California: Digital First Climate Data
Standards Benefit Companies, Data Collectors, Data Users

February, 2024

Executive Summary

To meet the goals of climate initiatives worldwide requires governments to understand the impact of industry on the environment. This can only be accomplished by collecting data that is concretely understood, timely, and consistently prepared to foster a shared understanding of the current state of climate risk and to monitor changes going forward. Digital data standards enable comparison across reporting entities so that businesses can identify their own risks and learn how to reduce their impact on the environment. At the same time, the reporting of climate data must be as efficient as possible to minimize the burden on reporting entities; and the collection and analysis of climate data must be automated to ensure the lowest possible cost for collecting agencies and data users.

Regulators tasked with collecting and evaluating global climate data like greenhouse gas (GHG) emissions are increasingly requiring data to be prepared in structured, machine-readable format, relying on the eXtensible Business Reporting Language (XBRL) standard. This is driven by the recognition that only structured, digital data can be confidently, cost-efficiently reported, collected, and analyzed. Regulators opt for XBRL because it is open, nonproprietary, widely used in global markets, and can render emissions and other data types (financial, narrative, etc.) unequivocally machine-readable.

Agreeing on common data definitions and structure (which is needed when data is standardized) will reduce the burden on companies when reporting climate data. With multiple climate data collection requirements around the world, a single company may be tasked with reporting to more than one regulatory authority. This makes it imperative that regulators agree on a single set of definitions and data structure for reporting of data like GHG emissions where there is likely to be overlap. This will eliminate duplication, the potential for errors, and reduce the burden on those reporting.

This paper recommends adopting the XBRL standard for reporting GHG emissions in support of California SB 253 and for SB 261. XBRL is already being mandated for climate data in jurisdictions in the US and around the world. It is the most cost-efficient approach for reporting entities, and the only method to ensure the collection of clean, consistent data for effective evaluation of climate

risk. If regulators adopt the same approach, companies will be able to prepare a single digital report which can support disclosure requirements to the appropriate securities regulators (and many may have more than one) and to the State of California.

Digital climate data reporting

Regulatory authorities realize that the historical practice of collecting emissions and other climate data through surveys, in unstructured reports like PDFs or spreadsheets, or uploaded to online portals, are not effective. These approaches have led to overly burdensome, duplicative reporting by businesses, costly collection processes, and climate data that is inconsistent, outdated, and not interoperable.

Climate initiatives worldwide are now focused on sustainability reporting in digital, structured format. They are taking the lead from regulators who have been collecting standardized, structured financial and narrative data for decades from many of the same companies that will now also be reporting climate data. These programs have proven successful at capturing the complexity of financial information. Modernizing the collection of climate data is a natural evolution, particularly given the importance of gaining a clear understanding about climate risk.

To that end, the Securities and Exchange Commission (SEC) is expected to publish a final rule[1] in the first half of 2024 which will require emissions reporting from all U.S. listed companies in structured XBRL format. In Europe, the Corporate Sustainability Reporting Directive (CSRD)[2] calls for all large companies and most listed companies (micro-enterprises excluded) in the European Union (EU) to report sustainability data through a phased-in program starting in 2024 and running through 2030. Sustainability data will be required to be digitized in XBRL format starting in year two. Public companies, some which will be U.S. based, will comply in phase 1 (therefore they will be reporting XBRL versions of sustainability reports by 2026). Public interest entities, which include large private companies and other utilities that do business in Europe, will begin reporting in phase two; smaller medium-sized enterprises in phase three; and all other internationally operated entities in phase four. All of these entities will be reporting using climate data standards (called an XBRL "taxonomy") created by the European Financial Reporting Advisory Group (EFRAG)[3].

The term "taxonomy" refers to a digital collection of terms representing a specific reporting domain. The taxonomy contains information about what can be reported, how it can be reported, and how data relates to other data. It is essentially a guide or "rulebook" on how reporting entities need to prepare the facts being reported.

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[1] See SEC proposed rule The Enhancement and Standardization of Climate-Related Disclosures for Investors: https://www.sec.gov/files/rules/proposed/2022/33-11042.pdf
[2] Corporate Sustainability Reporting Directive: https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en
[3] European Financial Reporting Advisory Group (EFRAG): https://www.efrag.org/

The EFRAG Taxonomy, therefore, contains all the concepts, like *GHG Emissions (CO2 equivalent)* for scopes 1, 2, and 3, along with definitions, data types and labels associated with the concept. The visual below shows the term *GHG Emissions (CO2 equivalent)* in a taxonomy viewing tool. The left side of the application shows how the term (or "taxonomy concept") relates to other information, for example it may appear as a line item on a table and could be broken down by baseline year, or by milestones and target year; it may be further disaggregated by calculation method (market-based or location-based).

The right side of the application displays the properties that would be associated with a fact reported for GHG emissions, for example it has a data type of "mass," a period type of duration (it is reported over a period of time) and is reported in decimals. The taxonomy rulebook provides concrete descriptions of the terms to be reported so that reporting entities and data users alike have complete, collective understanding of the meaning of the data making it not only easier to consume climate data but to report it as well.

Separately the IFRS Foundation, through its International Sustainability Standards Board Taxonomy (ISSB), has created a second XBRL taxonomy that also contains concepts for the reporting of GHG emissions, scopes 1, 2, and 3. Twelve countries have committed to using the ISSB Taxonomy to report, and more are considering adopting the ISSB Taxonomy for reporting.

Regulators and standards organizations have set up a working group to establish a concordance between the two taxonomies. The goal of the working group is to ensure that regardless of which taxonomy is used, the underlying concepts will be the same. This will eliminate duplicate reporting and reduce the burden on reporting entities. It will enable the interoperability of reported data,

which in turn will improve efficiencies and cut costs for those collecting and using climate-related data.

While the SEC rule proposal is silent on what taxonomy may be used for companies that ultimately will need to comply, the proposal notes that the SEC has modeled the proposed disclosures rules in part on the Task Force on Climate-Related Financial Disclosures (TCFD) framework to "*...enable companies to leverage the framework with which many investors and issuers are already familiar which should help to mitigate both the compliance burden for issuers and any burdens faced by investors in analyzing and comparing the new proposed disclosures.*"[4] Both the ISSB and EFRAG Taxonomy are based on the TFCD framework as well.

Standardized data reporting

Machine-readable data standards operate like most standards, from UPC codes to shipping containers. They are used to automate a manual process, making it less expensive, faster, and often less prone to error or fraud. Today, millions of organizations, from public and private companies to banks and utilities, prepare and submit financial and business data to regulators in structured, machine-readable format through hundreds of programs[5] around the world. Regulators have adopted XBRL to automate and modernize reporting of financial and other business information because it renders data unambiguously machine-readable, enabling automation, and eliminating manual data entry and review. When data is reported in structured, standardized format, it is more consistently prepared with agreed-upon definitions, labels, data types, and units of measure.

Widespread use of data standards has fostered a competitive marketplace of tools for preparation, data collection, extraction, and analysis. Competition between providers of thousands of software tools, both open-source and commercial, encourages competitive pricing and better applications.

In the United States, banks have been preparing their financials in XBRL format for 19 years, public companies for 15 years, utilities for three years. Each entity reports to their respective regulator and prepares their data following the same accounting standards they have used for decades, for example, US GAAP or IFRS. The US GAAP accounting standard, for example, provides the "information" layer and the data standard (XBRL) enforces a structure to the data that renders it machine-readable and portable.

Similarly, through the taxonomies developed by EFRAG and the ISSB, XBRL harmonizes with the GHG Protocol "information" layer to render GHG emissions data portable and machine-readable. XBRL modernizes the structure of the data, effectively freeing it from paper-based documents (PDF, HTML, Text) and transforming it into digitized facts that can be understood on their own. Each XBRL-formatted data point contains embedded information that fully articulates the meaning of that data point.

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[4] SEC proposal: https://www.sec.gov/files/rules/proposed/2022/33-11042.pdf
[5] XBRL Project Directory: https://www.xbrl.org/the-standard/why/xbrl-project-directory/

The visual below shows an Income Statement for [Microsoft Corporation in XBRL format on the SEC website](#). The fact highlighted has embedded information which is depicted in the popup box on the right to show that the value represents revenues for the quarter ending 12/31/2023 in millions of US dollars and has a credit balance. Every fact on this table with red bars above and below also has embedded metadata that is digitally transported along with the fact so that it can be completely understood by a machine or by a human.

PART I. FINANCIAL INFORMATION
ITEM 1. FINANCIAL STATEMENTS
INCOME STATEMENTS

(In millions, except per share amounts) (Unaudited)	Three Months Ended December 31,		Six Months Ended December 31,	
	2023	2022	2023	2022
Revenue:				
Product	$ 18,941	$ 16,517	$	
Service and other	43,079	36,230		
Total revenue	62,020	52,747		
Cost of revenue:				
Product	5,964	5,690		
Service and other	13,659	11,798		
Total cost of revenue	19,623	17,488		
Gross margin	42,397	35,259		
Research and development	7,142	6,844		
Sales and marketing	6,246	5,679		
General and administrative	1,977	2,337		
Operating income	27,032	20,399		
Other expense, net	(506)	(60)		
Income before income taxes	26,526	20,339	53,810	41,911
Provision for income taxes	4,656	3,914	9,649	7,930
Net income	$ 21,870	$ 16,425	$ 44,161	$ 33,981

Attributes

Revenue from Contract with Customer, Excluding Assessed Tax

Tag	us-gaap:RevenueFromContractWithCustomerExcludingAssessedTax
Fact	43,079,000,000
Period	3 months ending 12/31/2023
Axis	SRT Product Or Service Axis
Member	US-GAAP Service Other Member
Explicit Member	us-gaap:ServiceOtherMember
Measure	USD
Scale	Millions
Decimals	Millions
Balance	Credit
Sign	Positive
Type	Monetary Item Type
Format	num-dot-decimal

Public companies are also required to prepare narratives that accompany their financials in XBRL format. Narrative disclosures like the company's Basis of Accounting Policy, shown below, become much easier to search for and compare against other reporting entities. Structured, standardized text blocks like this would efficiently manage climate-related financial risk disclosures as called for in SB 261.

Accounting Principles

Our unaudited interim consolidated financial statements and accompanying notes are prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP"). In the opinion of management, the unaudited interim consolidated financial statements reflect all adjustments of a normal recurring nature that are necessary for a fair presentation of the results for the interim periods presented. Interim results are not necessarily indicative [...] should be read in conjunction with information included in the M[...] Securities and Exchange Commission on July 27, 2023.

We have recast certain prior period amounts to conform to the cur[...] no impact on our consolidated balance sheets, consolidated income [...]

Labels

Basis of Accounting, Policy [Policy Text Block]

Terse Label	Accounting Principles
Label	Basis of Accounting, Policy [Policy Text Block]
Documentation	Disclosure of accounting policy for basis of accounting, or basis of presentation, used to prepare the financial statements (for example, US Generally Accepted Accounting Principles, Other Comprehensive Basis of Accounting, IFRS).
Period	6 months ending 12/31/2023
Type	Text Block Item Type

Impact on data collectors and data users

Digital, structured data is easier for organizations collecting the data and for downstream users like investors to consume and access the data. Data is less expensive to process and available timelier. Users can drill down into detailed information such as facts buried in footnotes and full blocks of text within narratives that were previously cost-prohibitive to access. Publicly available data in easy-to-use structured format has encouraged the emergence of innovative data and analytics startup businesses because they can easily grab and manipulate data without manual data entry.

Data that is highly structured and detailed can be easily validated through automated error-checking rules which improve data integrity at zero or minimal cost to preparers or users. Because data prepared by reporting entities is higher quality, there is less need for data intermediaries or end users to spend time and resources on extensive data checking and cleaning, again reducing costs across the supply chain.

Users of data are keenly interested in obtaining more data in structured format, including climate-related data. The Head of Company Data Strategy and Management, London Stock Exchange (formerly Refinitiv) noted in a video, "*…the use of XBRL… has benefited both Refinitiv clients and the investment communities we serve by enabling us to make significant strides in how quickly we can deliver our fundamental data to the markets. In many instances that time has reduced from days to minutes…Given how successful XBRL has been in the financial data space, I'm hoping it will become an enabler for more standardized reporting across non-financial data like ESG.*"[6]

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[6] https://xbrl.us/news/analyst-video/

Impact on reporting entities

Data preparers have also benefited. Their information is available to downstream users faster, at a more granular level, and is more consistent and comparable. Data from small and mid-size reporting entities is available at the same time and at the same level of detail as larger reporting entities, which gives them more visibility and greater access to capital. Less costly data processing can impact public companies in the form of a lower cost of capital since investment research costs are lower.

Access to their own and peer data for benchmarking is timelier, and less expensive. Reporting application providers have expanded their offerings to enable easy export of data in structured XBRL format. In most cases today, public companies prepare their financials and export their data in XBRL, all within the same application environment.

The benefits to reporting entities of preparing climate data in structured, machine-readable format are even greater, given that a single company may need to comply with multiple reporting requirements from different regulators. Data standards not only bring more consistent guidance, but they allow companies to prepare a single report that can be used to satisfy all their climate reporting requirements.

Why GHG emissions in digital, standardized format

Agreed-upon standards for cleaner, high quality data

The process of collecting sustainability data has evolved over time from investors collecting survey data from companies to the proliferation of multiple sustainability information standards that often overlap and conflict, and that produce unstructured data that is often inconsistent and not comparable. The fragmentation of the market has made it difficult for companies to respond to requests from investors, their own customers and employees, and regulators. Providing companies with an agreed-upon standard embodied in a taxonomy will give them the needed clarity and guidance that make it easier to report and will improve the usefulness of the data they produce.

Building and implementing data standards imposes a discipline on data preparers and users by providing concrete definitions for concepts that are assigned to facts, as well as restrictions in how facts are allowed to be reported. A data standard provides the market with the tools to ensure that data reported meets appropriate definitions, data type requirements, and units of measure. The report preparer is presented with the means to select and associate metadata with a fact that makes it unambiguously clear what it represents. For example, when reporting a fact representing GHG emissions in XBRL, the preparer associates information with each fact that answers the questions:
- Does the fact represent scope 1, 2, or 3?
- Which gas does the fact represent, for example, all GHG gasses, or specifically, Carbon dioxide, Methane, Nitrous oxide, etc.?
- Is the fact expressed in metric tons or another unit of measure?

- Over what period of time is the fact reported?
- Who is the reporting entity?
- If the fact represents scope 3, to which category of the GHG Protocol does it apply, for example, Category 1 - Purchased goods and services, or Category 2 - Capital Goods.

This level of detail in reported facts ensures that all members of the supply chain have complete clarity over what the data represents. Furthermore, the structured nature of XBRL formatted data allows regulators to create automated validation rules that provide an additional data quality check. Reporting businesses can run rules against their reports to flag and correct potential errors in their reports prior to submission.

Reduced burden for companies reporting to more than one regulator

Companies tasked with sustainability reporting to multiple entities will experience significant burdens unless a single consistent standard for what needs to be reported is established and agreed upon by their regulators.

Many companies likely to be required to comply with California climate legislation are the same companies that will also be tasked with submitting emissions data to the SEC, to European regulators to comply with CSRD, and/or to their local regulatory authority, following IFRS accounting standards. Toyota Motor Corporation, for example, is listed on the London Stock Exchange, the NYSE, the Nagoya Stock Exchange, and the Tokyo Stock Exchange which suggests that they may need to comply with requirements from the SEC, local regulatory authorities, and because they sell in California, SB 253 and 261 as well. A study conducted by Refinitiv[7] last year found that CSRD is likely to affect 10,000 companies outside the EU with about a third of those in the United States.

As noted earlier, the IFRS Foundation and EFRAG are coordinating efforts to agree upon climate-related concepts within their respective taxonomies, where there is overlap. That means that whether a company uses the ISSB Taxonomy or the EFRAG Taxonomy, they will be reporting GHG emissions using the same definitions and preparing the data files in the same structure. Both taxonomies are aligned with the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD). The SEC also proposes to model their climate-related disclosure framework on the TCFD recommendations. The convergence of these three sets of climate-related disclosure requirements: EFRAG, ISSB, and SEC proposed standards, is a significant step towards reducing the burden on reporting companies and eliminating duplication of effort. Companies tasked with reporting GHG emissions to multiple regulators will be able to prepare a single digital document which can be used for all submissions. Each regulatory authority will be able to extract the data they require, and it will be unambiguously understood and consistent with what is reported to other regulatory authorities.

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[7] WSJ article: At Least 10,000 Foreign Companies to Be Hit by EU Sustainability Rules: https://www.wsj.com/articles/at-least-10-000-foreign-companies-to-be-hit-by-eu-sustainability-rules-307a1406

How it could work

As shown in the diagram below, businesses submitting information for SB 253 and SB 261 compliance, and potentially for other regulatory authorities, could prepare a single report leveraging standards already developed by the IFRS Foundation (ISSB) or EFRAG. The same report would be submitted for all climate-related regulatory requirements, thus limiting the burden on businesses, and ensuring that all data users collect the same information.

XBRL formatted GHG emissions and disclosure data can be immediately published and used by investors, regulators, data intermediaries and researchers. The consistency of reporting provides a shared understanding of climate activities through fully interoperable, cost-effective data.

1. Company prepares climate data report in XBRL using data standards rulebook (Climate Data Taxonomy) agreed upon by global regulators (EFRAG, IFRS Foundation).

3. CARB publishes XBRL reports which are digital and fully machine-readable.
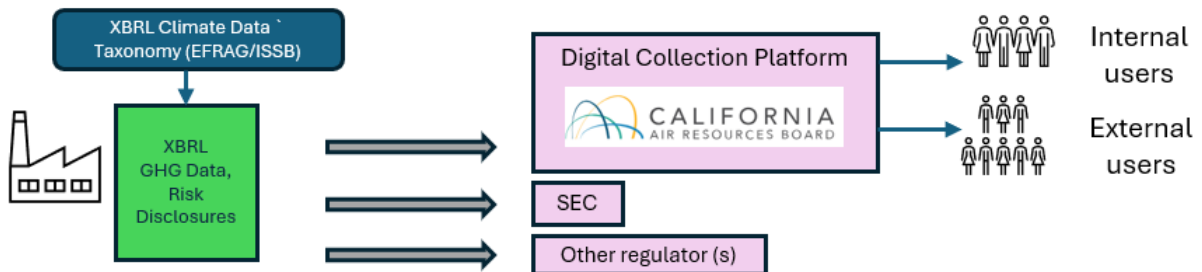
2. Company submits XBRL GHG emissions and disclosure data simultaneously to CARB, SEC, and other regulators (through CSRD or other non-US securities regulator, as needed).

Conclusion

The urgent need for timely, high-quality climate-related data at minimal burden to reporting entities calls for regulators to adopt a consistent, tangible approach. Leveraging data standards is the most efficient approach to meet the goals of SB 253 and SB 261 cost-effectively for all participants.

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