CDSB
Climate Disclosure Standards Board

CARBON DISCLOSURE PROJECT

Climate Change Reporting Taxonomy

Taxonomy Architecture and Style Guide

.

Table of Contents

1 Document Control Information

1.1 Version Control

Version Nr.	Revision Date	Author	Revision Summary
1.0	30/09/12	Pedro Faria	

1.2 Authoring

Main Authors: Pedro Faria; Makoto Koizumi

Reviewers: TWG members [Brad Monterio (ColCom Group), Paul Hulst (Deloitte), Josef Macdonald, Michal Piechocki (BRAG), Greg Soulsby]

1.3 References

The following references were used for the production of this document.

Reference	Location	Author	Version
GRI Taxonomy Architecture & Style Guide	www.globalreporting.org	Paul Hulst, Yaqing Sun, Elina Sviklina	V 1.1, 8/03/2012
FASB US GAAP Financial Reporting Taxonomy Architecture		FASB	V 2012, 31/01/2012
The Danish Commerce and Companies Agency - XBRL Taxonomy Framework Architecture		The Danish Commerce and Companies Agency	V7, 31/03/2010
The IFRS® Taxonomy 2012 Architecture - An overview of the draft (XBRL) architecture of the IFRS Taxonomy 2012	http://www.ifrs.org/XBRL/Resources/IFRS+Taxonomy+Guide.htm	IFRS Foundation/ IASB	March 2012

In order for this taxonomy to be harmonised with the GRI taxonomy, CDP has followed to the extent possible the architecture of the GRI Taxonomy. It follows that this documentation is also in line with the architecture and style guide of the GRI, which has been reproduced and/or adapted with GRI's permission.

In addition, different materials created by the IFRS Foundation – including the IFRS taxonomy and the Global Filing Manual – have been used as references during the CCRT project. We gratefully acknowledge the support of the IFRS Foundation XBRL team during the entire project, and in particular we would like to thank the IFRS Foundation for its permission to use some of its Intellectual Property and their copyright materials.

2 Introduction

This document presents and explains the architecture of the XBRL Climate Change Reporting Taxonomy ("CCRT") by the Carbon Disclosure Project ("CDP") and the Climate Disclosure Standards Board ("CDSB"). In particular, it explains the coverage of information requirements (or scope) of the taxonomy, how files are modelled and organized, the approach taken to define concepts and their relationships, naming conventions and any other important design aspects. It will also briefly cover the process for taxonomy creation, as well as specific decisions that were taken and why.

2.1 Intended Audience for this Document

This document was developed for users of the CCRT, namely:

- Business users working in reporting companies with the CCRT in order to produce instance documents, e.g. by applying mappings to business reports, internal systems or assigning XBRL tags to values in any other way[1];
- Analysts or any other data consumers using the CCRT and instances created in order to produce meaningful reports or applications based on the data reported in taxonomy instances; and
- IT solutions developers facilitating reporting in the XBRL format or analysis of XBRL data.

Prior knowledge of XBRL and climate change reporting is recommended to be able to use this document. To best understand its content, readers MUST be familiar with XBRL terminology, including taxonomy, table and dimensions; they SHOULD be familiar with climate change reporting, namely concepts such as boundaries, scopes and Greenhouse Gas emissions, preferably having previous reporting experience to the CDP. Users are directed to primary sources of information if they wish to know more about XBRL (http://www.xbrl.org/) or climate change reporting (https://www.cdproject.net and http://www.cdsb.net/).

2.2 Climate Change Reporting and Climate Change Reporting Taxonomy

The Carbon Disclosure Project

The CDP is an independent, not-for-profit organization holding the largest database of primary, corporate climate change information in the world.

Over 3,000 organizations in more than 60 countries around the world measure and disclose their greenhouse gas emissions and climate change strategies through CDP in order that they can set reduction targets and make performance improvements. This data is made available to a wide audience, including institutional investors, corporations, policymakers and their advisors, public sector organizations, government bodies, academics and the public. CDP puts this information at the heart of financial and policy decision-making.

CDP operates the only global climate change reporting system. Climate change challenges are not limited by national boundaries. That is why CDP harmonizes climate change data from organizations around the world and develops international carbon reporting standards. CDP acts on behalf of 655 institutional investors holding US$78 trillion in assets and some 60 purchasing organizations, such as Dell, PepsiCo and Walmart.

[1] The approach in this document is technical rather than didactical. As such, business users looking for practical guidance on how to create an instance document, including help on extensions and specific rules applicable to instance documents, should consult the "Climate Change Reporting Taxonomy: Implementation Guide for Reporters".

The Climate Disclosure Standards Board

The CDSB is an international organization committed to the integration of climate change-related information into mainstream corporate reporting. CDSB advances its mission by acting as a forum for collaboration on how existing standards and practices can be supported and enhanced to link financial and climate change-related reporting and respond to regulatory developments. CDSB develops its Climate Change Reporting Framework (CCRF) and guidance based on existing standards, research, analysis and good practice working in close partnership with leading professionals in accountancy, business, standard setting and regulation.

CDSB does not aim to create a new standard but works as a collaborative forum to: establish how to improve existing standards and practices to link financial and climate change-related reporting; and respond to regulatory developments. CDSB's ambition is to provide policy-makers and others with standard-ready material in the form of its CCRF and other resources designed to provide clear, reliable information for robust decision-making. The CDSB's work is designed to provide clarity, confidence and trust in information and greater stability in financial markets.

Scope of CCRT

The CDP and CDSB, through their members of the board and the Technical Working Group, share a common vision of a future where climate change disclosure will be a common feature of all business reporting, and that it will ultimately be integrated with mainstream financial reporting.

Recognizing that regulators around the world are mandating the use of interactive data for electronic filing of statutory reports, the CDP and CDSB prioritized the development of the CCRT at an early stage so that data definitions can evolve alongside standards and best practices for disclosing climate change-related information.

The CCRT goal is to reflect information requirements for voluntary or mandatory filings submitted by listed or non-listed companies to different authorities around the world. The intent is to have an overarching taxonomy that is able to accommodate the main reporting schemes and arrive at a common representation of the main aspects to allow different systems to process and communicate climate change data effectively and efficiently.

Under the current version, the scope of the CCRT is limited to the following initiatives:

- The CDP Investor 2012 Information Request;
- The CCRF.

In order to improve reporting practices in the future, a number of extensions may be provided so that companies can use them to report to other entities (e.g., suppliers) and using other scales (e.g., facility level reporting). At the moment the Taxonomy is divided into concepts specific to CCRF and concepts specific to CDP. Users can use existing CDP concepts to report specific aspects in accordance with CCRF, thus promoting the alignment of different reports and decreasing the costs of reporting.

Content overview

The main parts of this document are presented in the following chapters:

- DOMAIN MODEL – describes an overview of the reporting domain covered by the CCRT and its main requirements.

- LOGICAL MODEL - describes the logical architecture of the CCRT components, how XBRL components are used for it, and how the concepts are organized.
- PHYSICAL MODEL - describes the organization of the CCRT in physical files and folders.
- LINKS TO OTHER TAXONOMIES - describes any links with existing taxonomies, namely IFRS, and how the rules of IFRS Global Filing Manual have been considered in the making of the CCRT.
- STYLE GUIDE - describes the rules and guidelines used to name the concepts and other objects in the CCRT.
- ANNEXES – Provide technical information for reference that has been used in this document or can be of use for the reader, such as definitions, abbreviations, specific calculations rules, etc.

3 Domain model

Prior to the development of a taxonomy, information and business requirements need to be identified to produce a specification of the concepts to be reported, the relations between them, who the main users in the data value chain will be, and what functions they execute at each step of that value chain.

This chapter articulates the underlying thought process that led to the design of the CCRT, presenting the main business requirements, the intended uses and users of the data, and how the data is structured in the form of a data model. The process to derive the domain model is briefly addressed at the start of the chapter. In practice, the domain model articulates a concrete understanding and interpretation of the requirements. Whenever appropriate, it is explained how business requirements might have led to specific modelling choices and any limitations that might derive from them.

3.1 Domain model creation process

Creation of the domain model began with the gathering of business requirements. These were articulated in a business requirements document (that is briefly summarized in following sections). The initial formulation of the generic business requirements led to the development of specific – but still generic – documentation characterizing several use cases and how intended users might interact with the CCRT.

The domain model was designed considering the following criteria:

- Structuring reporting concepts that a climate change disclosure must contain;
- Limiting the need for extensions wherever possible and being as complete as possible in terms of the coverage;
- Achieving the greatest alignment possible with existing taxonomies (in particular, the IFRS XBRL Taxonomy), compliance with Interoperable Taxonomy Architecture (ITA) design, and the rules of the IFRS Global Filling Manual[2].To the extent possible, alignment to other sustainability taxonomies such as the GRI XBRL taxonomy, was considered.

The data models for the CCRT were created as a result of analysis of existing reporting requirements, including two main domain references: CDP Investor 2012 Information Request; and the Climate Change Reference Framework[3]. Additionally, best practices in taxonomy creation and management (IFRS) and the CDP's common practice in climate change disclosure were also considered.

All the information is presented in Microsoft Excel format as a set of sheets defining data structures. The sheets are designed to allow the specification of general and specific characteristics of each concept, in particular, English labels, references, data type, period of concept and relationship to other concepts. Additionally, the common items between components, as well as items from one component reused in another component, were identified and appropriately marked.

[2] IFRS Global Filing Manual can be found here http://www.ifrs.org/NR/rdonlyres/3996136C-2085-4CF9-A6AA-8C4B94D4DE17/0/GlobalFilingManual20101012.pdf

[3] However, explicit taxonomy requirements are to "provide high-level, over-arching concepts, sufficiently wide to accommodate the creation or expansion of concepts under it" and to "whenever possible (…) use the concepts that are already defined in existing taxonomies, in particular sustainability and financial accounting taxonomies".

Early specifications of the data model were reviewed in multiple interactions between domain and technical experts to check the model reflected the intended result and incorporated proposed modulations from better understating of XBRL capabilities. The data model was the basis for the development of the CCRT files, as well as the two main domain model references mentioned previously.

3.2 Business requirements[4]

As explained above, for the purpose of taxonomy creation, a Requirements Document was produced with detailed requirements as well as use cases and a public version is available in CDP website. For the purpose of this document, some of the main business requirements are restated here.

Some requirements might take priority over others. In general, priority requirements have been defined and any conflict between requirements will be explained in this document. The list of requirements is presented in order of priority.

1. The CCRT MUST be aligned with the CCRF and CDP investor information request

   The CCRT MUST be aligned with the disclosure provisions of the CCRF and CDP investor information request, including CDP's and CCRF's main objective of reporting data for investor decision making. All reporting concepts present in both references MUST exist in the CCRT so that the user does not need to extend.

2. The CCRT MUST be extensible

   Considering that existing concepts might be too general, the constant developments that occur in climate change disclosure and that specific reportable facts might be missing, the CCRT MUST be extensible, allowing reporting companies to create new concepts and report them under an instance produced according to the CCRT. The extenders SHOULD be able to reuse the concepts and structures created in the CCRT as a basis for their extensions.

3. The CCRT MUST be reusable by other taxonomies

   The CCRT MUST be able to be used by other existing taxonomies and allow: reuse of concepts and structures when properly referenced; and the linking of different schemes in order to decrease reporting burden.

   When adequate, the CCRT SHOULD use or refer to concepts that already exist in other taxonomies. The CCRT SHOULD refer and link to existent taxonomies/data standards, related to both sustainability and financial reporting, in order to favour integration and common understanding of the CCRT.

4. The CCRT SHOULD be constructed in such a way as to facilitate use by preparers

[4] For the purpose of this document the following interpretation of the terms MUST, SHALL and SHOULD is used:
- MUST: a requirement that is considered essential for the successful delivery of the taxonomy. This requirement can be expressed also by the word "SHALL".
- SHOULD: a requirement that expresses an option but that can admit deviations, provided there are suitable reasons for it.

The CCRT SHALL follow a logical structure reflecting the CDP investor information request and CCRF. The presentation link base follows the structure of the information request, and names and labels are similar to the terms used in the information request and CCRF.

Links between the CCRF and CDP structure SHOULD be made as intuitive as possible, allowing the user to use concepts from one or the other reference.

5. The CCRT SHOULD be constructed in such a way as to minimize maintenance effort

   The taxonomy SHOULD be built in such a way that it can accommodate future developments of CCRF and the CDP investor information request that will reflect expected evolutions in the climate change reporting space. The architecture SHOULD be usable for future versions of the CCRT, considering likely evolutions such as specific sector requirements.

6. The CCRT SHOULD be constructed in such a way as to maximize ease of delivery

   The technical architecture supporting the CCRT and data instances SHOULD be optimised to minimise cost and maximise ease of delivery of the most frequent use cases. Considering the life cycle of a data instance, these use cases are likely to be reporting and data analysis.

7. Compliance with ITA and IFRS GFM

   The CCRT SHOULD be consistent, to the extent possible, with the ITA and the rules in the IFRS Global Filling Manual.

3.3 Technical requirements

3.3.1 Disclosure pathway (lead and led disclosures)

The CDP investor questionnaire uses specific functionality to guide preparers of information through its disclosure. This functionality, at the same time is used to provide data points on frequent asked questions.

An example of such a frequently asked question is “How many companies verify their GHG emissions?”.

To answer this question, CDP requests explicitly for companies to disclose if they have verified their GHG emissions and collects those responses through enumeration lists. Depending on the response on this initial question, other specific request to disclose information can follow. This disclosure is what we call a “lead disclosure”.

Following from this “lead disclosure” might be a request to disclose the type of assurance standard used or the type of assurance obtained. These data points will follow logically from the initial disclosure and are called “led disclosure”.

We call this functionality “disclosure pathway” as it indicates the path preparer should follow on its disclosure[5]. Advantages of this approach are:

[5] No similar mechanism as yet been implemented in financial reporting, but a proposed solution based on the use of formula linkbase is being researched. This solution should be: in public domain to be implemented by all providers; completely generic and based on current XBRL specification; implemented on generic business logic; independent of any taxonomy architecture; allow interaction with user interface.

- it indicates order and inter-relationship of data;
- it guides the preparer in its disclosure;
- allows construction of data structures going from high-level to detail;
- facilitates data capture for scoring purposes.

To cover this requirement particular style rules have been set related to lead and led disclosure. Furthermore, two fields have been added in the reference linkbase (lead to; leb by) where, for each concept, the leading and led question as in CDP information request are identified. This approach is used until a better technical solution can be delivered and implemented.

3.3.2 Enumeration list/list of Values

CDP uses enumeration lists[6] extensively. Enumeration lists are helpful in structuring responses and providing data that is readily consumable for analysis. They are also helpful to stabilize the domain aspects as each of the enumerated values should be defined unambiguously.

An assessment of the requirements related with the use of list of values in CDP as highlighted some differences to how enumeration lists are currently implemented in XBRL. The requirements are:

- Fact value must be selected from a listed value.
- Listed value should be consistent across different languages.
- Extensibility should be provided easily somehow.
- Implementation should be as simple as possible.
- Validation against the input value should be performed.
- Any XBRL Tools cold support the capability easily

Currently CCRT is using an XML schema enumerations approach, which does not support extensibility and language translation, but this is expected to change in a future taxonomy release. Please refer to 4.1.5 - Enumeration lists/ lists of values, for further details.

3.4 Domain scope of taxonomy concepts

This version of the CCRT is based on the CDP 2012 Investor Information Request and its guidance document[7] as well as the CCRF[8]. However, any of these references are based on or subject to the influence of an existent body of knowledge and practice that forms the basis of current Greenhouse Gas (GHG) accounting practice, namely:

- The Intergovernmental Panel on Climate Change (IPCC) Guidelines and United Nations Framework Convention on Climate Change (UNFCCC) process;
- The GHG Protocol suit of standards (see http://www.ghgprotocol.org/standards);
- The International Standards Organization (ISO) standards developed under “TC 207/SC 7 - Greenhouse gas management and related activities”;

[6] In current CDP system these are called lists of values.
[7] https://www.cdproject.net/Documents/Guidance/CDP2012ReportingGuidance.pdf
[8] http://www.cdsb.net/file/72/climate-change-reporting-framework-edition-1.0-jan-2012.pdf

- Existing regulation across the world introduced by governments in the past 10 years[9].

As such, the work carried out by institutions such as CDP, CDSB, GHG Protocol, The Climate Registry, European Commission, etc and conducted by thousands of people in companies and other organisations in their efforts to report GHG emissions, make up the body of knowledge of the GHG accounting and reporting domain. The CCRT goal is to articulate, in the form of a taxonomy, the information from this body of knowledge as climate change reporting concepts and other meta-data needed for the electronic reporting process. This body of knowledge is of unknown size because many "concepts" are actually nothing more than the intersection of other, more basic concepts and developments occur on a permanent basis.

It was a specific objective of the CCRT to provide a high-level taxonomy. Current practice of Climate Change reporting includes a range of information that is organized hierarchically. From low level and granular information on fuels, technologies, activities and emissions that are reported at source and facility level; to consolidated corporate level data and specific narratives that are needed to contextualize them and make them meaningful at that level, such as information on business strategy or risk information for investors. The present CCRT is intended to be a high level taxonomy aimed at capturing the main information related to climate change relevant for investor decision making.

As such, it is important that the CCRT provide overarching concepts, sufficiently wide to accommodate the creation or expansion of concepts under it, and that can link to existing or future taxonomies, namely through the establishment of calculation rules. In order to decrease the reporting burden, the CCRT SHOULD be built in such a way that it can be used by different regulatory authorities, if they wish to, allowing them to refer to the CCRT and extend it within the overarching structure.

Only those aspects of climate change accounting practice that are pertinent to presentation and disclosure of climate change information are reflected in the CCRT. Although at times CDP guidance or the CCRF discuss the measurement of concepts, such as Scope 1 or Scope 2, how to measure, or the steps taken to get to the figures, are not reflected in the CCRT architecture.

The starting point for the development of the CCRT was the Carbon Disclosure Project 2012 Investor Information Request. This represents, in practice, the state of the art in terms of climate change disclosure. The CCRF has been the other reference use to build the CCRT. It provides a logical framework for the integration of climate change information into mainstream reporting, providing principles and criteria for the selection of relevant information to include in the disclosure. These two references (CDP, CCRF) complement each other: while CCRF provides principles and criteria on what to include in a mainstream report, CDP provides a comprehensive, structured set of data points for each of the reporting concepts defined in the CCRT. In fact, the CCRT structure is based extensively on the CDP best practice. The objective is that users can refer to the structure of CDP concepts to include them in their mainstream disclosures using the CCRF. This also allows proper exploitation of the data by the user communities, namely investors. At the same time, these concepts might be extended by future regulators that want to use the CCRT.

An exception is made to specific sector reporting concepts that the practice has revealed to be useful but also required for comprehensive and meaningful disclosure. CDP includes a number of sector modules that acknowledge this reality. Due to resource and capacity limitations, a decision has been made not to include such reporting concepts into the CCRT. However, this is certainly a desirable feature, and CDP will look to do it in the future.

However, with this exception, concepts appearing in CDP and CCFR MUST exist in the CCRT, and concepts appearing in the CCRT SHOULD be well-supported by the references and other domain literature. The

[9] For a more thorough view of this check the results of the consistency project at http://www.cdsb.net/priorities/the-consistency-project/

relationships of concepts (in the form of standard disclosures) SHOULD be supported by the CCRT. It is in this sense that the CCRT is a domain model and not an independent intellectual exercise.

For a more thorough understanding of climate change disclosure, it is worth looking at how the reporting concepts can be grouped within a climate change disclosure – or alternatively, how a climate change disclosure might be broken down. Note that this breakdown would resemble the "table of contents" of a climate change disclosure:

1. General information
    a. Document information
    b. Entity information
2. Strategic analysis, risks and governance
    a. Strategic analysis
    b. Risks
    c. Opportunities
    d. Governance
    e. Management actions
        i. Targets & initiatives
        ii. Performance
        iii. Communications
    f. Future outlook
3. Greenhouse gas (GHG) emissions
    a. Methodology
    b. Emissions data and complementary information[10]
        i. Emissions data for Scope 1,2 and 3 & associated breakdowns
        ii. Information specific to mandatory reporting schemes
4. Assurance/Verification statement/report

Different organizations, preparers (companies), analysts and users in general will have different preferences for how information is organized, but there are some commonalities. The above list will generally encompass and map to all reporting concepts and "groups of concepts" as defined in CDP and Climate Change Reference

[10] Complementary information might be, as an example, energy consumption data, data on assurance status or specific data on mandatory trading schemes

Framework. The taxonomy contains two entry points[11]: one for CCRF and one for the CDP. Below, a schematic vision of how the information is organized in CCRF and CDP information request and how it relates to the scheme identified above is given. In general, the CCRT architecture leverages the existing organization schemes in CDP and CCRF. The presentation linkbase in the CCRT, closely follows the organization of concepts in CDP and CCRF in order to make it as easy as possible for the preparer of information, as well as the consumer, to find the necessary concepts

General information		
CCRT – CDP entry point	**Climate Change Reporting Framework**	**CDP information request**
[00000000] General information about the report	-	CDP Portal and CRM system 0. Introduction page Sign-off

Strategic analysis, risks and governance		
CCRT – CDP entry point	**Climate Change Reporting Framework**	**CDP information request**
[02000000] Disclosure of strategy	1. Strategic analysis (4.6 to 4.8)	2. Strategy
[05000000] Disclosure of climate change risks	2. Risks (4.9) 3. Decision-useful information on risks & opportunities (4.11)	5. Climate change risks
[05000000] Disclosure of climate change opportunities	3. Opportunities (4.10) 3. Decision-useful information on risks & opportunities (4.11)	6. Climate change opportunities
[01000000] Governance	6. Governance (4.16 & 4.17)	1. Governance
[03000000] Disclosure of active targets and initiatives [04000000] Disclosure of communications [13000000] Disclosure of emissions performance	4. Management actions (4.12&4.13)	3. Targets & Initiatives 4. Communications 13. Emissions performance
[02000000] Disclosure of strategy	5. Future outlook	-

[11] Basic XBRL terminology is explained in Annex 1

Greenhouse gas (GHG) emissions		
CCRT – CDP entry point	**Climate Change Reporting Framework**	**CDP information request**
[0700000] Disclosure of emissions methodology	Greenhouse gas emissions (4.18 to 4.33)	7. Emissions methodology
[0800000] Disclosure of emissions data [0900000] Disclosure of scope 1 emissions breakdown [1000000] Disclosure of scope 2 emissions breakdown [1100000] Disclosure of scope 2 contractual emissions [1200000] Disclosure of energy [1300000] Disclosure of emissions trading [1400000] Disclosure of scope 3 emissions	Greenhouse gas emissions (4.18 to 4.33) [does not cover scope 3]	8. Emissions data 9. Scope 1 breakdowns 10. Scope 2 breakdowns 11. Scope 2 contractual 12. Energy 14. Emissions trading 15. Scope 3

Assurance/Verification statement/report		
CCRT – CDP entry point	**Climate Change Reporting Framework**	**CDP information request**
[0800000] Disclosure of emissions data [1400000] Disclosure of scope 3 emissions	Assurance (1.13&1.14) Note: CCRF does not require users to disclose their verification/assurance information. Rather it expects organizations to apply the same rigor and management responsibility as is appropriate to all statements and disclosures presented in the mainstream financial report, whether audited or not.	8. Emissions data 15. Scope 3

Each component of the groups listed above will cover facts reported as numbers, text values and as narrative text.

The facts reported as numbers include numbers with either physical units attached (e.g., tCO2e, MWh), monetary units (e.g., $, €), a mixture of both, and can be reported either in the form of tables or in-line inside narratives. Numeric concepts can be related by arithmetic relationships and by other type of relationships, e.g. facility breakdown of emissions, as a specific way of partitioning emissions. Whenever possible these figures shall be verified for consistency between values reported in related concepts. For this version of the taxonomy this has not been possible to implement, but the plan is to do implement it through formula linkbase.

List of Values (LOV) is a specific component that is relevant for reporting concepts to CDP. List of values are lists of pre-configured text values that the user MUST select to convey particular meaning to particular data points/disclosures. It improves the uniformity of data and considerably increases the analytical power of disclosure. List of values can be of two types: the ones that are non-extensible (LOV); and the ones that are extensible (LOV+). The currently existing system at CDP makes use of both. In the taxonomy, specific LOV were at times modelled as dimensions of a disclosure – e.g. when reporting climate change risks, the risk driver is a dimension that originally in CDP system is configured as list of value. Other times they are reporting facts – e.g. when considering if the risk is direct or indirect only certain value will be admissible, in this case Direct, Indirect (Supply Chain) and Indirect (Client). A discussion about the options considering for modelling is presented in section 4.

3.5 Domain Stakeholders

Climate change disclosure originates in a socio-technical context (or system) that will condition the forms and ways in that the disclosure is made. This system involves different stakeholders who seek different characteristics, sometimes conflicting, from a climate change disclosure and its respective XBRL taxonomy. These stakeholders are discussed in the Requirements Document and that is not repeated here, but the list of stakeholders is provided for reference as well their main functions within that system, divided between input and output of the disclosure:

- Input side:
    - Standards Setters - Standards Setters define the expected norms that should be followed to provide a meaningful disclosure, encoding the reporting concepts, as well as the necessary information about them (metadata) in standards and codes of practice, which will form the basis for the CCRT. A Standard Setter might, at times, also be a regulatory body.
    - Preparers (or reporting organisations) - A Preparer creates a filing using a taxonomy (e.g., the CCRT). The information (and associated metadata) within the base taxonomy can be extended by Preparers. The extension should be consistent with the base taxonomy.
    - Auditors - An Auditor my express an opinion on the filing and issue an audit report. A Software Vendor often provides software for this process (internal to auditor, external to auditor).
    - Software Vendors - A Software Vendor provides software that supports the preparer in creating fillings. Software vendors also provide software for all other activities related to the use of XBRL specific technology, such as document management and analytical capabilities enabled for XBRL.
    - XBRL community – XBRL community is responsible for the evolution of the XBRL standard and ensuring that it keeps responding to the needs of the community. The XBRL community does this through the XBRL International, Inc. (XII) consortium and benefits of a standardized approach to XBRL implementation.
- Output
    - Regulators - A Regulator receives a filing and analyses information within that filing. A Software Vendor often provides software for this purpose. A Regulator may, at times, also be a Standard Setter, or it may rely on other stakeholders to set the standards.

- Data Aggregators – Data Aggregators collect existing XBRL-tagged information, mash it with other data, and create additional value-added services based on the information collected. A Software Vendor often provides specific software for the purposes of data aggregation and analysis.

- Investors[12] - Investors obtain information from: a Regulator, a Preparer, and/or a Data Aggregator. A Software Vendor often provides specific software for the purposes of investor analysis.

- General public/consumers – The general public gets information from: a Regulator; a Preparer, and/or a Data Aggregator. Specific services for the public/consumer audience can be built by data aggregators or regulators.

For this socio-technical system to work, the following assumptions are made about it:

1. Preparers create instance documents with fact values (containing data that is "numeric," "text value" or "narrative") independently of the creation of other specific reports in other mediums (paper, html, PDF, etc). Software vendors often provide services that help to integrate the different needs of preparers.

2. The software used by the different stakeholders comes from different software vendors, but the software is compliant with XBRL recommendations to allow interoperability and is able to fully-interpret the CCRT[13].

3. There exists a centralized store of the data (filings) and meta-data (taxonomies) that all stakeholders (preparers, consumers of information, etc) can draw upon. The access to this data can be restricted by a subscription fee or not. Preparers can submit instance documents to one or more regulators or can decide to publish them on their own.

At the moment CDP is envisaged as the central location for storing climate change disclosure. However, considerable changes to CDP systems will have to be made in order to accommodate this role. Basic provisions will be made which are likely to evolve in time as adoption increases and CCRT evolves.

The main challenge for the CCRT is securing adoption by both preparers and regulators[14]. CDSB and CDP are committed to promote its widest adoption.

3.6 Change/Life Cycle

It has been explicit from the beginning and initial formulation of requirements that the CCRT will need to evolve. Financial reporting is now more than 100 years old and continues to change. Climate change disclosure is in its infancy, with barely 15 years of practice, and although benefiting from the experience of financial reporting, it is clear that climate change reporting will continue to evolve more quickly in coming years.

[12] The investor community is not a uniform community, and there are multiple ways of categorizing the industry. Both CDP and CCRF are particularly aimed at institutional investors, although the information collected can also be of use to Individual Investors and short term investors.
[13] This is subject of specific testing of the taxonomy with major software vendors.
[14] In fact, it is considered that the former is largely dependent of the later.

For this reason, the CCRT had to be constructed in such a way as to minimize maintenance effort by all stakeholders involved. The CCRT architecture strives for the appropriate balance, but due to the novelty of this pioneering effort, it is likely that certain decisions will have to be reviewed. XBRL, which has evolved mainly considering financial reporting, might have to evolve further to consider specific aspects related to sustainability reporting or/and integrated reporting. It will not be surprising if considerable evolution of the CCRT occurs in the coming years. As with all taxonomies, stakeholders will need to update their systems for different taxonomy versions and extensions; this will also be the case for the CCRT.

Preparers, aggregators and analysts store information within databases which MUST be versioned for:

- Changes to the taxonomy;
- Changes to what is reported (restatement of information, reclassification of information between periods, etc.);
- Changes to the XBRL specification itself, deriving from an entirely new domain of reporting (e.g., sustainability) that might require new or adapted features, as explained above.

To the extent possible, and within existing capabilities, options were taken in order to future-proof the current CCRT architecture. Any views on the success of this attempt are welcomed and should be directed to xbrl@cdsb.net.

4 Logical model

A taxonomy logical model organizes the domain model into data and meta-data definitions to be used in the physical model to articulate the taxonomy in XBRL syntax. A Climate Change disclosure in the form of an XBRL instance document will comprise many facts. These facts are articulated at the taxonomy level, as concepts. A fact, might relate to one or more concepts in the taxonomy. A concept can be used to report several different facts in an instance document. The taxonomy provides a structure for the organization and relationship between concepts building on existent components and syntax rules of the XBRL standard.

4.1 Concepts

A concept is a concept is an XML Schema element definition, defining the element to be in the item element substitution group or in the tuple element substitution group. At a semantic level, a concept is a definition of a kind of fact that can be reported about an activity or the nature of a business activity. Thus a concept is something with semantic meaning that can be expressed in XBRL form as XML Schema element definitions or elements. Thus, in the following text, the two names (concept, element) can at times be used interchangeably.

Each taxonomy concept will be uniquely identifiable via name, id and labels for concepts, definitions of concepts, and/or references to the climate change and GHG accounting literature issued by standards setters, regulators and scientific organizations. This information will be useful to preparers, analysts, and regulators.

Rules governing the relationship between a concept, its standard label, the element name representing the concept, and its supporting references are documented in detail elsewhere in this document (see Style Guide). A reporting concept has a minimum of one label, provided in US English, and optionally documentation and references to authoritative literature that defines the concept. Enough references are provided to uniquely identify each taxonomy concept, as opposed to an exhaustive list of each reference to the concept within the literature. Some concepts might have more than one reference, e.g. Global Warming Potentials are referenced both in scientific literature compiled by the IPCC and the accounting references. Both are used for completeness.

When modelling the information, the following structural elements were used.

4.1.1 Abstract

Abstract elements are used to facilitate the organization and structure of the taxonomy. They are used for organisation purposes within the taxonomy only and MUST never appear as a reported fact in an instance. All elements will have an abstract concept as its root. “Abstract” items should have their period attribute be set to duration, abstract set to “true” and their type set to stringItemType. Tables, Axis and Members are also identified as Abstracts but they fall into a special class with additional meaning and are used in the instance document contexts to uniquely identify reported information.

4.1.2 Hierarchies/lists

Another element created is hierarchies or lists. These hierarchies or lists organise concepts in an orderly logical way, e.g. by nesting one concept inside the other. An example will be a list of scopes, where Scope 1, 2 and 3 are listed and further breakdown of Scope 3 categories is then used as a nested list under Scope 3. Lists and hierarchies are one of the structural elements used to capture the CDP requirement of having List of Values (LOV), as mentioned in section 3.3.

4.1.3 Explicit dimensions

Explicit Dimensions are used. They are presented separately from the rest of the taxonomy in the dimension list. Each dimension can be connected to more than one primary item (or axis), thereby creating dimensional structures. Dimensions are used in CCRT for modelling of particular concepts that frequently repeat when reporting certain facts. Dimensions are also used to model concepts that in CDP system are represented as lists of values (see 4.1.5 - Enumeration lists/ lists of values).

When tables are used, some require the user to report multiple lines of information. This is the case of the tables concerning risks and opportunities. For each of the risk/opportunity drivers, an entity might report multiple lines. As an example, one can have two lines with “cap and trade systems” as risk driver, one referring to the European emissions trading schema and the other to the Alberta emissions trading scheme.

When there is no other information besides the line number, it has been consider that the best way to implement it is to consider a generic axis “Line numbers” with domain members named 1 to n. The number of lines to provide is established by analysis of historical responses to CDP.

4.1.4 Typed dimensions

In certain cases, there are tables that might require the use of a typed dimension. Such cases occur for example in the breakdown session. If one considers a country breakdown, a list of the countries can be provided, as this is known a priory. However, when a facility breakdown is asked, there is no way to know a priori the name of the facilities. Each company will identify these facilities in their own way.

Three approaches were considered for modelling this case:

1. Use of explicit dimensions, providing a Facility type axis: this option is ITA compliant, but has the disadvantage of not being very user friendly, as extending the taxonomy is typically a non-trivial task.

2. Use of an explicit dimension providing line numbers, and requesting the identification of the dimension as a line item fact, e.g. having “Facility name” as a line item. This option is more user friendly, as it does not require the user to extend the taxonomy but simply requires him to introduce the value in a field. However, it has the disadvantage that, as the table can have several dimensions (e.g. Tyoe of emission scope, requiring scope 1 and scope 2 information) it will have to report the same information twice. This is not very user friendly and it can have issues also from the point of view of data quality as typing mistake occur when typing same information several times.

3. Use of a typed dimension, using it to model the fact that needs to be reported. This case as the advantage of modelling the information as a dimension – thus an axis that can be multiplied by other dimensions without the need to reintroduce information – and allowing the user an easy way to introduce. It has the disadvantage of not being compliant with the ITA, namely rule “**1.2.5. If an xbrli:segment or xbrli:scenario element appears in a context, then its children must be one or more xbrldi:explicitMember elements” and rule “1.3.22. An xsd:element must not have an xbrldt:typedDomainRef attribute”.**

Approach 1 was used in initial design. From the early exposure of taxonomy, it could be observed that it confused users. As approach 2 was not considered appropriate due to requiring the entry of same information multiple times and thus approach 3 is used.

4.1.5 Enumeration lists/ lists of values

As mentioned earlier, CDP makes extensive use of enumeration lists and they can be used for different purposes, e.g. as dimensions, concepts or reporting facts.

For a discussion of the different alternatives considered when modelling CDP lists of values, please consider the following examples. The solutions were evaluated considering how easy they are for a preparer, a consumer (English speaker and non-english speaker), IT service providers, taxonomy maintenance, and interoperability with the ITA.

For Extended Link Role *"[02000000] Disclosure of strategy" there are three (3) different types of lists of values that occur*

First case

A list of values with Yes/No (or any other pair of values, e.g. disclosed/not disclosed) that can generally be considering as referring to a "status" of some kind, for example for the element

*Climate change integration into business strategy of entity [status] [lead disclosure]*values must be either:

- Integrated
- Not integrated

In this case, two solutions were considered for modelling the concepts:

1. Implement single element with booleanItemType (true | false)
2. Implement single element with custom data type which have enumeration (e.g. Yes | No)

It has been considered that option 2 would be easier to implement and better for preparers and consumers of information. However, this approach does not allow for multi-lingual support, as enumeration values can only be supported in one language.

Second case

A list of values with single sentences, e.g. for the element "*Disclosure of risk management procedures related to climate change risks and opportunities [lead disclosure]"* value must be 1 of the below 3:

- Integrated into multi-disciplinary company wide risk management processes
- A specific climate change risk management process
- There are no documented processes for assessing and managing risks and opportunities from climate change

For this case the following solutions were considered:

1. Traditional Approach with Generic Label

   Implement "*Disclosure of risk management procedures related to climate change risks and opportunities [lead disclosure]"* as single element with enumeration (the above 3 values without white space).

   The values for the item would be one of the following:

- integratedIntoMultiDisciplinaryCompanyWideRiskManagementProcesses
- aspecificClimateChangeRiskManagementProcess

- thereAreNoDocumentedProcessesForAssessingAndManagingRisksAndOpportunitiesFromClimateChange

Each enumeration value is able to have Multilanguage label with generic label.

2. Tokyo Stock Exchange's Approach

   Implement "*Disclosure of risk management procedures related to climate change risks and opportunities [lead disclosure]"* as an abstract element and the 3 values as 3 separate boolean elements.

The 3 values are defined as element with booleanItemType and either true or false for each element is reported in the instance document.

- Integrated into multi-disciplinary company wide risk management processes: **true**
- A specific climate change risk management process: **false**
- There are no documented processes for assessing and managing risks and opportunities from climate change: **false**

Each element is able to have multilanguage label.

3. US GAAP approach

   Implement explicit dimension table, "*Disclosure of risk management procedures related to climate change risks and opportunities [lead disclosure]"* as a string element (primary item) and the 3 values as 3 dimension members (US GAAP DEI approach).

The report would look like the table below:

	Disclosure of risk management procedures related to climate change risks and opportunities [lead disclosure] [axis]		
	Integrated into multi-disciplinary company wide risk management processes [member]	A specific climate change risk management process [member]	There are no documented processes for assessing and managing risks and opportunities from climate change [member]
Risk management procedures with regard to climate change risks and opportunities	x		

The value "x" has other view: "X: "Integrated into multi-disciplinary company wide risk management processes"" (in segment | scenario).

Each member is able to have Multilanguage label. This implementation is consistent with the third case of list of value implementation, presented below.

4. US Corporate Action approach

Implement "*Disclosure of risk management procedures related to climate change risks and opportunities [lead disclosure]"* as a string element and the 3 values as 3 dimension members.

Element:Value	**Dimension**
Risk management procedures with regard to climate change risks and opportunities: **Integrated into multi-disciplinary company wide risk management processes**	Risk management procedures with regard to climate change risks and opportunities [axis] • Integrated into multi-disciplinary company wide risk management processes [member] • A specific climate change risk management process [member] • There are no documented processes for assessing and managing risks and opportunities from climate change [member]

Store standard English label value (w/o [member]) to the value of the element

In US CA implementation, there is no relationship information between the element and axis.

The four alternatives were considered and implementation of 1 and 3 considered overall the best solutions. Solution 1 makes use of an emerging technology (generic link) and it has been considered it is potentially more user friendly and thus, has been considered for implementation. This solution is also aligned with implementation for list of values that need to be extended.

Third case

A list of values that is used as reporting fact in a table, e.g. in ELR [01000000] "Disclosure of governance" for the table under "Disclosure of incentives [abstract] [led disclosure]", which models Question 1.2a (shown in picture below)

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator
Select from: Board chairman Board/Executive board Director on board Corporate executive team Chief Executive Officer (CEO) Chief Operating Officer (COO) Executive officer Management group Business unit manager Energy managers Environment/Sustainability managers Facilities managers Process operation managers Public affairs managers Risk managers All employees Other	Select from: Monetary reward Recognition (non-monetary) Other non-monetary reward	Please describe an incentivized performance indicator and describe how it is linked to climate change. This is an open text field with a character limit of 2,400 characters.

Both the beneficiaries of incentives and type of incentives are used as reporting facts in CDP. In the taxonomy, they are modelled as dimensions; being the reported fact the explanation of the incentivized performance indicator.

In this case, the implementation with a table using explicit dimension e.g. similar to the table shown below, was the only case considered. Note that empty cells can be hidden by the specific XBRL tool or with application level.

Beneficiaries of incentives [axis]	Types of incentives [axis]	*Description of incentivised performance indicator*
Board chairman [member]	Monetary reward [member]	…The prize of money will be given in connection with each Prize listed in the Selection Standard…
	Recognition (non-monetary) [member]	
	Other non-monetary reward [member]	
Board/Executive board [member]	Monetary reward [member]	
	Recognition (non-monetary) [member]	
	Other non-monetary reward [member]	
Director on board [member]	Monetary reward [member]	
	Recognition (non-monetary) [member]	
	Other non-monetary reward [member]	
…	…	
All employees [member]	…	

Most enumerations lists in CDP have been modelled in the taxonomy as dimension concepts, i.e. specific domain members, organized in axis and tables like shown above. XBRL provides functionality to allow a user to introduce a new value by extending the taxonomy and it allows for Multilanguage.

However, some enumeration lists are reporting facts and they need to be extended[15] and presented in different languages[16].

In this case a fourth approach needs to be followed, which is similar to the first implementation of the second case, presented above. The following solutions were considered:

1. QName and linkbase approach

2. XML schema enumeration with generic label and extension by extension.

3. XML schema enumeration with generic label and other concept usage.

QName and linkbase approach

The basic design is as follows:

- Define primary item with QName Item Type.
- Declare enumeration items as abstract items.
- Build relationship between primary item and enumeration items.
- For multi language support, simply put labels to each enumerated items.
- Extension is made by defining new enumerated item and build relationship with the primary item.

The advantages of this solution are that the enumeration list can be extended in XBRL Manner; label and reference can be add for each item in a label link; is not so difficult to implement. The disadvantage is the need for application to perform validation and thus, to create one specification and register the arcrole type.

XML schema enumeration with generic label and extension by extension.

The basic design is as follows:

- Define primary item with string/token item type.
- Declare enumeration in its content model as a restriction.
- Each enumeration must have ID.
- For multi language support, create generic link then connect each enumeration to generic labels.
- Extension is made by defining new item.

The advantages of this solution are that label and reference can be added for each item in a **generic** link (needs tool support); a simple XML schema validation is enough for data validation; and is not difficult to implement. A disadvantage is that extending the enumeration in the same item seems impossible. It needs another item definition deriving from the item.

XML schema enumeration with generic label and other concept usage.

The basic design is as follows:

- Define primary item with string/token item type.

[16] A proposal is being researched based on the use of Arcrole plus a qualified name in itemType definition, e.g. e.g. Arcrole:ItemTypeName:LOVPlus.

- Declare enumeration in its content model as a restriction of extension, for example “other”.
- One enumeration value must provide special meaning for other enumerations.
- Each enumeration must have ID.
- For multi language support, create generic link then connect each enumeration to generic labels.
- The extension is made by selecting special enumeration with specific concept that describes the value.

The advantages of this solution are that label and reference can be added for each item in a **generic** link (needs tool support); a simple XML schema validation is enough for data validation with special care in case of other; and is not difficult to implement. A disadvantage is that limiting enumeration in the same item seems impossible (it needs another item definition deriving from the item); is not possible to control additional tokens; no multi language support for “other” descriptive value is possible.

Overall, the first aapproach seems better since:

- Semantic representation as taxonomy concept.
- Live with same primary item.
- Provides complete answers to all requirements.

CDP seeks to implement in the future this approach. However, due to time constraints that hasn’t been possible to do for this version of the taxonomy and simple enumeration lists were used.

4.1.6 Extended Link Roles

Extended link roles (ELR) in the presentation linkbase are defined considering the pages layout of the CDP Online Response System. This was an explicit option as filers of climate change information will be used to this layout. This implies that under the same presentation ELR you may find more than one hypercube table, but they are always rooted on an abstract element. Each abstract element directly connected to a hypercube (table) will only be linked to one and one only hypercube element (table). In a similar way, it will only be linked with one Line Items abstract element. However, under that element there can be further line items abstract elements.

Extended link roles (ELR) in the definition linkbase are also defined considering the pages layout of the CDP Online Response System and the order of appearance of the concepts being modelled in the CDP guidance. In this case, there will be only one hypercube table per ELR.

4.1.7 Other

Emission factors presented a challenge to the modelling. The option was to model or not the units of the emission factor explicitly in the taxonomy, as reporting facts. Emission factors were modelled has requiring a value, denominator units, numerator units, a year and a reference. These facts are reported against axes that are composed of materials and fuels and, for the case of electricity, countries. This has been modelled this way it allows full characterization of both materials and energy emission factors by country and the facts selected to be reported are enough to provide a thorough characterization of the emission factor.

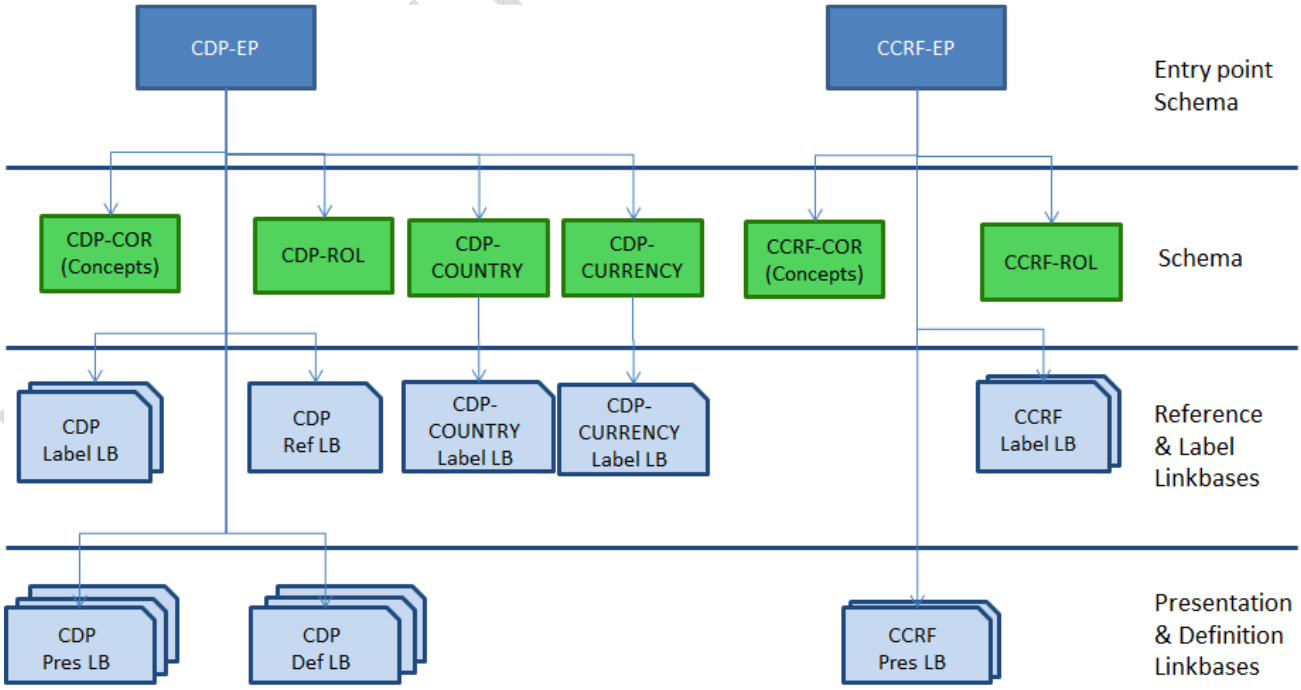
Furthermore, the expression of units is likely to be a cumbersome task to be done in XBRL and it does not allow characterization of all the different cases. For instance, while it could be specified that the numerator needs to be in units of mass, the numerator could be in many different types, e.g. mass, volume or energy.

On emissions breakdown the approach taken was to ask for breakdowns one by one. This means that a "Cartesian product" is not being asked. To understand what we mean by "Cartesian product" consider breakdown of emissions by country. A typical table will be modelled as composed of an axis characterizing the scopes (18 categories in total – scope 1, scope 2 and the 16 scope 3 categories defined by GHG protocol), which are then breakdown by country. If you have 100 countries, you have in total per line item 100 * 18 = 1800 different reporting concepts, which result from the Cartesian product. It could be said that the cardinality of this product is 1800. You could still add other dimensions of breakdown into these structures, e.g. you could include an axis for business division, a common type of breakdown in GHG emissions and financial reporting. If that was done for a company that had 4 different business division, in total there would be 100*18*4 = 7200 different reporting concepts. It is easy to understand that has you add dimensions to the Cartesian product, the cardinality (the number of reporting facts that can be reported) increases immensely. Consider, for example, the addition of the facility breakdown, where certain companies can have more than 100 facilities. It is true that if breakdown dimensions were modelled as cartesian products that the taxonomy could accept in practice even the most granular level of information. However, this is unlikely to happen in practice and it would certainly make the output XBRL a lot more complicated than what it needs to be. For this reason, breakdowns were modelled independently from each other.

4.2 Modularization

This section describes how CCRT is logically organized. This version of the CCRT contains two schema files to serve as entry points and that refer to different domain references: one for CDP (www.cdproject.net) and one for CCRF (www.cdsb.net). For each of these a specific folder was created that contains the different taxonomy linkbases and schema files.

The entry point schema files are the schema files that are referenced from instance documents (reports) filed by reporting entities.



5 Physical model

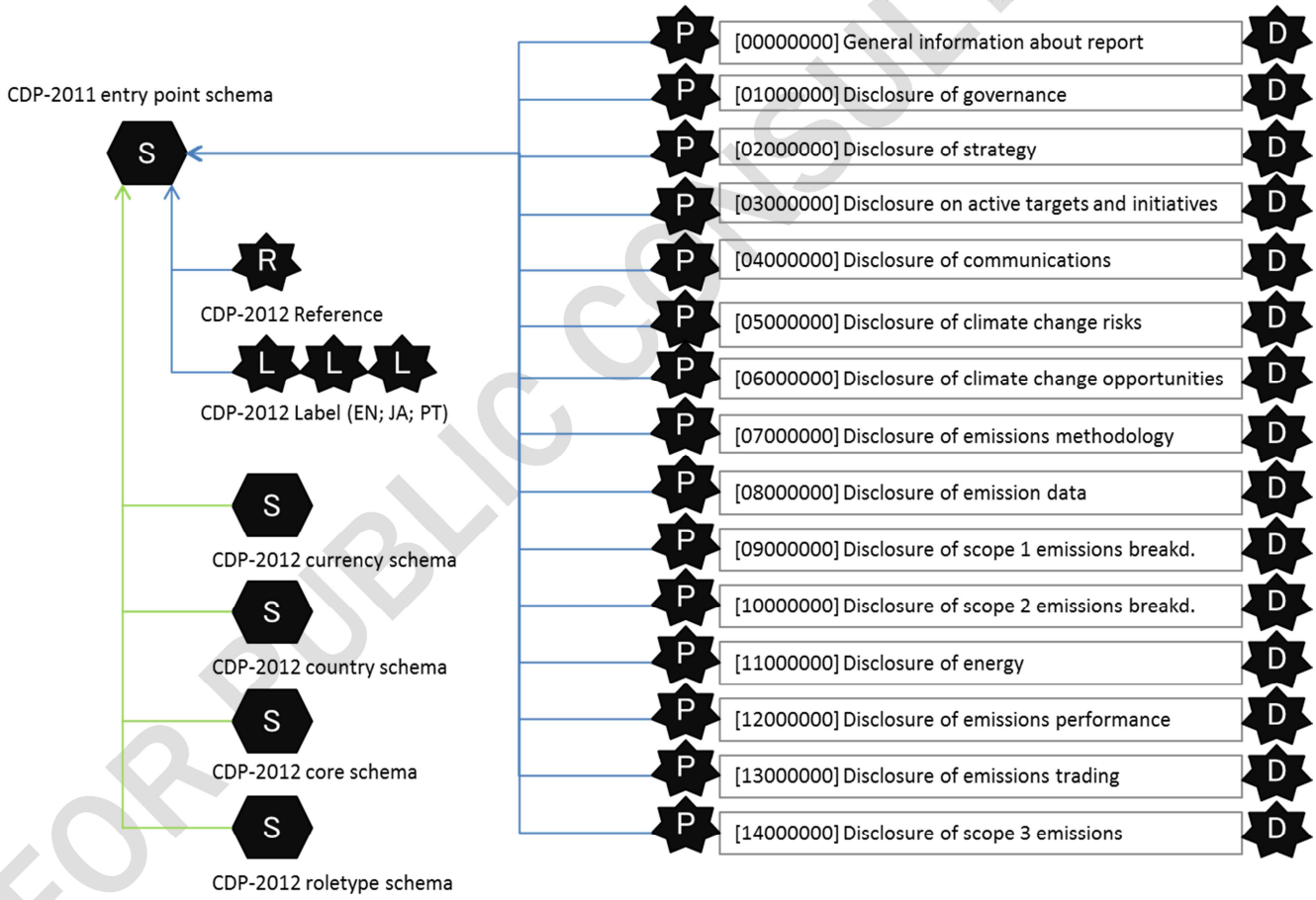
This section explains how the logical model is physically implemented within the constraints of current XBRL specification and how the physical XBRL files are organized and work together.

5.1 Physical structure of the Climate Change Reporting Taxonomy

The Climate Change Reporting Taxonomy contains files organized into two separate folders:

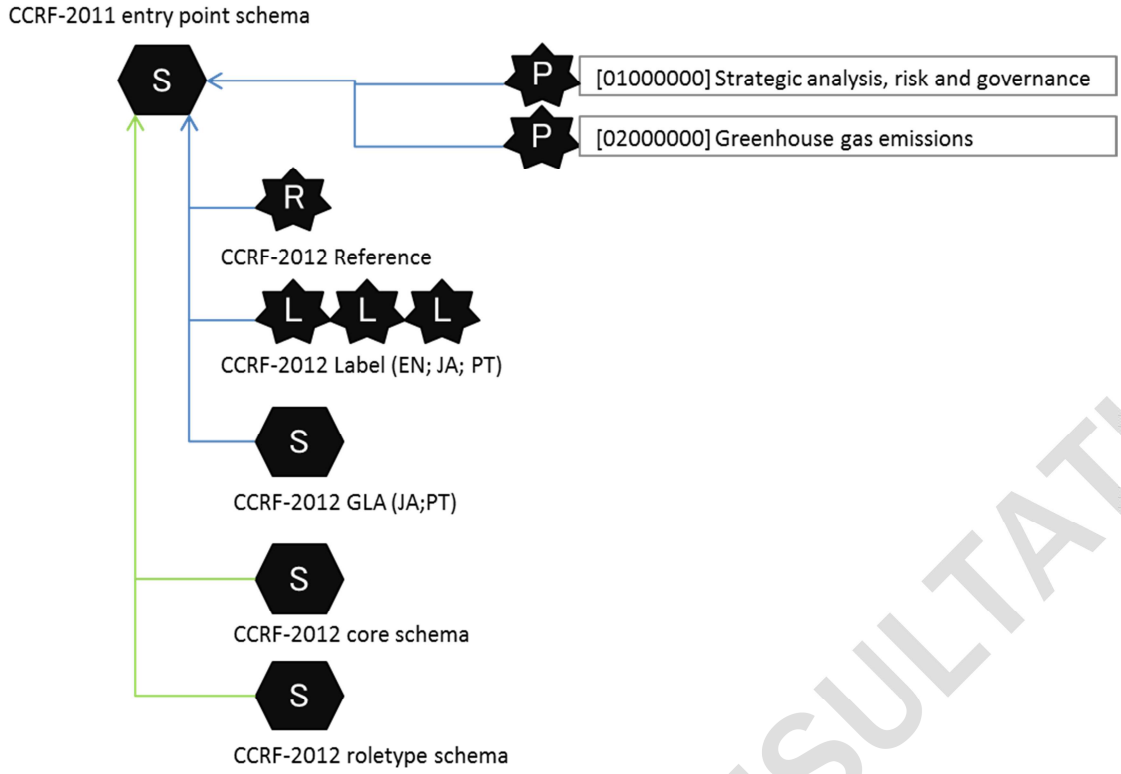
- www.cdproject.net folder, which contains the entry point and files for the Carbon Disclosure Project;
- www.cdsb.net folder, which contains the entry point and files for the Climate Change Reference Framework.

The physical structure of the CDP entry point is shown in the figure below.



To load the taxonomy the user should open the entry point file which will then call all the different files needed for rendering the taxonomy, consisting of references for each concept (R), label (L), role type, core concept definition, currency and country schema files (S). Additionally, there are also files relative to presentation linkbase (P) and definition linkbase (D).

The physical structure of the CCRF entry point is shown in the figure below.



As with previous example, to load the taxonomy the user should open the entry point file which will then call all the different files needed for rendering the taxonomy, consisting of references for each concept (R), label (L) in different languages, role type and core concept definition schema files (S). Additionally, there are also files relative to presentation linkbase (P). No files related with definition linkbase (D) are needed for this entry point as there is no use of dimensional concepts.

5.2 Relationships between domain, presentation linkbase and definition linkbase

This section briefly introduces the relationships between the domain reference (CDP Investor 2012, CCRF), the presentation linkbase and the definition linkbase. These relationships are described in the set of tables below.

The presentation linkbase are set in order to match the existent standards or guidelines that are familiar to the user with some knowledge of the domain (climate change reporting). In this case the base is the CDP 2012 Guidance (CDP entry point) and the Climate Change Reference Framework (CCRF entry point), as explained in section 3.

For each of the presentation linkbase reference can be made to a set of disclosures that use dimensional concepts. In that case, there is a correspondence between concepts as they are organized in the presentation linkbase and the definition linkbase where the dimensional concepts are defined.

Tables are defined whenever there are multiple dimensions that need to be characterized for a given fact. For example, emissions data is not only a numeric fact, but also a fact for which it should be specified the Scope of the emissions value. The concept of “scope” is one that can be further specified as scope 1, 2 or 3, and scope 3 further breakdown into more detailed categories. It is thus extremely convenient that these concepts can be brought together under a common axis (Type of scope) that can then be easily reused in several instances where the concepts of emission value and scope are used within the taxonomy. This approach is favoured

instead of an approach where each line item would specify not only that it is an emission value, but also the type of scope of that emission value.

For CDP entry point the relationship between how information is organized in the domain reference (Investor CDP 2012), the presentation linkbase and definition linkbase is:

Investor CDP 2012 Information Request	Presentation LB	Definition LB (Dimension)
0. Introduction Sign Off	[00000000] General information about report	[00100000] Disclosure of person responsible for signing off the report
1. Governance	[01000000] Disclosure of governance	[01100000] Disclosure of incentives
2. Strategy	[02000000] Disclosure of strategy	-
3. Targets & Initiatives	[03000000] Disclosure on active targets and initiatives	[03100000] Disclosure of types of active emission targets [03200000] Disclosure of detail information on active emissions targets [03200000a] Disclosure of detail information on active emissions targets, absolute emission target [03200000b] Disclosure of detail information on active emissions targets, intensity emission target [03200000c] Disclosure of detail information on active emissions targets, absolute and intensity targets [03200000d] Disclosure of detail information on active emissions targets, no emission targets [03300000] Disclosure of total number of emission reduction projects at each stage of development and estimated emission reductions [03400000] Disclosure of detail information on emission reduction activities active in current period [03500000] Disclosure of methods used to drive investments in emission reduction activities
4. Communications	[04000000] Disclosure of communications	[04100000] Disclosure of communications on climate change and GHG emissions
5. Climate Change Risks	[05000000] Disclosure of climate change risks	[05100000] Disclosure of types of climate change risks that have potential to generate material impact on entity [05200000] Disclosure of risks driven by changes in regulation, physical climate parameters and other climate-related developments
6. Climate Change Opportunities	[06000000] Disclosure of climate change opportunities	[06100000] Disclosure of types of climate change opportunities that have potential to generate material impact on entity

		[06200000] Disclosure of opportunities driven by changes in regulation, physical climate parameters and other climate-related developments
7. Emissions methodology	[07000000] Disclosure of emissions methodology	[07100000] Disclosure of base year emissions [07200000] Disclosure of standards, protocols, or methodologies used to collect activity data and calculate scope 1 and 2 emissions [07300000] Disclosure of global warming potentials used [07400000] Disclosure of emission factors used
8. Emissions data	[08000000] Disclosure of emission data	[08100000] Disclosure of greenhouse gas inventory boundary [08200000] Disclosure of scope 1 and 2 emissions [08300000] Disclosure of exclusions to boundary [08400000] Disclosure of emissions uncertainty [08500000] Disclosure of verification or assurance status applicable to emissions [08600000] Disclosure of proportion of emissions verified or assured [08700000] Disclosure of standards used and level of verification or assurance applicable to emissions
9. Scope 1 breakdowns	[09000000] Disclosure of scope 1 emissions breakdowns	[09100000] Disclosure of type of emissions breakdowns provided [09200000] Disclosure of emissions breakdown by country and region [09300000] Disclosure of emissions breakdown by facility [09400000] Disclosure of emissions breakdown by business division [09600000] Disclosure of emissions breakdown by activity [09700000] Disclosure of emissions breakdown by entity legal structure
10. Scope 2 breakdowns	[10000000] Disclosure of scope 2 emissions breakdowns	[09100000] Disclosure of type of emissions breakdowns provided [09200000] Disclosure of emissions breakdown by country and region [09300000] Disclosure of emissions breakdown by facility [09400000] Disclosure of emissions breakdown by business division [09500000] Disclosure of emissions breakdown by greenhouse gas

		[09600000] Disclosure of emissions breakdown by activity [09700000] Disclosure of emissions breakdown by entity legal structure
11. Scope 2 contractual	[11000000] Disclosure of scope 2 contractual emissions	[11100000] Disclosure of certificates associated with zero or low carbon electricity within the reporting period
12. Energy	[12000000] Disclosure of energy	[12100000] Disclosure of energy consumption
13. Emissions performance	[13000000] Disclosure of emissions performance	[13100000] Disclosure of changes in absolute emissions compared to previous reporting period [13200000] Disclosure of changes in intensity emissions compared to previous reporting period
14. Emissions trading	[14000000] Disclosure of emissions trading	[14100000] Disclosure of information related to participation in emissions trading schemes [14200000] Disclosure on the use of project-based carbon credits within reporting period
15. Scope 3 emissions	[15000000] Disclosure of scope 3 emissions	[15100000] Detail information on scope 3 emissions [08500000] Disclosure of verification or assurance status applicable to emissions [08600000] Disclosure of proportion of emissions verified or assured [08700000] Disclosure of standards used and level of verification or assurance applicable to emissions [13100000] Disclosure of changes in absolute emissions compared to previous reporting period

For CCRF entry point the relationship between how information is organized in the domain reference (Climate Change Reference Framework), the presentation linkbase and definition linkbase is:

Climate Change Reference Framework	Presentation LB	Definition LB (Dimension)
Strategic analysis, risk and governance	[01000000] Strategic analysis, risk and governance	-
Greenhouse gas emissions	[02000000] Greenhouse gas emissions	-

6 Style guide

This chapter (Style Guide) presents rules that were followed in the creation of the Taxonomy in order for it to be a multi-lingual, internally consistent, high-quality and easy-to-use taxonomy.

The objectives with the establishment of these rules are to provide:

- Labels that are easy to use, identify and relate to reference materials;
- Labels and names that are unique;
- Consistency and predictability, making it easier to locate concepts;
- Support to future translation efforts to achieve consistency between languages;
- Support to future maintenance and changes to the taxonomy.

The style guide will also document exceptions to the rules defined.

6.1 General rules

US English spelling MUST be used for all English content of the taxonomy

The CDP has adopted US English spelling rules for all its materials, therefore all taxonomy content in English MUST be written in US English.

Abbreviations MAY be used in a capitalised form when more common than full name

A list of abbreviations that MAY be used in a capitalised form include (among others):

- XBRL, eXtensible Reporting Business Language;
- IFRS, International Financial Reporting Standards;
- GAAP, Generally Accepted Accounting Principles;
- GRI, Global Reporting Initiative;
- CDP, Carbon Disclosure Project;
- CDSB, Climate Disclosure Standards Board;
- GHG, Greenhouse Gas;
- the 6 Kyoto gases (CO2, N2O, CH4, PFC, HFC, SF6);
- GWP, Global Warming Potentials;
- IPIECA, The International Petroleum Industry Environmental Conservation Association
- ICLEI, International Council for Local Environmental Initiatives

- USEPA, United States Environmental Protection Agency
- IPCC, Intergovernmental Panel on Climate Change
- CCRF, Climate Change Reference Framework

6.2 Naming concepts convention

The following naming conventions were used when defining concepts in the Taxonomy.

Concepts MUST have a clear and understandable name

The name given to a concept MUST be clear. A longer and easier to understand name is preferable to a shorter name but more difficult to understand.

Concepts SHOULD be created according to the Label Camel Case Concatenation rules (LC3)

The name of the concept must define the concept clearly with no chance of misunderstanding its content. The following rules will generally apply:

- The concept names MUST be based on appropriate presentation labels.
- The first character of the concept name MUST not be underscore (_).
- The first character of the concept name MUST be capitalized.
- Words that do not add meaning SHOULD be left out, as for example: a, an, in, on, at, where, that, which.
- Connective words in the label MAY be omitted from the concept name to make names shorter. Examples of English connective words include (but are not limited to) the following: the, and, for, which, of, a.
- Special characters MUST be omitted from the concept name, including the following: () * + [] ? \/ ^ {} | @ # % = ~ ` ; : , <> & $ £ € .
- Concept names MUST be limited to 256 characters.

Concepts MUST be unique

Two or more concepts MUST NOT share the same concept name. If they do then uniqueness SHOULD be accomplished by:

- Appending a distinguishing suffix;
- Adding a distinguishing prefix.

Nature of concepts SHOULD be defined as a suffix

Standard suffixes that SHOULD be used for naming non-dimensional concepts:

- Only one suffix is to be used for this purpose.
- “Abstract” to be used for all abstract concepts.

- “TextBlock” to be used for all string concepts representing text blocks.
- “Percentage” suffix is added to concepts that use the Percentage data type.
- “Enumeration” suffix is added to concepts that use strings that are pre-defined.

Standard suffixes that SHOULD be used for naming dimensional concepts:

- “Table” to be added to concepts representing the hypercube level. The name of the Table is defined in plural, e.g. StandardsProtocolsOrMethodologiesTable. All “Table” elements should should be in the hypercubeItemType substitution group and have their type set to string and their period type set to duration.
- “Axis” to be added to concepts representing the dimension level of an explicit or typed dimension, e.g. StandardsProtocolsOrMethodologiesAxis. All “Axis” elements should be in the dimensionItemType substitution group and have their type set to string and their period type set to duration.
- “Member” to be added to concepts representing the member level of a dimension, e.g. GreenhouseGasProtocolCorporateAccountingAndReportingStandardRevisedEditionMember. All “Member” elements should have their period attribute set to duration, abstract set to “true” and their type set to domainItemType.
- “LineItems” (plural) to be added to concepts that serves as placeholders grouping concepts for a hypercube. The name of the Line Items is defined in plural, e.g. InformationAboutStandardsProtocolsOrMethodologiesUsedToCollectActivityDataAndCalculateScopeOneAndTwoEmissionsLineItems.

6.3 Label naming convention

Labels are provided in taxonomy to minimize the need to go to reference materials and to ensure that the user of the taxonomy is using the correct concept. Thus, a label should provide a concise but complete description of the concept.

The following goals SHOULD be achieved by providing labels to concepts:

- Each label describes the meaning of a concept;
- A label SHOULD facilitate the ability to locate a concept quickly;
- A label SHOULD be meaningful, recognizable, consistent, and easy to read;
- A label SHOULD be unique - users of the taxonomy do not need to refer to the concept name to be sure of its meaning.

Labels SHOULD NOT contain certain special characters.

The following characters should generally be avoided in creating concept labels:

? | > < : * “ + ; = . & ! @ # { } \

e.g. do not use

"Scope 3: Purchased goods and services [member]"

Common exception that will be allowed are "scope1+2" and "scope 1+2+3".

Characters that are allowed are:

A-Z, a-z, 0-9, (,), comma, -, ', space, [ ], /

e.g. use

Scope 3, purchased goods and services [member]

To the extent possible the use of "/" will be avoided and substituted by expression "or".

Labels SHOULD be concise, follow established terminology and avoid being excessively descriptive

The following rules SHOULD be applied:

- All abstract elements grouped under an Extended Link Role (ELR) SHOULD start by "Disclosure of…". Exception is for "General information about the report".
- All abstract elements used to group dimension information SHOULD start by "Disclosure of…".
- "LineItems" elements SHOULD NOT start by "Disclosure of…". "LineItems" that are rooted under an "Abstract" element SHOULD start by "Information about…". "LineItems" that are rooted in other "LineItems" SHOULD NOT start with "Information about…" and SHOULD use alternative forms such as "Description of…" or "Reason for…".
- The formulation "[label], comment" SHOULD be used instead of alternative formulations such as "Comment on" or "Comment about".

The agreed spelling and terminology SHOULD be used

There are various accepted ways to spell some terms, thus the following list of terms should be used in the Climate Change Reporting Taxonomy:

- "scope 1 + 2", SHALL be used to mean values that aggregate the emissions form the two scopes;
- "scope 1 and 2", SHALL be used for disclosures where values need to be presented separately for the two scopes;
- CO2e, SHALL be used to mean carbon dioxide equivalent;
- "tonne", SHALL be used to mean a "metric tonne".

Labels SHALL start with a capital letter and SHALL NOT use upper case, except for proper names and abbreviations

Example of proper use is

Scope 3, purchased goods and services [member]

IPIECA's Petroleum Industry Guidelines for reporting GHG emissions, 2003 [member]

Example of improper use is

Scope 3, Purchased goods and services [member]

Kyoto Protocol Greenhouse Gases [member]

Dashes SHALL NOT be used in labels where commas can be used instead.

For example, DO NOT use 'Verification or assurance underway but not yet complete - first year it has taken place [member]', but rather use 'Verification or assurance underway but not yet complete, first year it has taken place [member]'.

An allowed example of dash would be "Guinea-Bissau [member]".

Numbers SHOULD be expressed as text when less than 10, with exception of reference to Scopes 1, 2 and 3

The expression of number is a matter of judgement. The following rules for numbers SHOULD be considered when using numbers in labels:

- Exact numbers one through nine should be spelt out, except for percentages and numbers referring to parts of a book (for example, '5 per cent', 'page 2').
- Numbers of 10 or more should be expressed in figures.
- Exceptions are mention to Scopes 1, Scope 2 and Scope 3 concepts, as defined in the Greenhouse Gas Protocol.

Labels SHALL NOT have leading spaces, trailing spaces or double spaces.

Labels SHALL NOT have spaces also between square brackets, e.g.

[led disclosure][text block]

and not

[led disclosure] [text block]

Certain adjectives and prepositions used in labels SHOULD appear before or after the noun and be separated by a comma

For example "scope1 and 2" or "scope 3," or the mention to "gross" (meaning emissions before ....) will be constructed for all non-abstract elements, in the following way:

{other} {noun}, {scope}, {gross}

Example would be:

"Disclosure of boundary used for greenhouse gas inventory, scope 1 and 2"

"Emissions target, comment"

"Emission value, gross"

Labels SHOULD avoid defining what they do or do not include.

For example, "General environmental regulations, including planning permissions [member]" SHOULD be avoided. What an item includes or excludes should be provided in the definition of the concept or the calculation linkbase.

The label component related to XBRL and not to Climate Change Reporting SHALL be placed between square brackets '[ ]' at the end or beginning of the label

The component of labels placed in square brackets provides XBRL-related information that does not influence the information provided. For example:

- [08000000] Disclosure of emissions data;
- Boundary disclosure [abstract]

The following rules SHALL apply to standard labels aligned with naming convention

To abstract elements used to organize the taxonomy:

- SHALL append the word "[abstract]";
- Abstract elements that are nodes of line items SHALL append the word "[line items]";

Dimension elements:

- that are tables SHALL append the word "[table]";
- that are axis SHALL append the word "[axis];
- that are domain members SHALL append the word "[member]".

Non-abstract, reporting elements:

- textBlockItemType concepts SHALL append the word '[text block]' to the label;
- percentItemType concepts SHALL append the word "[percentage] to the label;
- booleanItemType concepts SHALL append the word [flag] to the label;

- Stringitem type concepts SHALL append in the label:
    - The word [status] when the reported fact resembles a status, e.g. “Absolute emissions trend comparatively to last reporting year [status][lead disclosure]”, which can have as status “increase” and “decrease”; or “Provision of incentives for management of climate change issues and attainment of targets [status] [lead disclosure]”, which can have as status “Incentives provided” and “Incentives not provided”;
    - The word [enumeration] when the reported fact makes use of a set of pre-defined string values.
- dateItemType concepts SHALL have in the label the word “date”;
- gYearItemType concepts SHALL have in the label the word “year”;
- integerItemType concepts SHALL have in the label the word “number”;
- massItemType concepts SHALL append the word [CO2] or [CO2e] to the end of the label.

Other conventions used are:

- Disclosures that lead to the disclosure of other information are identified as [lead disclosure]. This tag is added preferably to the highest-level concept, starting at abstract level first, then line items nodes and then line items, e.g. “Disclosure of highest level of direct responsibility for climate change within entity [lead disclosure]”.
- Disclosures that are led by other disclosures of information are identified as [led disclosure]. This tag is added preferably to the highest-level concept, this is abstract level first, then line items nodes and then line items, e.g. “Position of individual with highest level of responsibility [led disclosure]”.
- The terms scope 1, scope 2 and scope 3 will not be written in capital letters, unless they start the sentence.

Labels that are ambiguous such as “engagement process” SHALL be avoided. They SHALL be defined as complete and succinctly as possible, e.g. “Engagement process with policy makers” clearly identifies who is the object of the engagement process.

6.4 Reference link base

References to appropriate and authorative literature SHOULD be added to all non-abstract concepts defined in CCRT. The same concept can have multiple references but those references MUST NOT contradict themselves.

The CCRT uses in the following manner the parts defined by XBRL International in the reference schema[17] and identified in the table below.

[17] http://www.xbrl.org/2006/ref-2006-02-27.xsd

Reference part	Use in the taxonomy
Publisher	Publisher of the reference material, such as {CDP; CDSB; GHGP }
Name	Name refers to the specific publication, e.g. “Climate Change Reference Framework” or “Guidance for reporting companies”
Number	Number is used to record the actual number of the specific publication. For example, for Guidance for reporting companies, it will be referred by the year.
IssueDate	The issue date of the specific reference. The format is CCYY-MM-DD. If more than one version is published, the date of release of the version used should be referenced.
Chapter	For a publication that uses chapters, this part should be used to capture this information. Because chapters are not necessarily numbers, this is a string. In the case of the “Guidance for reporting companies”, chapter will be used to identify the CDP programmes to which the “Guidance for reporting companies” document apply.
Article	Article refers to a statutory article in legal material.
Notes	Notes can contain reference material; use this element when the note is published as a standalone document. There is a separate element for footnotes within other references
Section	Sections of standard, interpretation or guidance. In case of CDP “Guidance for reporting companies” a section will be identified to a CDP Module.
Sub-section	A sub-section is a specific part of a section. In case of CDP “Guidance for reporting companies” a sub-section will be identified to a specific CDP Page, used to structure the guidance document.[18]
Paragraph	A specific paragraph in the standard. In the case of CDP “Guidance for reporting companies” this will be identified to a specific question number, identified as Q##.##.
Subparagraph	Subparagraph of a paragraph. In the case of CDP “Guidance for reporting companies” this can refer to specific columns in tables or reporting concepts that are identified in the text associated with a specific question.
Clause	Subcomponent of a paragraph.
Subclause	Subcomponent of a clause in a paragraph.
Appendix	Refers to the name of an Appendix, which could be a number or text, e.g.
Example	Example captures examples used in reference documentation; there is a separate element for Exhibits.
Page	Page number of the reference material.
Exhibit	Exhibit refers to exhibits in reference documentation; examples have a separate element
Footnote	Footnote is used to reference footnotes that appear in reference information.
Sentence	In some reference material individual sentences can be referred to, and this element allows them to be referenced.
URI	Full URI of the reference such as
URIdate	Date or DateTime that the URI was valid, in CCYY-MM-DD format.
LedBy	Shows the correspondent question in CDP that leads to the equivalent question for this element
LeadTo	Shows the correspondent question(s) in CDP that is (are) led by the equivalent question for this element

[18] No references to the general guidance of each page are made as it generally links to specific functionality related to the current CDP Online Response system and does not apply to the domain expertise or to XBRL technology.

6.5 Extended Link Roles (ELRs)

Roles definitions SHALL start with the ordering number.

For better sorting of the extended link roles (ELR), the definitions of the ELRs SHALL start with an eight-digit number. The numbers allow sorting of the ELRs according to the structure of greenhouse gas reports, for example: “[010000000] Disclosure of governance”.

The numbering of presentation link ELR’s follows closely the organization of the CDP information request, namely the numbering of pages in its online response system.

The numbering of definition link ELR’s also relate to the organization of the CDP information request and the numbering of the pages and questions in the online response system. Thus the first two digits relate to the CDP page where that dimensional structure is first used and the 3rd digit will relate to the order in which they are presented in that CDP page. Exceptionally some ELR’s might have the use of lettering such as “a” or “b”,etc. In these cases, a previous ELR as already modelled the concept and ELR presents an alternative (and simpler) view of the same structure.

7 Annexes

7.1 Basic XBRL terminology

Please refer to the IFRS® Taxonomy 2012 Architecture - An overview of the draft (XBRL) architecture of the IFRS Taxonomy 2012, Appendix B, for a comprehensive glossary of basic XBRL terminology.

7.2 Basic greenhouse gas terminology[19]

Absolute target - A target defined by reduction in absolute emissions over time e.g., reduces CO**2** emissions by 25% below 1994 levels by 2010. (Chapter 11)

Additionality - A criterion for assessing whether a project has resulted in GHG emission reductions or removals in addition to what would have occurred in its absence. This is an important criterion when the goal of the project is to offset emissions elsewhere. (Chapter 8)

Allowance - The basic tradable commodity within GHG emission trading systems. Allowances grant their holder the right to emit a specific quantity of pollution once (e.g., one tonne of CO**2**eq). The total quantity of allowances issued by regulators dictates the total quantity of emissions possible under the system. At the end of each compliance period, each regulated entity must surrender sufficient allowances to cover their GHG emissions during that period.

Annex 1 countries - Defined in the International Climate Change Convention as those countries taking on emissions reduction obligations: Australia; Austria; Belgium; Belarus; Bulgaria; Canada; Croatia; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; Ireland; Italy; Japan; Latvia; Liechtenstein; Lithuania; Luxembourg; Monaco; Netherlands; New Zealand; Norway; Poland; Portugal; Romania; Russian Federation; Slovakia; Slovenia; Spain; Sweden; Switzerland; Ukraine; United Kingdom; USA.

Associated/affiliated company - The parent company has significant influence over the operating and financial policies of the associated/affiliated company, but not financial control. (Chapter 3)

Audit Trail - Well organized and transparent historical records documenting how an inventory was compiled.

Baseline - A hypothetical scenario for what GHG emissions, removals or storage would have been in the absence of the GHG project or project activity. (Chapter 8)

Base year - A historic datum (a specific year or an average over multiple years) against which a company's emissions are tracked over time. (Chapter 5)

Base year emissions - GHG emissions in the base year. (Chapter 5)

[19] Definitions as presented in the annex of GHG Protocol, A Corporate Accounting and Reporting Standard, Revised Edition (2004)

Base year emissions recalculation - Recalculation of emissions in the base year to reflect a change in the structure of the company, or to reflect a change in the accounting methodology used. This ensures data consistency over time, i.e., comparisons of like with like over time. (Chapter 5, 11)

Biofuels - Fuel made from plant material, e.g. wood, straw and ethanol from plant matter (Chapter 4, 9, Appendix B)

Boundaries - GHG accounting and reporting boundaries can have several dimensions, i.e. organizational, operational, geographic, business unit, and target boundaries. The inventory boundary determines which emissions are accounted and reported by the company. (Chapter 3, 4, 11)

Cap and trade system - A system that sets an overall emissions limit, allocates emissions allowances to participants, and allows them to trade allowances and emission credits with each other. (Chapter 2, 8, 11)

Capital Lease - A lease which transfers substantially all the risks and rewards of ownership to the lessee and is accounted for as an asset on the balance sheet of the lessee. Also known as a Financial or Finance Lease. Leases other than Capital/Financial/Finance leases are Operating leases. Consult an accountant for further detail as definitions of lease types differ between various accepted financial standards. (Chapter 4)

Carbon sequestration - The uptake of CO**2** and storage of carbon in biological sinks.

Clean Development Mechanism (CDM) - A mechanism established by Article 12 of the Kyoto Protocol for project-based emission reduction activities in developing countries. The CDM is designed to meet two main objectives: to address the sustainability needs of the host country and to increase the opportunities available to Annex 1 Parties to meet their GHG reduction commitments. The CDM allows for the creation, acquisition and transfer of CERs from climate change mitigation projects undertaken in non-Annex 1 countries.

Certified Emission Reductions (CERs) - A unit of emission reduction generated by a CDM project. CERs are tradable commodities that can be used by Annex 1 countries to meet their commitments under the Kyoto Protocol.

Co-generation unit/Combined heat and power (CHP) - A facility producing both electricity and steam/heat using the same fuel supply.

Consolidation Combination of GHG emissions data from separate operations that form part of one company or group of companies.

Control - The ability of a company to direct the policies of another operation. More specifically, it is defined as either operational control (the organization or one of its subsidiaries has the full authority to introduce and implement its operating policies at the operation) or financial control (the organization has the ability to direct the financial and operating policies of the operation with a view to gaining economic benefits from its activities).

Corporate inventory program - A program to produce annual corporate inventories that are in keeping with the principles, standards, and guidance of the *GHG Protocol Corporate Standard*. This includes all institutional, managerial and technical arrangements made for the collection of data, preparation of a GHG inventory, and implementation of the steps taken to manage the quality of their emission inventory.

CO2 equivalent (CO2e) - The universal unit of measurement to indicate the global warming potential (GWP) of each of the six greenhouse gases, expressed in terms of the GWP of one unit of carbon dioxide. It is used to evaluate releasing (or avoiding releasing) different greenhouse gases against a common basis.

Cross-sector calculation tool - A GHG Protocol calculation tool that addresses GHG sources common to various sectors, e.g. emissions from stationary or mobile combustion. See also GHG Protocol calculation tools (www.ghgprotocol.org).

Direct GHG emissions - Emissions from sources that are owned or controlled by the reporting company.

Direct monitoring - Direct monitoring of exhaust stream contents in the form of continuous emissions monitoring (CEM) or periodic sampling.

Double counting - Two or more reporting companies take ownership of the same emissions or reductions.

Emissions - The release of GHG into the atmosphere.

Emission factor - A factor allowing GHG emissions to be estimated from a unit of available activity data (e.g. tonnes of fuel consumed, tonnes of product produced) and absolute GHG emissions.

Emission Reduction Unit (ERU) - A unit of emission reduction generated by a Joint Implementation (JI) project. ERUs are tradable commodities which can be used by Annex 1 countries to help them meet their commitment under the Kyoto Protocol.

Equity share - The equity share reflects economic interest, which is the extent of rights a company has to the risks and rewards flowing from an operation. Typically, the share of economic risks and rewards in an operation
is aligned with the company's percentage ownership of that operation, and equity share will normally be the same as the ownership percentage.

Estimation uncertainty - Uncertainty that arises whenever GHG emissions are quantified, due to uncertainty in data inputs and calculation methodologies used to quantify GHG emissions.

Finance lease - A lease which transfers substantially all the risks and rewards of ownership to the lessee and is accounted for as an asset on the balance sheet of the lessee. Also known as a Capital or Financial Lease. Leases other than Capital/Financial/Finance leases are Operating leases. Consult an accountant for further detail as definitions of lease types differ between various accepted accounting principles.

Fixed asset investment - Equipment, land, stocks, property, incorporated and non-incorporated joint ventures, and partnerships over which the parent company has neither significant influence nor control.

Fugitive emissions - Emissions that are not physically controlled but result from the intentional or unintentional releases of GHGs. They commonly arise from the production, processing transmission storage and use of fuels
and other chemicals, often through joints, seals, packing, gaskets, etc.

Green power - A generic term for renewable energy sources and specific clean energy technologies that emit fewer GHG emissions relative to other sources of energy that supply the electric grid. Includes solar photovoltaic panels, solar thermal energy, geothermal energy, landfill gas, low-impact hydropower, and wind turbines.

Greenhouse gases (GHG) - For the purposes of this standard, GHGs are the six gases listed in the Kyoto Protocol: carbon dioxide (CO**2**); methane (CH**4**); nitrous oxide (N**2**O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); and sulphur hexafluoride (SF**6**).

GHG capture - Collection of GHG emissions from a GHG source for storage in a sink.

GHG credit - GHG offsets can be converted into GHG credits when used to meet an externally imposed target. A GHG credit is a convertible and transferable instrument usually bestowed by a GHG program.

GHG offset - Offsets are discrete GHG reductions used to compensate for (i.e., offset) GHG emissions elsewhere, for example to meet a voluntary or mandatory GHG target or cap. Offsets are calculated relative to a baseline that represents a hypothetical scenario for what emissions would have been in the absence of the mitigation project that generates the offsets. To avoid double counting, the reduction giving rise to the offset must occur at sources or sinks not included in the target or cap for which it is used.

GHG program - A generic term used to refer to any voluntary or mandatory international, national, sub-national, government or non-governmental authority that registers, certifies, or regulates GHG emissions or removals outside the company. e.g. CDM, EU ETS, CCX, and CCAR.

GHG project - A specific project or activity designed to achieve GHG emission reductions, storage of carbon, or enhancement of GHG removals from the atmosphere. GHG projects may be stand-alone projects, or specific activities or elements within a larger non-GHG related project.

GHG Protocol calculation tools - A number of cross-sector and sector-specific tools that calculate GHG emissions on the basis of activity data and emission factors (available at www.ghgprotocol.org).

GHG Protocol Initiative - A multi-stakeholder collaboration convened by the World Resources Institute and World Business Council for Sustainable Development to design, develop and promote the use of accounting and reporting standards for business. It comprises of two separate but linked standards—the *GHG Protocol Corporate Accounting and Reporting Standard* and the *GHG Protocol Project Quantification Standard.*

GHG Protocol Project - An additional module of the GHG Protocol Initiative addressing the quantification of GHG

Quantification Standard - reduction projects. This includes projects that will be used to offset emissions elsewhere and/or generate credits. More information available at www.ghgprotocol.org.

GHG Protocol sector specific calculation tools - A GHG calculation tool that addresses GHG sources that are unique to certain sectors, e.g., process emissions from aluminum production. (see also GHG Protocol Calculation tools)

GHG public report - Provides, among other details, the reporting company's physical emissions for its chosen inventory boundary.

GHG registry - A public database of organizational GHG emissions and/or project reductions. For example, the US Department of Energy 1605b Voluntary GHG Reporting Program, CCAR, World Economic Forum's Global GHG Registry. Each registry has its own rules regarding what and how information is reported.

GHG removal - Absorbtion or sequestration of GHGs from the atmosphere.

GHG sink - Any physical unit or process that stores GHGs; usually refers to forests and underground/deep sea reservoirs of CO**2**.

GHG source - Any physical unit or process which releases GHG into the atmosphere.

GHG trades - All purchases or sales of GHG emission allowances, offsets, and credits.

Global Warming Potential (GWP) - A factor describing the radiative forcing impact (degree of harm to the atmosphere) of one unit of a given GHG relative to one unit of CO**2**.

Group company / subsidiary - The parent company has the ability to direct the financial and operating policies of a group company/subsidiary with a view to gaining economic benefits from its activities.

Heating value - The amount of energy released when a fuel is burned completely. Care must be taken not to confuse higher heating values (HHVs), used in the US and Canada, and lower heating values, used in all other countries (for further details refer to the calculation tool for stationary combustion available at www.ghgprotocol.org).

Indirect GHG emissions - Emissions that are a consequence of the operations of the reporting company, but occur at sources owned or controlled by another company.

Insourcing - The administration of ancillary business activities, formally performed outside of the company, using resources within a company.

Intensity ratios - Ratios that express GHG impact per unit of physical activity or unit of economic value (e.g. tonnes of CO**2** emissions per unit of electricity generated). Intensity ratios are the inverse of productivity/efficiency ratios.

Intensity target - A target defined by reduction in the ratio of emissions and a business metric over time e.g., reduce CO**2** per tonne of cement by 12% between 2000 and 2008.

Intergovernmental Panel on Climate Change (IPCC) - International body of climate change scientists. The role of the IPCC is to assess the scientific, technical and socio-economic information relevant to the understanding of the risk of human-induced climate change (www.ipcc.ch).

Inventory - A quantified list of an organization's GHG emissions and sources.

Inventory boundary - An imaginary line that encompasses the direct and indirect emissions that are included in the inventory. It results from the chosen organizational and operational boundaries.

Inventory quality The extent to which an inventory provides a faithful, true and fair account of an organization's GHG emissions.

Joint Implementation (JI) - The JI mechanism was established in Article 6 of the Kyoto Protocol and refers to climate change mitigation projects implemented between two Annex 1 countries. JI allows for the creation, acquisition and transfer of "emission reduction units" (ERUs).

Kyoto Protocol - A protocol to the United Nations Framework Convention on Climate Change (UNFCCC). Once entered into force it will require countries listed in its Annex B (developed nations) to meet reduction targets of GHG emissions relative to their 1990 levels during the period of 2008–12.

Leakage (Secondary effect) - Leakage occurs when a project changes the availability or quantity of a product or service that results in changes in GHG emissions elsewhere.

Life Cycle Analysis - Assessment of the sum of a product's effects (e.g. GHG emissions) at each step in its life cycle, including resource extraction, production, use and waste disposal.

Material discrepancy - An error (for example from an oversight, omission, or miscalculation) that results in the reported quantity being significantly different to the true value to an extent that will influence performance or decisions. Also known as material misstatement.

Materiality threshold - A concept employed in the process of verification. It is often used to determine whether an error or omission is a material discrepancy or not. It should not be viewed as a de minimus for defining a
complete inventory.

Mobile combustion - Burning of fuels by transportation devices such as cars, trucks, trains, airplanes, ships etc.

Model uncertainty - GHG quantification uncertainty associated with mathematical equations used to characterize the relationship between various parameters and emission processes.

Non-Annex 1 countries - Countries that have ratified or acceded to the UNFCC but are not listed under Annex 1 and are therefore not under any emission reduction obligation (see also Annex 1 countries).

Operation - A generic term used to denote any kind of business, irrespective of its organizational, governance, or legal structures. An operation can be a facility, subsidiary, affiliated company or other form of joint venture.

Operating lease - A lease which does not transfer the risks and rewards of ownership to the lessee and is not recorded as an asset in the balance sheet of the lessee. Leases other than Operating leases are Capital/Financial/Finance leases. Consult an accountant for further detail as definitions of lease types differ between various accepted financial standards.

Operational boundaries - The boundaries that determine the direct and indirect emissions associated with operations owned or controlled by the reporting company. This assessment allows a company to establish which operations and sources cause direct and indirect emissions, and to decide which indirect emissions to include that are a consequence of its operations.

Organic growth/decline - Increases or decreases in GHG emissions as a result of changes in production output, product mix, plant closures and the opening of new plants.

Organizational boundaries - The boundaries that determine the operations owned or controlled by the reporting company, depending on the consolidation approach taken (equity or control approach).

Outsourcing - The contracting out of activities to other businesses.

Parameter uncertainty - GHG quantification uncertainty associated with quantifying the parameters used as inputs to estimation models.

Primary effects - The specific GHG reducing elements or activities (reducing GHG emissions, carbon storage, or enhancing GHG removals) that the project is intended to achieve.

Process emissions - Emissions generated from manufacturing processes, such as the CO2 that is arises from the breakdown of calcium carbonate (CaCO3) during cement manufacture.

Productivity/efficiency ratios - Ratios that express the value or achievement of a business divided by its GHG impact. Increasing efficiency ratios reflect a positive performance improvement. e.g. resource productivity(sales per tonne GHG). Productivity/efficiency ratios are the inverse of intensity ratios.

Ratio indicator - Indicators providing information on relative performance such as intensity ratios or productivity/efficiency ratios.

Renewable energy - Energy taken from sources that are inexhaustible, e.g. wind, water, solar, geothermal energy, and biofuels.

Reporting - Presenting data to internal management and external users such as regulators, shareholders, the general public or specific stakeholder groups.

Reversibility of reductions - This occurs when reductions are temporary, or where removed or stored carbon may be returned to the atmosphere at some point in the future.

Rolling base year - The process of shifting or rolling the base year forward by a certain number of years at regular intervals of time.

Scientific Uncertainty - Uncertainty that arises when the science of the actual emission and/or removal process is not completely understood.

Scope - Defines the operational boundaries in relation to indirect and direct GHG emissions.

Scope 1 inventory - A reporting organization's direct GHG emissions.

Scope 2 inventory - A reporting organization's emissions associated with the generation of electricity, heating/ cooling, or steam purchased for own consumption.

Scope 3 inventory - A reporting organization's indirect emissions other than those covered in scope 2.

Scope of works - An up-front specification that indicates the type of verification to be undertaken and the level of assurance to be provided between the reporting company and the verifier during the verification process.

Secondary effects (Leakage) - GHG emissions changes resulting from the project not captured by the primary effect(s). These are typically the small, unintended GHG consequences of a project.

Sequestered atmospheric carbon - Carbon removed from the atmosphere by biological sinks and stored in plant tissue. Sequestered atmospheric carbon does not include GHGs captured through carbon capture and storage.

Significance threshold - A qualitative or quantitative criteria used to define a significant structural change. It is the responsibility of the company/ verifier to determine the "significance threshold" for considering base year emissions recalculation. In most cases the "significance threshold" depends on the use of the information, the characteristics of the company, and the features of structural changes.

Stationary Combustion - Burning of fuels to generate electricity, steam, heat, or power in stationary equipment such as boilers, furnaces etc.

Structural change - A change in the organizational or operational boundaries of a company that result in the transfer of ownership or control of emissions from one company to another. Structural changes usually result from a transfer of ownership of emissions, such as mergers, acquisitions, divestitures, but can also include outsourcing/ insourcing.

Target base year - The base year used for defining a GHG target, e.g. to reduce CO**2** emissions 25% below the target base year levels by the target base year 2000 by the year 2010.

Target boundary - The boundary that defines which GHG's, geographic operations, sources and activities are covered by the target.

Target commitment period - The period of time during which emissions performance is actually measured against the target. It ends with the target completion date.

Target completion date - The date that defines the end of the target commitment period and determines whether the target is relatively short or long-term.

Target double counting policy - A policy that determines how double counting of GHG reductions or other instruments, such as allowances issued by external trading programs, is dealt with under a GHG target. It applies only to companies that engage in trading (sale or purchase) of offsets or whose corporate target boundaries interface with other companies' targets or external programs.

Uncertainty - 1. Statistical definition: A parameter associated with the result of a measurement that characterizes the dispersion of the values that could be reasonably attributed to the measured quantity. (e.g., the sample variance or coefficient of variation). 2. Inventory definition: A general and imprecise term which refers to the lack of certainty in emissionsrelated data resulting from any causal factor, such as the application of non-representative factors or methods, incomplete data on sources and sinks, lack of transparency etc. Reported uncertainty information typically specifies a quantitative estimates of the likely or perceived difference between a reported value and a qualitative description of the likely causes of the difference.

United Nations Framework Convention on Climate Change (UNFCCC) - Signed in 1992 at the Rio Earth Summit, the UNFCCC is a milestone Convention on Climate Change treaty that provides an overall framework for international efforts to (UNFCCC) mitigate climate change. The Kyoto Protocol is a protocol to the UNFCCC.

Value chain emissions - Emissions from the upstream and downstream activities associated with the operations of the reporting company.

Verification - An independent assessment of the reliability (considering completeness and accuracy) of a GHG inventory.