

Increased transparency and documentation of private sector contributions to NDCs



A comparative analysis of greenhouse-gas emissions-reporting protocols

December 2020

Project title:

Increased transparency and documentation of private sector contributions to NDCs

Deliverable title:

A comparative analysis of greenhouse-gas emissions-reporting protocols

Authors:

Fatemeh Bakhtiari (UNEP DTU Partnership, UDP)

Daniel Puig (UNEP DTU Partnership, UDP)

COPYRIGHT©

This publication may be reproduced in whole or in part and in any form for educational or non-profit purposes without special permission from the copyright holder, provided acknowledgement of the source is made. UNEP DTU Partnership (UDP) would appreciate receiving a copy of any publication that uses this publication as a source. No use of this publication may be made for resale or for any other commercial purpose whatsoever without prior permission in writing from UDP.

DISCLAIMER

This publication has been produced as part of a component of the Initiative for Climate Action Transparency project (ICAT) implemented by UNEP DTU Partnership (UDP). The views expressed in this publication are those of the authors and do not necessarily reflect the views of UDP

PREPARED UNDER

The project Increased transparency and documentation of private sector contributions to NDCs supported by the Ministry of Foreign Affairs of Denmark Danida

ACKNOWLEDGEMENT:

The authors are grateful to David García (Libélula, Peru), for facilitating information regarding the reporting protocols used by the main Latin American private-sector reporters, and to Gordon Mackenzie (UNEP DTU Partnership), for comments on the approach to implementing the activity that is the object of this report.

.

REVIEWERS

Sandra Roxana Aparcana Robles

1. Introduction

To achieve the Paris Agreement's long-term goal of limiting warming to 1.5 °C above pre-industrial levels, large reductions in greenhouse-gas emissions are needed across all economic sectors. Complementing governmental efforts, the private sector is taking steps to cut its emissions of greenhouse gases. However, at present, mechanisms to account for private sector-driven emission reductions are sub-optimal. The goal of the project is to help strengthen such mechanisms.

A number of voluntary platforms exists for businesses to disclose information concerning plant- or company-level greenhouse-gas emissions and the efforts made to reduce them. These platforms, and the associated tools, notably reporting protocols, seek to strike a balance between technical soundness and accessibility by as broad a range of users as possible. What the strengths and weaknesses of the main protocols are has not been investigated. The present report fills this gap.

The report focuses on the three major protocols for private-sector voluntary disclosure of greenhouse-gas emissions data (Box 1). The findings presented in the report stem from an in-depth analysis of the protocols, structured around a list of fifteen topics. These topics were identified through a review of sixty-eight protocols for private-sector voluntary disclosure of greenhouse-gas emissions data. (This review is presented in a companion report.) The goal of the report is to support potential users of these protocols in their efforts to (i) chose a specific protocol and (ii) navigate the pitfalls associated with it. Ultimately, the goal of the report is to promote widespread voluntary disclosure of greenhouse-gas emissions data by private companies.

To complement the desk analysis referred to above, we intended to survey the experiences of the users of the three protocols, further to which we planned to interview some of these users. We tried two approaches, which proved unfeasible, even though we counted with the help of protocol developers.

Initially, we contacted the three protocol developers individually. In our enquiry, we requested to be put in touch with private-sector users of the protocols. We stressed that we were interested in experienced users, namely companies that were (i) long-term users of the protocols, or (ii) known for having produced especially thorough reports. However, protocol developers were unable to support us. Only ISO provided the name of one private-sector user (a large multinational company headquartered in France), which unfortunately never responded to our enquiry.

As a second-best option, we relied on a database of Latin American companies that produce voluntary reports of corporate greenhouse-gas emission data and control measures. We selected the companies that used one of the three protocols of interest, and contacted their sustainability managers. Out of eight companies contacted, covering all three protocols, only one superficial response was obtained.

In light of the above, we abandoned the idea of complementing our analysis with data gathered from protocol users. Therefore, the findings presented below are based on a comparative analysis of the three protocols considered (Box 1).

The remainder of the report is structured as follows. Chapter 2 presents our comparative analysis, individually for each topic. Chapter 3 draws conclusions across issues and protocols: it reports on (i) the topics on which least guidance is available, and (ii) the overall pros and cons of each protocol. Annex 1 gives a tabular summary of the main characteristics of the three protocols analysed.

Box 1: major protocols for private-sector voluntary disclosure of greenhouse-gas emissions data

A companion report reviews sixty-eight protocols for private sector voluntary disclosure of greenhouse-gas emissions data. Three protocols provide the core elements upon which all other protocols are built. We refer to these three protocols as “primary protocol”. They are described in the following paragraphs.

The Global Reporting Initiative (GRI) is a voluntary corporate sustainability reporting initiative launched in 2001. It offers guidelines to companies, which can be adapted to the sector, geographic location and size of the company. The guidelines targeting greenhouse-gas emissions (named “GRI 305: emissions”, and hereinafter referred to as GRI protocol) were last updated in 2016, and are applicable to direct, indirect and supply-chain emissions. These guidelines are available in English, Spanish and a number of other languages.

The ISO 14064 standard, developed by the International Standards Organization (ISO), is part of the ISO 14000 standard series, published in 2006 and updated in 2018, which provides international standards for environmental management. The ISO 14064 standard offers tools to quantify, monitor, report and verify greenhouse-gas emissions. This standard can be used by businesses, but caters to governmental organisations too. The main protocol (ISO 14064-1:2018, hereinafter ISO protocol) has been complemented by a second protocol focused on reporting project-level greenhouse gas emissions (ISO 14064-2:2019) and a third protocol focused on verification (ISO 14064-3:2019). All protocols are available in English, Spanish and a number of other languages.

The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard is a protocol that can be used for reporting on corporate greenhouse-gas emissions. The protocol was developed by the World Resources Institute (WRI), a not-for profit environmental advocacy group, and the World Business Council for Sustainable Development (WBCSD), a not-for-profit coalition of multinational companies. It was first launched in 2001 and last updated in 2018. In addition to the multi-sector protocol for reporting direct emissions (hereinafter, WRI/WBCSD protocol), WRI and WBCSD have developed protocols to account for indirect and supply-side emissions. The protocols are available in English, Spanish and a number of other languages.

Chapter 2: assessment of the primary protocols

For fifteen key issues, identified through a review of sixty-eight protocols for voluntary reporting of greenhouse-gas emissions, the following paragraphs outline if and to what extent each of the three protocols analysed in this report deal with various issues. The information presented is purely factual. An assessment of this information from the point of view of potential users is presented in Chapter 3.

Adapting a multi-sector protocol

The three primary protocols are multi-sector protocols, in the sense that they don't cater to any specific sector. As a result, a certain amount of work has to go into adapting the protocol to the specificities of the sector in which the company works.

With its concise and targeted guidance, the GRI protocol facilitates adaptation to most economic sectors, albeit at the expense of excluding potential users that lack experience with regard to greenhouse-gas emission reporting. Conversely, the WRI/WBCSD protocol, the most detailed among the three protocols, is likely to appeal to experienced potential users. In turn, a key strength of the ISO protocol is its quality assurance framing, which makes a seamless integration with other quality assurance operations possible. Notwithstanding, the extent of the effort required to adapt any of the protocols will be determined by the sources of emissions concerned: the more numerous these sources are, the more complex the adaptation process will be, irrespective of the protocol chosen.

Types of emissions covered

The three primary protocols focus on the emissions associated with the company's own operations. In these protocols, emissions associated with electricity, heat or steam sourced externally by the company, and emissions attributable to the activities of the company's suppliers received little or no attention.

Sensu stricto, the ISO protocol is the most complete among the three protocols, in that it covers all types of emissions in a highly disaggregated manner. For example, indirect emissions are broken down into categories such as "imported energy" or "transportation". However, the extent to which step-by-step guidance is provided is limited, especially in comparison to the GRI protocol. Indeed, the guidance provided by the GRI protocol is both more aggregated and more suitable for non-specialists.

The WRI/WBCSD protocol only covers direct emissions. Nonetheless, two companion guidance documents cover emissions associated with the electricity, heat or steam sourced externally by the company, and emissions attributable to the activities of the company's suppliers. Arguably, a thorough treatment of this type of emissions would be best guided by these companion protocols (to the main WRI/WBCSD protocol).

Gases considered

The three primary protocols consider the main greenhouse gases. For first-time reporters, guidance concerning carbon dioxide emissions may be sufficient. Conversely, for companies with specific emission profiles characterised by uncommon greenhouse gases, generic guidance is likely to be insufficient.

The GRI protocol considers the six Kyoto-Protocol gases plus nitrogen trifluoride. The ISO protocol and the WRI/WBCSD protocol don't consider a specific selection of gases. Instead, these protocols highlight, through examples, that the gases of relevance can be very specific to the industrial process concerned. The WRI/WBCSD protocol refers to "calculation tools" that are freely available online. Because they are not an intrinsic part of the protocol and some of them have been developed by third parties, potential users may be confused about the relationship between the WRI/WBCSD protocol and these tools, and the reliability of the tools.

Emission factors

Emission factors are region-specific. Since the three primary protocols are designed to be used, after adaptation, in any region of the world, none of the protocols provides guidance on emission factors. Therefore, this guidance has to be obtained elsewhere.

With regard to emission factors, there is little difference among the three protocols. They outline the main principles behind the use of activity data and emission factors, and provide examples. The ISO protocol, with its extensive annexes, may be more comparatively more informative than the GRI protocol and the WRI/WBCSD protocol.

Materiality

Materiality refers to delimiting the boundaries of the analysis. Doing so is far from straightforward, especially for companies with an international presence or mixed ownership. The extent to which guidance on materiality is provided varies across the protocols.

The GRI protocol provides hardly any guidance on this issue, whereas the ISO protocol touches upon the main principles, but lacks step-by-step guidance. Such step-by-step guidance is provided in the WRI/WBCSD protocol, which distinguishes between two approaches to the analysis of materiality: the equity share approach, which defines reporting boundaries as a function of economic interest, and the control approach, in which management responsibility is used to define reporting boundaries.

Setting baselines

Reporting responds to several rationales. Disclosing information about progress toward meeting a target is one of them. In such situations, it may be instructive to compare actual emission levels with the levels that would prevail in the absence of the efforts made to reach the target. To do so, the latter, referred to as "baseline emission levels", have to be calculated.

Only the WRI/WBCSD protocol touches upon the issue of baseline emission scenarios. It does so in the context of emission offsets and, to a lesser extent, in the context of setting emission targets. Simply stated, the protocol introduces the concept of baselines and makes the case for its use. However, no guidance is provided as to how to calculate baseline emission scenarios.

Setting emission-reduction targets

Reporting responds to several rationales, transparency being one of them. However, emission estimates convey little information, unless they are normalised (for example, presented by unit of

output) and compared with related estimates (for example, previous-year estimates, or estimates from different plants).

Not least, emission estimates can be compared to a future emissions-reduction target. The appeal of setting emissions-reduction targets lies in the knowledge to be gained from two process. First, the process of defining the target, which helps the company understand its processes better. Second, the process of implementing measures aimed at reaching the target, which has the same effect, and can help identify efficiency gains in term of both emission volumes and production processes.

This is the background against which the WRI-WBCSD protocol devotes a full chapter to setting emissions-reduction targets. The proposed process, articulated around ten steps, is illustrated with examples. The ISO protocol provides somewhat generic indications concerning how to set a target. The GRI protocol mentions the issue, but only in passing.

Defining base years

Emissions fluctuate, for example, as a result of structural changes, such as the closing of a plant or a spike in demand that leads to higher-than-average production. Such fluctuations can mask actual trends, and thus need to be taken into consideration, especially when setting the base year, the emission levels in which should be representative of the levels in a regular year. If there are reasons for establishing the so-called base year on a year when emissions fluctuated, emissions data for that year have to be recalculated, to discount the impact of the (temporary) fluctuation.

The ISO protocol provides a number of criteria – a checklist of sorts – of relevance with regard to setting the base year. The GRI protocol simply mentions the need to explain the rationale for the choice of base year, and “the context for any significant changes in emissions that triggered recalculations of base year emissions”.

The WRI/WBCSD protocol provides comparatively more detailed guidance. This guidance is mainly focused on the situations in which base-year emissions data ought to be recalculated, and the way to do so. For example, the protocol touches upon recalculations associated with structural changes, and changes in the methodology used to calculate emissions.

Managing uncertainty

Emissions accounting is subject to several types of uncertainties. For example, estimates of activity levels in a company, or the accuracy of a given emission factor cannot be known with absolute confidence. Nonetheless, the uncertainty associated with the various estimates used to account for emissions can be assessed, typically by expressing the estimate as a range of values, as opposed to a single value.

Whereas the GRI protocol does not consider uncertainty, the ISO protocol and the WRI/WBCSD protocol do, albeit to a limited extent only. The ISO protocol refers to the importance of assessing uncertainty, and encourages users to rely on an ISO “guide” (ISO/IEC Guide 98-3), which “establishes general rules for evaluating and expressing uncertainty in measurement”. Other sources of uncertainty, notably related to emission factors, are excluded.

The WRI/WBCSD protocol introduces two types of uncertainty: “scientific uncertainty” and “estimation uncertainty”, and breaks down the latter into “model uncertainty” and “parameter

uncertainty". With regard to the approaches that can be used to assess uncertainty, reference is made to both measurement equipment and expert judgement. Finally, the protocol refers users to a separate guidance document on uncertainty management and the associated "uncertainty calculation tool", both of which are freely available online.

Managing double-counting

In large companies, where the outputs of certain industrial processes are shared across plants, the greenhouse-gas emissions associated with those processes might be counted more than once, inadvertently. Similarly, in companies that report on emissions that take place outside of the company's gates, notably emissions by suppliers, double-counting may occur.

The ISO protocol does not provide specific guidance on how to manage double-counting. Nonetheless, the protocol devotes an extensive example to illustrate a common situation in which double-counting may arise.

The GRI protocol takes a different approach, in that it provides (limited) guidance on how to avoid double counting, although only in the context of indirect emissions. Specifically, the GRI protocol focuses on emissions associated with the generation of electricity, heat and steam purchased by the company, and advocates for a "market-based calculation method" (see "equity-share approach" above, under "materiality") as the best way to avoid double-counting in the context of indirect emissions.

The WRI/WBCSD protocol touches upon two types of double-counting. First, double-counting in the context of indirect emissions. On this matter, the advice provided by the WRI/WBCSD protocol is similar to that provided by the GRI protocol. Second, double-counting in the context of (i) trading of emission offsets and (ii) target overlap across companies. On both types of double-counting situations, the WRO/WBCSD protocol advocates for ex-ante clarity on what emissions are reported by whom.

Establishing projections

Supporting planning is one of the main rationales of emissions accounting. As such, in addition to accounting for past and present emissions, companies may choose to establish projections of likely future emission levels.

None of the three protocols analysed provides guidance on establishing projections of likely future levels of emissions. This is surprising because, once a company has invested in reporting on past and present-day emission levels, comparatively much more modest additional efforts would be required to estimate future emission levels, at least for the short term.

Verification

To assess the accuracy and completeness of the greenhouse-gas emissions data that they disclose, companies may want to undergo third-party verification. Verification contributes to increasing the understanding of the company's emission sources and volumes, and the opportunities to reduce emissions and optimise processes. Not least, a positive assessment by an independent verifier lends an extra level of credibility to the data disclosed.

Whereas the GRI protocol does not cover verification, the ISO protocol makes reference to it, by (i) outlining the importance of verification and (ii) encouraging users of the protocol to rely on ISO 14064-3, a companion protocol that provides guidance exclusively on verification.

The WRI/WBCSD protocol devotes a full chapter to verification. However, in keeping up with the overall goal of the protocol, the guidance provided concerns the tasks required to prepare the verification process, as opposed to the tasks required to conduct it. Thus, the WRI/WBCSD protocol outlines issues such as the criteria that need to be taken into account when selecting an independent verifier, the type of information that the verifier is likely to request, the timing of the verification, and the use that the company may want to make of the verification results.

Benchmarking performance

By virtue of the knowledge it conveys about emissions intensity across all industrial processes in a company, emissions accounting can help reduce the overall emissions intensity of the company. This is the background against which a company may be interested in comparing its emissions intensity with that of similar companies, an activity that is often referred to as benchmarking. Benchmarking can also refer to comparing a company's emissions with a voluntary governmental target or a target that applies to a subset of companies in a sector (typically, the largest companies), but does not apply to the company disclosing greenhouse-gas emissions data.

None of the three protocols include guidance concerning how to benchmark performance. The lack of guidance on this topic is somewhat surprising, especially with regard to the two protocols that refer explicitly to the usefulness of benchmarking, namely the ISO protocol and the WRI/WBCSD protocol. Such guidance could cover issues related to the metrics to be used for benchmarking, or the scope of the activities and the types of industrial processes that are more amenable to benchmarking.

Communicating with stakeholders

Companies have different types of stakeholders, including shareholders, employees, governmental agencies and civil society. Each group is likely to be interested in a slightly different aspect of a company's operations and, therefore, requires a specific type of information. This observation, which is true whether the issue concerned is a company's products or a company's greenhouse-gas emissions profile, receives full attention in the case of products and typically little or no attention in the case of emissions profiles.

None of the three protocols analysed provides guidance on how to communicate with stakeholders. Nevertheless, the WRI/WBCSD protocol does outline the key issues that a company disclosing greenhouse-gas emissions data may want to report on. The list of issues put forward includes "required information" such as contextual data on the company, and its emission sources and volumes, and "optional information" such as data on emission intensities and emission offsets, where applicable. Interestingly, the WRI/WBCSD protocol suggests a number of ration indicators, such as productivity and efficiency ratios, which may be more relevant to non-technical audiences, especially if time series are provided. Finally, it is suggested that any potential double-counting is described.

User-friendly reporting software

In all cases, emissions accounting relies on computer-based spreadsheet calculators. Mindful of this reality, many reporting protocols associated with (voluntary or mandatory) national-government emissions-reduction programmes provide custom-made reporting software. Provision of these tools is less common among generic reporting protocols, such as the three protocols analysed.

Only the WRI/WBCSD protocol offers reporting software. The tools offered are clustered in three blocks. First, “cross-sector tools”, including emission factors, global warming potential values, and the uncertainty calculation tool referred to above, among other tools. Second, “country-specific tools”, including spreadsheets usable in the context of coal-fired power plants in China, or pulp and paper companies in Mexico, for example. Third, sector-specific tools, covering a range of sectors with distinct emission profiles, such as lime, aluminium, semiconductors or cement, among many others. (A fourth set of tools is included, targeting national and local governments.)

Chapter 3: conclusions

3. Summary and Conclusion

Informing users about pros and cons of the existing protocol would help them to have a clear understanding and expectation of applying the protocols. Therefore, as a conclusion, in this section, the information gained from literatures above is summarized for each shortlisted protocol. It is then evaluated against the criteria presented in section 2 to identify pros and cons.

3.1- The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard

The following points have been listed as pros for WRI/WBCSD protocol:

Determining the boundaries of the reporting process

- the WRI/WBCSD protocol provides guidance for determining the boundaries of the reporting process including organizational boundaries and operational boundaries

Defining base years and calculating base-year emissions

- The WRI/WBCSD protocol provides guidance on defining and calculating base years. The WRI/WBCSD protocol describes why base-year emissions may need to be recalculated.

Engaging a third party to verify the reporting process

- First, the rationale for verification and the boundary conditions of the verification process.). Second, the types of issues that a verification process might include. The latter includes issues such as the possible objectives associated with verification and the type of verifier (internal to the company versus external).

Communicating with stakeholders

- The WRI/WBCSD protocol provides guidance on how to communicate the results of the reporting process. I.e. Examples of these issues are (i) a description of the organizational and operational boundaries, (ii) the reporting period covered, (iii) the types of emissions – direct, indirect and supply-chain – included, and (iv) information on offsets, as relevant. The WRI/WBCSD protocol suggests some ration indicators, such as productivity and efficiency ratios, which may be more relevant to non-technical audiences, mainly if time series are provided. Finally, it is suggested that any potential double-counting is described.

Gas considered

- The WRI/WBCSD protocol does not consider a specific selection of gases. Instead, this protocols highlight, through examples, that the gases of relevance can be very specific to the industrial process concerned. The WRI/WBCSD protocol refers to “calculation tools” that are freely available online. It worth to mention that it is a good practice to include **HCFCs in addition to the Kyoto basket-of-six GHGs when it comes to reporting on refrigerant leakage. However, HCFCs is not covered by most protocol.**

The following points have been listed as cons for WRI/WBCSD protocol which could be an area of development in the future:

Collecting activity data and developing emission factors

- The WRI/WBCSD protocol does not offer guidance on how to collect activity data.
- The WRI/WBCSD protocol does not provide a set of emission factors, because the protocols cater to a potentially diverse audience, made up of different types of companies in different countries: stated, no single set of emission factors can serve the needs of such an audience. For this reason, the protocol only provides generic guidance on this issue.

Benchmarking performance

- Such guidance could cover issues related to the metrics to be used for benchmarking, or the scope of the activities and the types of industrial processes that are more amenable to benchmarking. The WRI/WBCSD protocol does not provide guidance on how to benchmark performance

3.2 The Global Reporting Initiative (GRI)

The following points have been listed as pros for GRI protocol:

Adapting a multi-sector protocol:

- The GRI protocol is a multi-sector protocols, in the sense that it does not cater to any specific sector. As a result, a certain amount of work has to go into adapting the protocol to the specificities of the sector in which the company works. With its concise and targeted guidance, the **GRI protocol** facilitates adaptation **to most** economic sectors, albeit at the expense of excluding potential users that lack experience with regard to greenhouse-gas emission reporting.

Gas considered:

- The GRI protocol considers the six Kyoto-Protocol gases plus nitrogen trifluoride.

The following points have been listed as cons for GRI protocol which could be an area of development in the future:

Determining the boundaries of the reporting process

- The GRI protocol does not provide guidance for determining the boundaries of the reporting process

Defining base years and calculating base-year emissions

- The GRI protocol does not provide guidance on defining and calculating base years and only provide limited guidance on this topic.

Collecting activity data and developing emission factors

- The GRI protocol does not offer guidance on how to collect activity data.
- The GRI protocol does not provide a set of emission factors, because the protocols cater to a potentially diverse audience, made up of different types of companies in different countries: simply stated, no single set of emission factors can serve the needs of such an audience. For this reason, the protocol only provides generic guidance on this issue.

Engaging a third party to verify the reporting process

- The GRI protocol does not provide guidance on verification. Nonetheless, it has prepared a guidance document that outlines the importance of verification, and the issues that a company seeking to have its report verified may wish to consider before engaging in verification.

Benchmarking performance

- The GRI protocol does not provide guidance on how to benchmark performance

Communicating with stakeholders

- the GRI protocol does not provide clear guidance on how to communicate the results of the reporting process.

3.3 The ISO 14064 standard

The following points have been listed as pros for ISO protocol:

Engaging a third party to verify the reporting process

- A companion protocol to the ISO protocol provides guidance exclusively on verification. This companion protocol, which is not analysed here, is fully compatible with the ISO protocol. It covers issues such as validation or verification planning, assessment procedures, and the evaluation of data reported.

Quality assurance framing

- a key strength of the **ISO protocol** is its quality assurance framing, which makes a seamless integration possible with other quality assurance operations.

Gas considered

- The ISO protocol doesn't consider a specific selection of gases. Instead, this protocols highlight, through examples, that the gases of relevance can be particular to the industrial process concerned.

The following points have been listed as cons for ISO protocol which could be an area of development in the future:

Determining the boundaries of the reporting process

- The ISO protocol does not provide guidance for determining the boundaries of the reporting process

Defining base years and calculating base-year emissions

- The ISO protocol does not provide guidance on defining and calculating base years and only provide limited guidance on this topic.

Collecting activity data and developing emission factors

- The GRI protocol does not offer guidance on how to collect activity data.
- The GRI protocol does not provide a set of emission factors, because the protocols cater to a potentially diverse audience, made up of different types of companies in different countries: simply stated, no single set of emission factors can serve the needs of such an audience. For this reason, the protocol only provides generic guidance on this issue.

Benchmarking performance

- The ISO protocol does not provide guidance on how to benchmark performance even though it refers explicitly to the usefulness of benchmarking.

Communicating with stakeholders

- the ISO protocol does not provide clear guidance on how to communicate the results of the reporting process.

Annex 1: main characteristic of the three protocols analysed

GRI protocol

Overview	
Name:	The Global Reporting Initiative's Reporting Requirements on Emissions
URL:	https://www.globalreporting.org/standards/gri-standards-download-center/
Origin:	International
Year:	2016
Is the protocol widely known (as measured by the number of internet hits)?	33,300
Has the protocol been used by Latin American companies?	Yes
Is the protocol generic, or sector-specific?	Generic
Was the protocol designed for individual plants or entire companies?	Companies
Does the protocol draw on another protocol?	No
Does the protocol include a verification component?	No

Technical details	
Does the protocol rely on the IPCC's emission factors?	None provided
Does the protocol consider materiality?	No
Does the protocol consider supply-chain emissions?	Limited
What gases does the protocol consider?	carbon dioxide, methane, nitrous oxide, sulphur hexafluoride, hydrofluorocarbons, perfluorocarbons, and nitrogen trifluoride
Does the protocol include guidance on how to develop baselines?	No
Does the protocol consider potential double-counting?	Limited

Does the protocol include guidance about how to assess uncertainty?	No
Does the protocol outline how it compares with other protocols?	No
Does the protocol provide user-friendly software, in addition to the guidance?	No
Does the protocol include advice with regard to showcasing the data disclosed to company stakeholders and the wider public?	No
Does the protocol offer guidance with regard to setting emission reduction targets?	No
Does the protocol provide guidance for defining base years?	Limited
Does the protocol provide guidance for calculating future projections?	No
Does the protocol provide guidance for defining benchmarks?	No

WRI/WBCSD protocol

Overview	
Name:	The Greenhouse Gas Protocol – a Corporate Accounting and Reporting Standard
URL:	https://ghgprotocol.org/corporate-standard
Origin:	International
Year:	2015
Is the protocol widely known (as measured by the number of internet hits)?	11,800
Has the protocol been used by Latin American companies?	Yes
Is the protocol generic, or sector-specific?	Generic
Was the protocol designed for individual plants or entire companies?	Entire companies
Does the protocol draw on another protocol?	No
Does the protocol include a verification component?	Yes

Technical details	
Does the protocol rely on the IPCC's emission factors?	Yes
Does the protocol consider materiality?	Yes
Does the protocol consider supply-chain emissions?	No
What gases does the protocol consider?	No specific selection (though more than the Kyoto gases are discussed)
Does the protocol include guidance on how to develop baselines?	Limited
Does the protocol consider potential double-counting?	Yes
Does the protocol include guidance about how to assess uncertainty?	Limited
Does the protocol outline how it compares with other protocols?	No

Does the protocol provide user-friendly software, in addition to the guidance?	No
Does the protocol include advice with regard to showcasing the data disclosed to company stakeholders and the wider public?	Limited
Does the protocol offer guidance with regard to setting emission reduction targets?	Yes
Does the protocol provide guidance for defining base years?	Yes
Does the protocol provide guidance for calculating future projections?	No
Does the protocol provide guidance for defining benchmarks?	No

ISO protocol

Overview	
Name:	ISO 14064-1:2018 Greenhouse gases - Part 1: Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals
URL:	https://www.iso.org/standard/66453.html
Origin:	International
Year:	2018
Is the protocol widely known (as measured by the number of internet hits)?	17,200
Has the protocol been used by Latin American companies?	Yes
Is the protocol generic, or sector-specific?	Generic
Was the protocol designed for individual plants or entire companies?	Both
Does the protocol draw on another protocol?	No
Does the protocol include a verification component?	Limited

Technical details	
Does the protocol rely on the IPCC's emission factors?	Yes
Does the protocol consider materiality?	Yes
Does the protocol consider supply-chain emissions?	No
What gases does the protocol consider?	No specific selection (though more than the Kyoto gases are discussed)
Does the protocol include guidance on how to develop baselines?	No
Does the protocol consider potential double-counting?	Yes
Does the protocol include guidance about how to assess uncertainty?	No
Does the protocol outline how it compares with other	No

protocols?	
Does the protocol provide user-friendly software, in addition to the guidance?	No
Does the protocol include advice with regard to showcasing the data disclosed to company stakeholders and the wider public?	No
Does the protocol offer guidance with regard to setting emission reduction targets?	Limited
Does the protocol provide guidance for defining base years?	Limited
Does the protocol provide guidance for calculating future projections?	No
Does the protocol provide guidance for defining benchmarks?	No