special

criteria for selecting carbon credits include the following:

- compensation for all remaining direct and indirect emissions with carbon credits,

- third-party-verified emission reduction projects,

- clearly allocated/ownership,

- credits will only be issued after associated emissions have taken place,

- credits must be measurable, permanent, and additional, and

- credits must be retired no later than 12 months following the end of the entity's reporting period.

Key Highlights

- It is a well-known private certification program to attain carbon neutrality aimed at companies and governments.

- It develops and implements its own emission reduction projects and strategies as business opportunities.

3.1.5 Carbon Neutral Standard by SCS

Latest version: January 2022
Organization type: Private
Headquarters: United States

Carbon (or Climate) Neutrality as Defined by the Standard

This standard only refers to **carbon neutrality**, which is defined as follows: "For the subject under consideration, there is no net increase in emissions of GHGs for a specified period of time; hence, the sum for the subject's carbon footprint minus the offsetting is equivalent to zero for a specified period of time" (SCS Global Services, 2022).

Offsets Approach and Requirements to Grant Carbon-Neutral Certification

The standard does not refer to offsets endorsed by ICROA but provides a list of standards (most endorsed by ICROA) that entities can use to obtain their offsets. However, the entity can use other schemes, as long as the carbon credits comply with the following SCS requirements:

- carbon offsets must be clearly allocated and tracked back to the original project;

- they must be third-party verified against an established protocol;

- carbon offsets are additional, permanent, and prevent leakage and double counting; and

- credits must be retired on a public registry.

The standard protocol states that for the initial certification period, carbon neutrality can be achieved by purchasing carbon offsets. In the following years, certification will be granted based on a combination of reducing direct GHG emissions and compensation through carbon offsets.

Key Highlights

- It has a separate standard that considers Scope 3 emissions.

- It certifies numerous subjects, from products to buildings, entities, services, and activities.

3.1.6 Climate Neutral Certification by CNG

Latest version: September 2020
Organization type: Private
Headquarters: Netherlands

Carbon (or Climate) Neutrality as Defined by the Standard

This standard only refers to **climate neutrality**. The standard does not provide a definition of climate neutrality in the glossary. However, it says clients can claim climate neutrality once their annual reduction target is achieved and the residual emissions are offset. Through the Climate Neutral Certification Program, clients are given the tools to bring their emissions down to zero between the present and 2050, in line with the Paris Agreement, by progressively reducing emissions each year (CNG, 2020).

Offsets Approach and Requirements to Grant Carbon-Neutral Certification

The standard provides guidance on the levels of ambition required to reduce emissions and the type of offsets required to achieve neutrality (e.g., emission reductions, carbon removals).

Clients can choose to buy carbon credits from any projects, as long as they comply with a standard endorsed by ICROA. CNG is a member of ICROA and follows its code of best practice (ICROA, 2023b). On top of ICROA's criteria, CNG has put in place extra criteria to account for the additionality of projects and thus has a portfolio of projects that participants can voluntarily approach to purchase offsets.

Notably, CNG is also proposing an insetting approach to facilitate emission reductions at the supply chain level, where activities and projects are also expected to follow ICROA requirements (i.e., additionality, uniqueness, measurability, verifiability).

Key Highlights

- It is the only carbon-neutral standard following the ISEAL Codes of Good Practice; it is also a community member of the ISEAL Alliance.

- It offers certification for organizations, products, and services, with different reduction targets for each category.

3.1.7 Climate Neutral by ClimatePartner

Latest version: June 2021
Organization type: Private
Headquarters: Germany

Carbon (or Climate) Neutrality as Defined by the Standard

This standard uses **carbon and climate neutrality** interchangeably. It is important to note that, in English, the label is identified as Carbon Neutral, while the label in French and German is defined as Climate Neutral. For ClimatePartner, carbon neutral is defined as "companies, processes, and products whose GHG emissions have been calculated and offset through support for internationally recognized carbon offset projects can be considered carbon neutral. Besides avoidance and reduction, offsetting GHG emissions is an important part of a holistic climate action strategy" (ClimatePartner, 2021).

Offsets Approach and Requirements to Grant Carbon-Neutral Certification

As an ICROA-accredited organization, ClimatePartner adopts its requirements for carbon credits (i.e., real, measurable, additional, permanent, third-party verified, and unique), as well as a contribution to the United Nations Sustainable Development Goals (SDGs), such as no poverty, zero hunger, good health, and clean water and sanitation.

ClimatePartner offers clients the option to choose from their own project portfolios, which are certified under standards endorsed by ICROA.

Key Highlights

- Operates globally, but mostly in Europe.

- It covers Scope 1 and 2 emissions and specific categories of Scope 3 (i.e., employee commuting, business travel, upstream electricity, heating/cooling, and fleet).

3.1.8 Climate Neutral Certified by Climate Neutral

Latest version: October 2022
Organization type: Non-profit organization
Headquarters: United States

Carbon (or Climate) Neutrality as Defined by the Standard

This standard refers to **carbon and climate neutrality** and differentiates both concepts. "Carbon neutrality means achieving a balance between emitting carbon and absorbing carbon from the atmosphere" (Climate Neutral, 2023a); climate neutrality accounts for other GHGs

in addition to carbon. By achieving these, participants "can help accelerate the world on its path to net-zero by 2050. That's the target year for getting all of human civilization to a point where our emissions have been reduced below the amount that is absorbed through natural and man-made carbon sinks" (Climate Neutral, 2023a).

Offsets Approach and Requirements to Grant Carbon-Neutral Certification

Carbon credits must be verified according to one of the following standards: Gold Standard, Verified Carbon Standard, Climate Action Reserve, or American Carbon Registry. However, the standard allows open allocation for CO_2 removal credits: up to 5% of the carbon credit portfolio may consist of these credits, which are not verified under one of the ICROA-accredited standards. Credits must be issued and retired to count toward certification.

Key Highlights

- It is a certification standard whose requirements vary depending on the size of the company.

- The standard has a strong focus on post-certification to track progress.

3.1.9 Airport Carbon Accreditation (ACA) by ACI Europe and WSP

Latest version: November 2020

Organization type: Airports Council is an airport membership organization and WSP is a private consultancy company.

Headquarters: Belgium

Carbon (or Climate) Neutrality as Defined by the Standard

This initiative refers to **carbon neutrality**. Its glossary does not provide a definition of carbon neutral. However, to achieve carbon neutrality, airports must measure their carbon footprint for Scope 1, 2, and 3 emissions, reduce their emissions, optimize their operations, and offset residual Scope 1 and 2 emissions. Scope 3 emissions are addressed jointly with relevant stakeholders (ACI Europe, 2020).

Offsets Approach and Requirements to Grant Carbon-Neutral Certification

ACA by ACI Europe does not refer to ICROA, but it gives airports a list of standards from which they can buy offset credits (most of which are endorsed by ICROA).

In addition to the standard's protocol, ACA also provides an offsetting manual with comprehensive information about the requirements, as well as the type of offset projects accepted to obtain carbon-neutral certification.

Notably, beyond compensating by purchasing offsets, ACA recommends that airports consider the varying degree of quality (and additionality) of eligible project types. Based on this, ACA excludes the following offset types: nuclear energy, fuel switching, industrial gases

(hydrofluorocarbons and nitrous oxide), and coal mine methane. In addition, airports should seek offset labels, which, in addition to traditional offset programs, demonstrate socio-environmental benefits (e.g., Climate, Community & Biodiversity Standards).

Key Highlights

- It is a global carbon management certification program for airports that independently assesses their efforts to manage and reduce carbon emissions.

- It defines six levels of accreditation: mapping, reduction, optimization, neutrality, transformation, and transition.

By reviewing the information above, it is possible to identify the heterogeneity of approaches of the different standards. Most standard-setting organizations (BSI, CIP, SCS, SP, and ACI) refer only to carbon neutrality; however, definitions differ among them and from that of the IPCC. CNN by the UNFCCC defines both carbon neutrality and climate neutrality, indicating in practice how they may differ, while CP uses both and signals that the two terms are used as synonyms in some contexts (i.e., its label in English is carbon neutral while in German and French, it is climate neutral). Nevertheless, even though some standards refer only to carbon neutrality, the guidelines indicate that processes under the standard should consider other GHGs in producing inventories and implementing mitigation efforts.

Almost all organizations setting VCNSIs (BSI, CIP, SP, UNFCCC, SCS, CN, CP, and ACI) indicate that offsets should comply with specific requirements, in terms of aspects such as additionality, measurability, third-party verification,

and traceability. Some standards (BSI, SP, CNG, CIP, and CP) explicitly require that offsets come from standards endorsed by ICROA. Others (ACI, CN, and SCS) do not refer directly to ICROA, but the list of offset standards they accept is endorsed by the alliance. When considering the specific nature and types of carbon dynamics underlying the different offset projects, however, most standards do not make a distinction between the different types of offsets allowed. While CNN by UNFCCC identifies the different types of offsets associated with carbon neutrality and those required for climate neutrality in its definitions, this is not reflected in the practical steps for granting recognition levels. CIP provides a transition plan to phase out the use of offsets from emission reduction projects in favour of carbon removals, and CN allows the marginal use of carbon dioxide removals as part of the offsetting strategy.

Given the heterogeneity of the definitions, to understand what is included in the different standards and how their implementation contributes to net-zero targets, one should look at the concepts described in the standards themselves and not necessarily those defined by external actors, such as IPCC, or in policies or academia.

3.2 Results and Discussion of the CARE Analysis

The following sections present the main results for the four dimensions of CARE. In each dimension, specific aspects are discussed for each initiative. The average values for each indicator and for all the standards and initiatives are also presented, followed by a discussion of the best practices identified.

3.3 Coverage

The analysis of the Coverage dimension reveals the scope to which each carbon-neutral standard integrates relevant parameters and requirements for ambitious, coherent, and effective climate action through standard compliance. Table 6 illustrates whether and the degree to which each standard integrates these indicators. See Appendix A for the disaggregated Coverage results of each standard (by indicator and indicators' elements).

Table 6. Level of coverage (percentage) of Coverage indicators for each VCNSI

Indicator ID	Coverage Indicator	ACI	BSI	CIP	CN	CNG	CP	SCS	SP	UNFCCC	Indicator average
1.1	Emission scopes included in GHG inventory (Scope 1, 2 and 3)	100	83	83	83	83	83	83	83	83	**85**
1.2	Proposed methods required for GHG inventory (Scope 1, 2, 3)	100	100	100	100	100	100	100	100	67	**96**
1.3	Frequency of GHG inventory	100	100	100	100	100	100	100	100	100	**100**
1.4	Criteria for the revision of GHG inventory	100	75	100	50	100	50	50	50	50	**69**
1.5	Criteria for the ambition of mitigation strategy	100	67	100	100	100	100	67	100	67	**89**
1.6	Verification of results of mitigation strategies	100	67	33	33	100	67	67	67	33	**63**
1.7	Criteria for the ambition of the compensation strategy (of Scope 1, 2, 3 residual emissions)	100	89	89	89	89	89	67	89	33	**81**
1.8	Criteria for eligibility of offsets	100	80	100	90	100	90	90	90	50	**88**
1.9	Criteria for handling offsets (i.e., in case of reversals, to prevent double counting)	100	100	100	100	100	100	100	100	20	**91**
	VCNSI average	**100**	**83**	**87**	**84**	**97**	**89**	**80**	**89**	**52**	**84**

Source: Authors.

Note: As mentioned in the CARE methodology section, high coverage is represented by scores closer to 100, and lower coverage is represented by scores closer to 0. A 100 score indicates the VCNSI follows best practice; a score between 0 and 100 indicates the VCNSI has room for improvement; and a score of 0 indicates poor performance.

3.3.1 GHG Inventories

The first aspects we examine refer to the requirements for GHG inventories. We look at the protocol document of each standard to understand the guidelines for the inclusion of emission processes of Scopes 1, 2, and 3 in GHG inventories.

In general, VCNSIs have different options to define the boundaries and objects of certification—for instance, for products, events, facilities, and, most commonly, an entire company. In practice, this creates different sub-certification modalities under the same standards. For each modality, the rules of the standard indicate which emission processes are required, recommended, or can be excluded. All the VCNSIs analyzed require estimating the emissions of Scope 1 and 2 in all their certification modalities (i.e. products, events, facilities). In addition, they all have at least one certification modality with a higher level of ambition, setting guidelines for considering Scope 3 emission processes in the inventories (for instance, SCS has a label specifically designed for those companies that integrate Scope 3 emissions) However, this creates two challenges. First, participant organizations using the standards may not choose the most stringent certification modality and may opt for options that do not include all GHG emission processes. Second, for the certification modalities considering Scope 3, some standards (those developed by CIP, CNG, CP) provide a comprehensive list of Scope 3 emissions categories that may be

excluded from an organization's inventory, depending on the object of certification (i.e. activity, event, project). Finally, other standards, such as those by SCS and SP, predefine which scope emission categories apply for different objects of certification (product, organization, event, etc.). This initial step is critical in assessing the contribution of the standard because mitigation and compensation strategies are only defined for the emission scopes and categories included.

All standards say emissions inventories should consider information on the main GHGs, not only CO_2 figures. However, none of them refer explicitly to black carbon[15] (this may be required by the specific methodology used to prepare the GHG inventory, but we believe the standards should specify this). The benchmark or best practice is set by standards requiring the consideration of all emissions from the three scopes and that also provide guidelines for the inclusion (or justified exclusion) of Scope 3 emission categories according to different levels of performance or objects of certification.[16]

Another aspect relates to the methodologies that VCNSIs propose for developing GHG inventories. The benchmark or best practice is standards requiring the use of recognized methodologies (i.e., ISO 14064; GHG Protocol, IPCC Guidelines) to calculate inventories. It is important to point out that while almost all standards recommend the use of recognized methodologies, this does not mean the inventories prepared should

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[15] Black carbon itself is not a GHG, but it does have a significant impact on atmospheric warming. Black carbon particles are released into the atmosphere through the incomplete combustion of fossil fuels, biomass, or biofuels. Particles heat the atmosphere and when they are deposited on snow and ice surfaces, they reduce the reflectivity and accelerate melting. In addition to not being a gas per se, black carbon differentiates from other GHG in that it stays in the atmosphere for only a couple of days/weeks, whereas GHG have longer life cycles (e.g., CO_2 stays in the atmosphere for more than 100 years) (Ramanathan & Carmichael, 2008).

[16] Performance levels are discussed in detail in Responsiveness.

be certified based on those methodologies (e.g., participants may use ISO 14064 but may not be required to certify under the ISO). Furthermore, ACA and CNG have a higher mark because they require site visits to validate the inventories. These are followed by PAS, which allows for in-person and virtual visits. The remaining standards review the inventories but without site visits.

The frequency of preparing GHG inventories is also important. We consider the benchmark to be every 1 or 2 years (based on IPCC guidelines) (IPCC, 2018c). All standards reviewed require inventories at the company level to be prepared annually. In some modalities—for instance, in the certification of emissions from products— some standards, such as CP, allow these to be calculated up to every 3 years.

3.3.2 Ambition of Mitigation Strategies

Once companies produce their GHG inventories, they are required to reduce emissions, ideally through setting ambitious mitigation strategies. Meaningful action requires emission reduction targets to be aligned with net-zero goals and 1.5°C pathways (IPCC, 2018b). It is critical to clarify that compensation practices, or the purchase of carbon offsets, are not substitutes for direct emission reduction or mitigation actions. The best practices that standards should set are, first, to require a certain amount of emission reductions that are aligned with ambitious and meaningful targets (e.g., toward net-zero) and second, to require compensation for unabated emissions. In general, all standards say participants should first reduce emissions and then compensate. However, not all the

standards include guidelines for establishing ambitious mitigation targets, and some, such as the one by SCS, grant carbon neutrality certification in the first years of compliance solely based on offsetting, with the understanding that mitigation actions are about to start. This process implies that after the second year, compliant companies or participants should demonstrate advancements in their emission reduction strategies.[17] All standards (except those by BSI and and SCS) explicitly mention the Paris Agreement and/or the SBTi as the condition to set more ambitious requirements for setting mitigation goals.

3.3.3 Eligible Offsets and Management

The next aspect that we examined is the specification for the offsets allowed for compensating unabated emissions. As mentioned in Section 3.1, most standards consider offset programs endorsed by ICROA. In general, *there are no specific guidelines* on the type of offsets or projects allowed (i.e., offsets from emission reductions, temporary carbon removals, or long-term carbon removal projects), though exceptions are found in the guidelines from UNFCCC, CIP, and CNG. However, it is important that these specific guidelines are consistent with a net-zero scenario in which there is a balance between emissions and removals. The benchmark or best practice therefore is to favour the use of offsets from carbon removals when offsetting unabated emissions (Mulligan, et al., 2023). Still, under the current guidelines of some standards, participants can claim to be carbon neutral in the first years of compliance, based predominantly on the use of offsets, without first reducing

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[17] This creates challenges for including ambitious mitigation actions for events certified under the standards, since, by definition, they are short-term activities.

their emissions consistently with net-zero goals—and this can be problematic and generate confusion. Furthermore, as already mentioned, not all certification modalities include Scope 3 emissions.

Another aspect of Coverage pertains to the criteria for handling offsets—these are the steps required to cancel or retire them from the market. As a benchmark, standards should verify that participants have effectively retired the certificates, that they have not been used for other purposes to prevent double counting (i.e., are not used as part of cap-and-trade systems or to deduct carbon taxes), and that projects associated with the offsets have not produced "reversals" (ICORA, 2023b). This will require independent verification and communication between the standard-setting organizations and the registries of the offsets used (e.g., VCS, Gold Standard, CAR). While some standards, including CNG and ACA, require proof of retirement of the offsets by the compliant companies or participants, none verify this through formal mechanisms with registries tracking usage of offsets. Finally, when dealing with offsets, there is a risk of reversals in some cases. Although the different offset certification schemes issuing the offsets should address this issue in the case of reversals of their projects, carbon-neutral standards should include considerations and guidelines indicating the steps to be taken by participants should the offsets used for achieving carbon neutrality be reverted. None of the standards include criteria related to this issue.

3.4 Assurance

The analysis of the indicators of Assurance explores the aspects considered to promote and guarantee compliance with the scope of the standards. Table 7 presents the extent to which each VCNSI covers the Assurance indicators. See Appendix A for the disaggregated Assurance results of each VCNSI (by indicator and indicators' elements).

Many lessons have already been learned from other voluntary certification standards and initiatives about quality assurance. These lessons underpin, for instance, the importance of having a formal controlled standard, the role of competent and independent third-party verifications, and clear verification guidelines for assessing compliance (ISEAL Alliance, 2018). It is also good practice to define when it is necessary to perform site conformity assessment visits and which elements should be assessed in the field.

Table 7. Level of coverage (percentage) of Assurance indicators for each VCNSI

Indicator ID	Assurance Indicator	ACI	BSI	CIP	CN	CNG	CP	SCS	SP	UNFCCC	Indicator average
2.1	Standard availability	100	50	100	100	100	50	100	50	100	**83**
2.2	Conformity assessment for inventories	67	33	67	67	67	67	67	67	67	**63**
2.3	Conformity assessment for mitigation	67	33	67	67	67	67	67	67	67	**63**
2.4	Conformity assessment for compensation	100	100	100	100	100	100	100	100	100	**100**
2.5	Site audit considerations	100	50	100	0	100	50	50	50	50	**61**
2.6	Auditor competency and independent oversight mechanisms	100	50	100	50	100	50	100	50	0	**67**
2.7	Compliance with an external assurance code	0	0	100	0	100	0	50	0	0	**28**
2.8	Frequency of verification/ certification	100	0	100	100	100	100	100	100	100	**89**
2.9	Supply chain considerations	0	33	50	33	67	50	50	33	0	**35**
	VCNSI average	**71**	**40**	**83**	**67**	**86**	**67**	**79**	**64**	**60**	**69**

Source: Authors.

Note: As mentioned in the CARE methodology section, high coverage is represented by scores closer to 100, and lower coverage is represented by scores closer to 0. A 100 score indicates the VCNSI follows best practice; a score between 0 and 100 indicates the VCNSI has room for improvement; and a score of 0 indicates poor performance.

3.4.1 Availability of Standard and Verification Guidelines

The first element we considered in our analysis of VCNSIs is the formality or the existence of specific documents that clearly and extensively describe the assurance procedures of each "standard" or "verification guidelines." Ideally, these should be public, official, and controlled documents (i.e., a document that undergoes a formal review, approval, and controlled distribution and is updated periodically). Such official documents facilitate the understanding of the standards or initiative and the processes and criteria for the evaluation of performance of compliant participants. As best practice, the standards protocols should include a glossary of terms, including the definition of carbon or climate neutrality and the source of such definitions (e.g., IPCC). They should also

specify, in detail, the program requirements, verification guidelines, conditions to grant recognition (and, if applicable, different levels of recognition), and guidelines for using logos, communications, etc.

We found most information about the standards and initiatives on their websites and in official documents, though some specific issues that needed clarification were addressed verbally during the interviews. This is a weakness of the schemes, as the requirements and guidelines for compliance are dispersed and not presented systematically and homogeneously to participants in a single document. CIP, ACA, and CNG have the most comprehensive documents, including detailed information about requirements to obtain carbon-neutral certification. From all consulted standards, seven protocols were publicly available, one was available upon request, and one was available for a fee (PAS 2060:2014). Standard-setting organizations such as CIP and CN update their protocols annually. For reference, CN retains past versions of its standard on its website.

3.4.2 Processes for Conformity Assessment

Two standard-setting organizations (BSI and UNFCCC) allow conformity self-assessment to evaluate GHG inventories and mitigation strategies. All the others, except ACA, rely on second-party assessment; third-party assessment is recommended but not required. However, ACA requires third-party assessment for evaluating mitigation and compensation strategies.

In the case of conformity assessment for compensation through offsets, all standards require offset credits to be third-party

verified by a legitimate certifier (usually recognized by ICROA). However, there are no requirements for the external verification of mitigation strategies or a detailed guideline for offset management (i.e., to prevent double counting and in case of reversals) (except for ACA). As best practice, UNFCCC specifies that higher levels of recognition or performance level in the evaluation of GHG inventories can be obtained only after third-party verification. It should be recalled that although the standards may require a recognized methodology for preparing GHG inventories and then third-party verification, this does not necessarily imply that the inventory is certified by the methodologies (e.g., GHG Protocol, PAS 2050, ISO 14064) but only that a competent third party has reviewed it for the purposes of the carbon neutrality standard.

Furthermore, VCNSIs should include independent assurance processes to prevent conflicts of interest or perverse incentives, for instance, when standard-setting organizations have various sources of finance, including fees paid by entities for participating in the schemes, consultancy services offered to the participants, or even commissions on the sale of offsets from specific projects.

For example, if a standard-setting organization offers consultancy services for preparing a GHG inventory or a mitigation strategy, then, by definition, the conformity assessment should not be done by the second party (staff of the organization running the standard) to maintain independence. If the organization also gets a commission on offsets sold to participants, this can create a conflict of interest, as there could be incentives for reporting more emissions in the GHG inventories or limiting the ambition of the mitigation

strategy to increase the sale of offsets and associated revenues.

The situation worsens when third-party verification is not included in assurance processes (i.e., independent evaluation of GHG inventories and mitigation strategies and their implementation). We have set as a benchmark or best practice that standards should maintain independence, objectivity, and transparency in their processes and should also publicly disclose any potential conflicts of interest that may exist, along with specifying any provisions to prevent them. In the standards we reviewed, there are no specific mentions of potential conflicts of interest at the board, standard secretariat, or staff levels.

3.4.3 External Assurance Codes

It is a benchmark for standards to be bound by and subject to external assurance codes or quality processes (e.g., ISO, ISEAL) to strengthen their credibility. Our review found that only CNG is an ISEAL community member. Other organizations, such as CP, have a third party certify their carbon footprint methodologies. In addition, the BSI—an accredited organization complying with different quality standards—has formally defined PAS 2060 as a controlled document and certification standard.

3.4.4 Site Audits

We identified two good practices coming from ACI and CNG, which define in which cases site visits are required to conduct the conformity assessment. However, in our review of the standards, we did not identify official documents specifying the criteria for the development of site visits as part of the conformity-assessment process. This does not mean that site visits do not take place;

however, they may not be officially and clearly defined in the formal documents.

3.4.5 Audit Bodies

It is necessary to establish who can perform third-party verifications or evaluations. The standard-setting organizations can certify the auditors directly or indicate the qualifications and experience required by audit bodies. In our review, we found that some of the standards include requirements for third-party verification of GHG inventories (i.e., BSI, UNFCCC, CIP, and ACI say verifying organizations should be specifically accredited to verify GHG inventories, while CNG gives additional training to auditors).

3.4.6 Frequency of Certification/Verification

As a best practice, the standards protocols should specify the frequency of the certification and conformity-assessment processes (ISEAL, 2018). All initiatives set a timeline for companies to submit their updated information, and as part of each submission, there are specific processes to assess conformity with the standards. The frequency for updating information and assessing conformity is usually once a year, though the period could be longer depending on the size of the company (SMEs in the case of CN) or the subject of certification (e.g., up to 3 years for products in the case of CP).

3.4.7 Traceability and Supply Chains

As many companies are part of different supply chains and their goods become inputs for other companies, it is important to explore whether the standards have specific guidance to trace certified products

along supply chains. While we identified the guidelines for the communication and use of brands and logos by certified organizations and in final products, we did not find specific directives that are applicable across the supply chains (i.e., the standard has requirements and guidelines for the traceability of products and an assurance program to track claims from downstream users of certified products within a supply-chain). Furthermore, while there are guidelines for the use of logos, we did not find provisions or guidelines to assess compliance with their usage.

While there is a need to keep finding solutions to challenges in traceability systems, such as data gaps and data disparity within a supply chain (Raghavan, 2023), companies can still integrate additional efforts into their carbon management plans. Investing in carbon reduction projects within a company's supply chain (insetting) is a main avenue to decarbonize entire production processes. Through insetting, companies can invest in areas specific to their needs. For instance, a company relying on agriculture for their raw materials can invest in agroforestry projects. From the VCNSIs analyzed, only CNG considers insetting, along with other approaches,[18] to account for the complexity of traceability, to help reduce emissions in the supply chains and Scope 3 processes of its participants (CNG, 2020).

3.5 Responsiveness

This section describes the indicators included for assessing the dimension of responsiveness of VCNSIs, which looks at how standards evolve and adapt in a changing environment and respond to the needs of different users and realities. Table 8 presents the findings of the integration of Responsiveness indicators. See Appendix A for the disaggregated Responsiveness results of each VCNSI (by indicator and indicators' elements).

3.5.1 Periodic Review and Update

In the constantly evolving context of climate action, it is critical to periodically update VCNSIs to adapt to new developments, scientific information, and policies. The benchmark or best practice is that standards should be revised and updated at least every 5 years (ISEAL, 2018). Critical aspects of periodically reviewing and updating include the definitions of carbon and climate neutrality, criteria for establishing and revising mitigation goals and progress, guidelines on the types of offsets allowed, and the specific guidelines for conformity assessment. Most current versions of standards were published by 2020 or afterwards; a notable case is CIP, which updates the Carbon Neutral Protocol annually to reflect scientific and policy developments. On the other extreme, BSI has not updated their standard, PAS 2060, since it was published in 2014. Thus, it does not include relevant information stemming from the Paris Agreement or more recent definitions of carbon neutrality (i.e., by IPCC) in the context of net-zero goals.

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[18] For more information, see CNG (2022).

Table 8. Level of coverage (percentage) of Responsiveness indicators for each VCNSI

Indicator ID	Responsiveness Indicator	ACI	BSI	CIP	CN	CNG	CP	SCS	SP	UNFCCC	Indicator average
3.1	Revision period of the standard	0	50	100	100	0	100	100	100	0	**61**
3.2	Performance levels	100	0	0	50	33	0	33	0	100	**35**
3.3	Requirements for continuous improvement	100	0	100	100	100	100	100	100	0	**78**
3.4	Incentives for exceeding basic compliance	100	0	0	0	0	0	0	0	0	**11**
3.5	Technical assistance materials	100	100	100	100	100	100	100	100	0	**89**
3.6	Specific considerations for SMEs	100	0	50	100	50	100	0	0	0	**44**
3.7	Recognition of compliance with other standards	100	100	100	100	100	100	100	100	0	**89**
	VCNSI average	**89**	**28**	**50**	**72**	**50**	**56**	**56**	**44**	**33**	**53**

Source: Authors.

Note: As mentioned in the CARE methodology section, high coverage is represented by scores closer to 100, and lower coverage is represented by scores closer to 0. A 100 score indicates the VCNSI follows best practice; a score between 0 and 100 indicates the VCNSI has room for improvement; and a score of 0 indicates poor performance.

3.5.2 Performance Levels

VCNSIs need to consider how to incorporate and communicate to stakeholders (particularly end consumers) the different and complex processes and elements required to achieve carbon-neutrality certification. Elements that can vary among participants are whether GHG inventories include emissions from the three scopes, whether third parties verify such inventories, the ambition of the mitigation plans, and their results after implementation, among others. Fully implementing a comprehensive mitigation strategy will usually take time, so there will be a transition period. The challenge faced by carbon-neutral standards is to synthesize all this information—and a wide range of possible results—into one discrete metric related to carbon or climate neutrality and grant the use of a homogenous logo for communication (i.e., certified or not certified).

Some standards (e.g., SCS) grant carbon-neutral labels to companies that have just enrolled in their programs on the promise

they plan to reduce emissions in the coming years, even if not all emission scopes and processes are included. The use of offsets is allowed to fill the gap in emissions still to be reduced. However, it could be disputed whether this level of recognition should be the same as that granted to other organizations that, over some years, have already reduced their emissions consistently with 1.5°C pathways and offset residual emissions.

In this context, we explored whether standards assign different performance levels to compliant companies and organizations as a means of providing more detailed information to different stakeholders on the actual progress they made to reduce GHG emissions, and the challenges that lie ahead. Defining different performance levels can be a way to provide more context about the actual progress of participating companies and organizations in reducing their emissions. When defining such performance levels, it would be necessary to include clear criteria and reserve the highest level of recognition for the most comprehensive and ambitious (already implemented) actions to reduce GHG emissions consistent with 1.5°C pathways. This would be essential to prevent greenwashing. Using different logos and labels can also help to communicate these performance levels. The basic levels of recognition may acknowledge early actions but should also include information about their limitations. Standard-setting organizations should grant recognition levels consistent with what is actually done and achieved.

Only CNN by UNFCCC and ACA by ACI include different performance levels as part of their recognition systems. The CNN initiative provides a medal-based system of performance to show the different levels of

progress of the companies and organizations participating in the initiative. This shows advancements in the three main processes: measuring GHG emissions, reducing emissions, and offsetting. The initiative evaluates the efforts made by participants on each of these processes, designating them as bronze, silver, and gold. The higher levels of recognition are granted only to companies that have included all three scopes of emissions in their inventories and have had them verified by a competent third party, those that have assumed net-zero targets and year-to-year reduction goals (which are reported annually), and those that have made a full contribution (offset) to all unabated emissions, including Scope 3. ACI assigns the progress made by participants to one of four different levels, with the higher levels involving more complete and ambitious actions.

3.5.3 Continuous Improvement

We also examined whether the standards invite or require participants to show continuous improvement to comply with their schemes and guidelines beyond the goals associated with mitigation or offsetting GHG emissions. Requirements for continuous improvement, specifically in mitigation and offsetting, are included under the Coverage section. CN includes requirements related to an additional aspect called "advocacy" in its protocol, through which the standard encourages companies to engage in lobbying, education, and stakeholder mobilization efforts to support climate action.

3.5.4 Incentives, Resources, and Local Considerations

Standards can include specific guidelines to adapt and respond to the needs of different local contexts—for instance, by

keeping the standards protocols available to the public and in different languages. They can also include guidance to promote the participation of local auditors to reduce costs, offer incentives for exceeding compliance, provide capacity building to participants, or consider the special conditions of SMEs. These efforts can be useful to encourage SMEs and companies in developing and non-English-speaking countries to participate, become compliant, and strengthen the overall governance of carbon neutrality at regional scales and in different industry sectors.

We found that none of the standards offers incentives for exceeding basic compliance, though most provide some capacity building and assistance. Only CN offers specific considerations for SMEs, establishing different requirements depending on the company's size. ACI has differentiated requirements depending on the airport's size, even allowing for grouped certification (operators with multiple small airports). Most of the information across standards is available only in English, though CNG and CP are available in French and German.

3.5.5 Mutual Recognition

Standards increase their responsiveness by recognizing other carbon-neutral initiatives and schemes. The nine evaluated standards recognize various methodologies for elaborating GHG inventories, and they also acknowledge the work of other carbon-neutrality standard-setting organizations. For instance, if an organization that complies with a carbon-neutral standard wants to change to use another one, previous work could be acknowledged and assessed against the guidelines of the new standard.

3.6 Engagement

This section shows the indicators that we have considered to assess the Engagement dimension of VCNIS, which looks at how standard-setting organizations promote participatory governance. Table 9 presents the findings, describing the dimension of Engagement of the VCNSIs considered. See Appendix A for the disaggregated Engagement results of each VCNSI (by indicator and indicators' elements).

Table 9. Level of coverage (percentage) of Engagement indicators for each VCNSI

Indicator ID	Engagement Indicator	ACI	BSI	CIP	CN	CNG	CP	SCS	SP	UNFCCC	Indicator average
4.1	Availability of standard-setting procedures	50	100	0	0	100	100	0	0	0	**39**
4.2	Geographical representation in the board of the standard-setting organization	0	0	0	0	0	0	0	0	50	**6**

Indicator ID	Engagement Indicator	ACI	BSI	CIP	CN	CNG	CP	SCS	SP	UNFCCC	Indicator average
4.3	Gender representation in the board of the standard-setting organization	0	100	50	0	0	0	50	100	25	**36**
4.4	Multistakeholder representation in the board of the standard-setting organization	43	29	14	86	29	0	14	43	0	**29**
4.5	Stakeholder consultation in standard-setting	0	100	100	100	100	100	100	100	0	**78**
4.6	Stakeholder evaluation of results and claims made by compliant companies	0	0	50	100	100	100	0	0	0	**39**
4.7	Availability of public complaints procedures	0	0	0	0	50	0	50	0	0	**11**
4.8	Independent dispute resolution body	0	0	0	0	50	0	50	0	0	**11**
4.9	Availability of annual reports	100	100	0	100	100	0	100	100	0	**67**
4.10	Availability of information about board membership	100	100	100	100	0	0	50	100	0	**61**
4.11	Availability of list of applicant companies	0	0	0	0	0	0	0	0	100	**11**
4.12	Availability of list of compliant companies	100	0	50	100	0	100	100	100	0	**61**
4.13	Availability of impact reports of compliant companies	0	100	0	0	0	100	0	0	0	**22**
	Standard average	**33**	**45**	**25**	**55**	**35**	**25**	**33**	**45**	**10**	**33**

Source: Authors.

Note: As mentioned in the CARE methodology section, high coverage is represented by scores closer to 100, and lower coverage is represented by scores closer to 0. A 100 score indicates the VCNSI follows best practice; a score between 0 and 100 indicates the VCNSI has room for improvement; and a score of 0 indicates poor performance.

The fourth dimension of analysis, Engagement, refers to the processes considered by standard-setting organizations to approach different social and economic groups (how their views and input are integrated into the design and governance of each scheme). Local and specific climate actions must address issues of social and climatic justice and equity, especially to contribute to fair global climate mitigation efforts and sustainability (e.g., Sustainable Development Goal 13). Promoting participatory governance systems is one consistent tool and process to encourage equity (Fritz et al., 2014). Moreover, as claims derived from using these standards help compliant companies differentiate and improve their image, reputation, and performance among consumers and investors, there is a need to leverage for accountability and transparency that back up any claims. This section focuses on aspects related to transparency, inclusiveness, and dispute-resolution mechanisms.

3.6.1 Background and Standard Setting

Initiatives emerge in various contexts. Those included in this report range from private, for-profit organizations (BSI, SP, SCS, CP, CIP, CNG) to non-profit organizations (CN, ACI) and initiatives run by multilateral bodies (UNFCCC). By differentiating the origin of each scheme, it is possible to understand the different approaches to engagement. The nature of the standard-setting organizations defines the approach of the schemes and sets specific conditions regarding the confidentiality and privacy of information, sources of funding, and so on. It also tells a story of how the standards were designed and created. CNG and ACI are the only

initiatives of the nine examined that have publicly available procedures on how the standards were set.

3.6.2 Board Diversity

Creating inclusive and diverse bodies that govern and manage the schemes is important to ensuring that different perspectives and needs of affecting actors are considered, while promoting participation, justice, and equity (i.e., gender, geographical, and sectoral). While most of the initiatives examined in this report operate from the Global North, some of their certified companies have operations in Global South countries. Furthermore, most of the offset projects that companies are required to support as part of their compensation strategy operate in developing countries. Therefore, geographical representation on committee boards is essential to ensure that the benefits of certification expand beyond the compliant company.

In terms of gender, our benchmark looked for a 50/50 women-to-men ratio. Only SP had mostly women on its board, while the SCS and PAS boards were balanced. The other boards are predominantly male, or information was not available. Nonetheless, it is important to highlight that gender representation should intersect with other characteristics, such as race (Creary et al., 2019; Diligent Institute, 2021) (i.e., a board with 50/50 white women and white men is not the same as a board with 50/50 non-white women and men). The score of the VCNSIs examined is relatively low in the indicators related to board diversity. In some cases, in fact, there are no specific boards for managing the standards. This may be explained by the origin of the initiatives but also by the resources available and the vision of the management team.

3.6.3 Stakeholder Participation

Other measures that standards can adopt to increase engagement include creating opportunities for public consultation and participation in the design of the standard, as well as in the update, review, and evaluation of its results. Our findings indicate that stakeholders participate more in the design of the standards and much less in the evaluation of their results (in terms of emission reductions) and claims made by participating companies. Relatively higher levels of public participation in evaluation processes were found for CNG, CN, and CIP. The participation of different stakeholders in the evaluation of results and claims is an opportunity to increase transparency and strengthen the governance of carbon/climate neutrality.

3.6.4 Complaint and Dispute-Resolution Procedures

Rules and guidelines for conflict resolution are essential parts of governance systems. Thus, we explored whether standards welcome and process public complaints, define procedures for conflict resolutions, or offer other independent procedures, as these help enhance transparency and accountability. In other words, these procedures can help to maintain impartiality and avoid conflict of interest, as well as reflecting multiple stakeholder interests. Only five of the VCNSIs (those by BSI, CNG, SCS, CIP, and ACI) include measures that enable conducting and receiving public complaints or conflict resolution processes. BSI's website, for instance, provides a good example of how to receive customer feedback.[19]

3.6.5 Public Information

Disclosing information about the results and impacts of the standard or initiative enhances accountability, and transparency. To track results and the impact of the standard, it is important to know if the standard-setting organization compiles historical information about emissions, emissions reduced, and compensation. The main challenge is the revision of baseline scenarios and the quantification of emission reductions achieved by participants, although this should be reflected in subsequent GHG inventories as reductions of absolute emissions. The best practice for a standard would be to present the absolute emission levels generated each year by the participating companies. Ideally, this would show a declining trend, depicting the implementation of mitigation actions and the volume of offsets used to compensate for residual emissions by type of offset.

Standard-setting organizations usually use the aggregated number of total emissions they have helped reduce or avoid through their certified companies, but few report the actual emissions of the companies they are certifying. Only CN's website provides the number of emissions that each of its certified companies has compensated for (Climate Neutral, 2023b). Other standards offer information about their certified companies through case studies without revealing their actual emissions or amounts reduced and compensated amounts. CP is among the standard-setting organizations that share information about a given carbon-neutral-certified product or company through a QR code, which consumers must scan to access the company's climate action strategies (CP, 2021). Other standard-setting organizations,

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[19] See: https://www.bsigroup.com/en-GB/about-bsi/governance/Customer-Feedback-Policy-and-Procedure/

such as SCS, will share this information with consumers upon request (SCS, 2022).

For transparency purposes and engagement with final consumers, we believe that sharing public reports of compliant companies is a good practice. However, companies' numbers (total GHG emissions reduced and compensated for) may not be comparable across standards because of the different considerations made and methodologies used for GHG inventories, along with the different offset projects that companies are allowed/required to purchase. There are concerns among private schemes that information about their clients cannot be disclosed due to confidentiality restrictions. Still, if results and impacts are presented in aggregated form, the standards impacts and contributions can be communicated. In conclusion, as a benchmark or best practice, information of GHG emissions should be presented in absolute terms (i.e., tonnes of CO_2e emitted, reduced, and offset); in addition, the percentage of reduced emissions achieved and the percentage of participants that are following a consistent 1.5°C pathway should be displayed.

3.7 Conclusions

In this report, we have analyzed and discussed the main characteristics of nine leading VCNSIs through the lens of the CARE methodology developed by IISD. We sought to identify best practices through benchmarking and analyzing their potential to contribute to ambitious climate action, as well as any room for improvement. These schemes have proliferated and quickly evolved since the emergence of the concepts of carbon and climate neutrality in the span of almost 3 decades. In turn, the number of organizations seeking certification has also increased, so it is crucial to understand the methodologies, rules, and processes that different standards and initiatives use to allow companies to claim carbon and climate neutrality. We hope the findings and recommendations stemming from this report inform the design or adaptation of the standards and initiatives analyzed and of those based in other geographies.

In general, these schemes are a positive voluntary tool for climate change mitigation. Participation in VCNSIs implies that companies are undertaking specific actions for climate mitigation, so we expect it to produce positive results (i.e., some level of emission reduction and offsetting). This assumes that the companies would not carry out these activities if they were not taking part in the schemes. Nevertheless, after reviewing the details of different standards and initiatives examined, we identified specific opportunities to leverage a systematic and effective contribution to ambitious climate action. The main recommendations for each dimension of CARE are presented below.

4.0 Recommendations

4.1 Coverage Recommendations

Although coverage had the highest marks, critical aspects of this dimension must be addressed to ensure the implementation of ambitious mitigation actions consistent with net-zero targets.

- VCNSIs may have to consider the urgency for ambitious climate action and create more stringent requirements for emission reductions, including short- and long-term plans.

- VCNSIs should work towards harmonizing definitions, approaches, and rules in order to make it more feasible to compare the performance of "carbon-neutral" companies (or products, or events) across VCNSIs.

- VCNSIs should set clear criteria for mitigation strategies requirements aligned with 1.5°C pathways; sometimes, criteria for setting targets were unclear, with suggestions such as "reduce as possible" or "reduce emissions that can be reduced." One option would be to require back-up information as periodically updated abatement curves to justify which emissions cannot be initially addressed.

- VCNSIs should set clear guidance on the roles that different types of offsets can have in compensation strategies, especially in the long term (i.e., emission reductions, temporary removals, and long-term removals). In addition, VCNSIs usually rely on recognized offset certifications to ensure participants purchase high-quality offsets. Nonetheless, VCNSIs could be more involved to prevent double counting or let participants know what to do in the event of reversals.

4.2 Assurance Recommendations

Assurance processes could be of higher quality and benefit from systematization across standards.

- VCNSIs should increase the use of third-party verification and site visits to review not only the GHG inventories but also mitigation efforts and the handling of offsets. It is vital to maintain a principle of independence in these processes to avoid potential conflicts of interest. It is also important to clarify when other methodologies are only suggested, strictly required, or when they should have their own certification processes (e.g., to get GHG inventories certified under ISO-14064 or the GHG Protocol). These recommendations are cost-sensitive, so certain options could be considered to ease costs in favour of SMEs (as discussed in the section on Responsiveness).

- VCNSIs should systematize and incorporate controlled documents that explain the assurance and conformity assessment process. This could be addressed by complying with quality control (ISO 9000) and ISEAL guidelines. We found it useful to include a glossary and definitions, as well as sources used for these definitions.

- VCNSIs should make previous versions of the standard protocols available to participating companies for transitioning to new versions.

- In relation to addressing Scope 3 emissions, standards could incentivize insetting emission reduction initiatives, which can directly target the supply chains of participating

organizations and improve the traceability of Scope 3 emissions (not only carbon emissions, but it can also be helpful for other sustainability metrics). Therefore, guidelines for the traceability of certified products or materials for supply chains must be leveraged.

4.3 Responsiveness Recommendations

Standards could improve their responsiveness by introducing performance levels in their certification, as well as adapting their standards to target SMEs and Global South-based organizations.

- VCNSI should keep working on including new scientific and policy development elements in their revised versions. This can boost the contributions of VCNSIs to ambitious climate action and net-zero goals and to close the emissions gap to achieve 1.5°C.

- VCNSIs can offer an evaluation scale with different performance levels, such as the one developed by UNFCCC. Different recognition levels for the GHG inventories prepared, mitigation strategies, and compensation practices can help address issues of transparency. In addition, in this case, different performance levels could be more inclusive of SMEs, as initial performance levels can rely on first- or second-party reviews and have little or no cost. When a company is being certified under a standard, it is very challenging to describe all elements considered (and excluded), assumptions and decisions made,

and actions and progress achieved in one label. We believe any labels or logos that are communicated to end consumers and other relevant stakeholders (such as companies at other levels of the supply chain or regulators) should be as self-explanatory as possible in terms of the following:

- providing basic details about the limits and advancements of the steps taken by compliant companies to prepare GHG inventories, mitigation strategies, and compensation efforts;

- granting different levels of recognition for participants according to the actual progress made (i.e., include different recognition levels for those organizations starting implementation *[ex-ante]* versus those that already delivered ambitious results *[ex-post]*), with their correspondent logos; and

- offering information indicating when efforts made are aligned with net-zero targets.

- VCNSIs could also consider the implementation of simplified processes for SMEs with their own performance levels and to provide tailored tools and technical services. However, it is important to make standards accessible to SMEs and in other geographies—and for this to happen, the standards and guidelines must be translated into other languages.

4.4 Engagement Recommendations

Although most VCNSIs are private, their engagement activities should be improved to increase the value of certifications.

- VCNSIs should work on including issues of access to information and conflict resolution in their standards protocols.

- VCNSIs need to increase the geographic, gender, and sectoral diversity of boards.

- VCNSIs should engage stakeholders not only in standard-setting processes but also in evaluating results and claims by participants.

- VCNSIs should work on making information about applicants and the results publicly available. Although we understand it needs to be done in a way that protects the confidentiality of information of their clients, VCNSIs could shift their focus from a service that also spotlights the interests of the end consumer and other relevant stakeholders.

- VCNSIs' core objective must be to provide transparent, reliable, complete, verifiable, and objective information on meaningful climate action.

- VCNSIs must communicate to consumers and stakeholders the progress made by certified organizations on their carbon management efforts. It is important to inform and educate the public on what is included in each certification to materialize its value and spark demand.

4.5 Final Remarks

Although these standards coexist and compete, they have a mutual objective of showing companies and organizations how they can voluntarily contribute to climate action and climate neutrality and share this information with a range of stakeholders. However, a lack of coordination and weak sectoral governance are at the root of many of the challenges identified in this report. Perhaps it is time to consider forming an overseeing body for VCNSIs in the same manner that ICROA works with carbon offset standards. One important goal (and challenge) would be to align the efforts of the different standard-setting organizations to ensure they all incorporate key elements to foster the comparability, traceability, effectiveness, transparency, and credibility of carbon- and climate-neutral initiatives. A complementary goal would be to promote and increase the uptake of carbon management to contribute effectively and credibly to climate action. Ideally, there should be a consensus among all standards to agree on what carbon and climate neutrality are and how they are achieved, including bottom lines for preparing GHG inventories, reducing emissions, and deciding on the role of offsets.

VCNSIs generate valuable information that tracks the progress of the climate action implemented by participating organizations. However, it is essential to align information on the actual impact generated by certified entities and the messages that are communicated to end consumers and other stakeholders through logos and labels. Moreover, we consider it important to rethink the use of static concepts such as carbon and climate neutrality that might depict a state in which certified participants have already complied with their share of action to address the climate emergency

by managing their carbon emissions. We recommend shifting the focus of these initiatives to a systematic approach that shows the dynamic progress made by participants in measuring, reducing and offsetting their carbon emissions. This will make the initiatives more transparent, and help provide a better understanding of the impacts of participant entities. This kind of labelling and its positioning of VCNSIs as climate action progress-monitoring initiatives (or something similar) proposes a dynamic and responsive system for communicating claims made by participants more accurately. It is important to stress again that this requires strengthening the governance of the sector and informing and educating different stakeholders about the value and implications of these efforts.

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