



STANDARDS RESEARCH

Global Financial Taxonomies

Considerations for the Canadian Context

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Foreword

In 2019, the Canadian Expert Panel on Sustainable Finance recommended the creation of a market-based tool to mobilize capital to transition to a net-zero greenhouse gas (GHG) emissions economy by 2050.

“Canada has a strong, diversified and resource-rich economy; a world leading financial sector; and excellent capacity for innovation. By harnessing these advantages, Canada can be among the leaders in the global transition to a low-emissions future, as a trusted source of climate-smart solutions, expertise and investment.”

In response, the Canadian financial community and eight industry sectors, including forestry, agriculture, mineral mining, utilities, steel, aluminum, cement, and energy, came together to collaborate on a foundational transition guidance document for the marketplace. This process was facilitated by CSA Group and resulted in the development of a volunteer committee on Transition and Sustainable Finance.

The committee worked together over a two-year period, but there were fundamental differences of opinion among committee members, and consensus on the draft foundations document could not be achieved. CSA Group determined that work of the committee had progressed as far as it could at that time.

To determine next steps, CSA Group and the committee intend to work with the Sustainable Finance Action Council (SFAC)² and government stakeholders.

In parallel with these efforts, CSA Group engaged Climate Bonds Initiative to examine current global activities in sustainable finance to outline best practices, opportunities, and challenges for a natural resource-based economy such as Canada. This research report presents the results of this analysis.

Given recent dramatic changes in the current global geopolitical environment and their impacts on global peace, food and energy security, it becomes increasingly important to consider the role of a transition taxonomy as the world moves toward the goal of net zero.

1 Final Report of the Expert Panel on Sustainable Finance, “Mobilizing Finance for Sustainable Growth,” Environment and Climate Change Canada, Gatineau, QC, 2019, p. iii. https://publications.gc.ca/collections/collection_2019/eccc/En4-350-2-2019-eng.pdf

2 In May 2021, the Canadian government formed a Sustainable Finance Action Council with the mandate to develop a Canadian Transition Finance tool.

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Executive Summary

Achieving the objectives of the Paris Agreement requires radical transformation of all aspects of the global economy, including financing structures. The realization of a world with net-zero greenhouse gas (GHG) emissions by 2050 not only requires a dramatic increase in both private and public low-carbon investments but it also requires that markets reconsider the type of economic activities current financial flows should support. However, to mobilize the capital needed for the decarbonization, the financial markets need guidance on which investments support the achievement of the net-zero decarbonization objective and which may negatively impact the success of such a transformation.

While the net-zero target is a substantial challenge for all Paris Agreement signatories, the climate action gap is smaller for some economies than it is for others. The difference in starting points depends on several factors, including geography, state of economy, and historical background. In this context, due to the strong dependency on natural resources and the role they play in the Canadian economy, Canada's transition is intrinsically linked to the natural resource sectors, which account for 21.61% of Canada's GDP and more than 6% of jobs in Alberta [5].

For Canada, achieving the target of net-zero emissions requires industries with some of the highest emissions levels to reimagine themselves, planning and implementing transition pathways in a world that has renewed priorities for GHG management and climate resilience. Given the urgency of the transformation and the scale of the actions required, it is crucial to support the reimagining process to ensure it meets the objectives of the Paris Agreement.

The research conducted for this report explored the characteristics and approaches of international taxonomies within the Canadian context. It included a review of 21 international taxonomies, focusing on their approaches toward low-carbon transition, along with the application of these approaches to the Canadian economic context.

To ensure robustness, a transition taxonomy for Canada should embed well-established global best practices for both the architecture of the taxonomy and the requirements defining transition. This report reviews taxonomies in the international marketplace and makes recommendations that could inform a future Canadian transition taxonomy.



"The realization of a world with net-zero greenhouse gas (GHG) emissions by 2050 not only requires a dramatic increase in both private and public low-carbon investments but it also requires that markets reconsider the type of economic activities current financial flows should support."

1 Introduction

1.1 Taxonomies: A Global Perspective

Achieving the objectives of the Paris Agreement requires radical transformation of all aspects of the global economy, including financing structures. The realization of a world with net-zero greenhouse gas (GHG) emissions by 2050 not only requires a dramatic increase in both private and public low-carbon investments but it also requires that markets reconsider the type of economic activities current financial flows should support. However, to mobilize the capital needed for the decarbonization, the financial market needs guidance on which investments support the achievement of the net-zero decarbonization objective and which may negatively impact the success of such a transformation.

1.1.1 A Brief History of Taxonomy Development

Definitions, principles, and classification systems have been used for decades to determine the eligibility of assets to be included in environmental, social, and governance (ESG) and other sustainable investment products. Historically, these were often private sector-led, developed in-house, and based on methodologies, ratings, and scoring tools developed by specialist service providers. While many of these were fit for purpose, the variety of different approaches and their sometimes-opaque criteria led to concerns around greenwashing.

Public actors, such as the People's Bank of China, Japan's Ministry of Finance, and the European Commission, entered the arena to reduce greenwashing concerns by putting forward more top-down approaches to determining green or sustainable activities, initially to support the growth of the green bond market. It began with the establishment of national and regional green bond guidance, which was generally voluntary and in line with the Green Bond Principles [1], which are voluntary guidelines for issuing green bonds established by the International Capital Market Association. While these guidelines were useful for promoting transparency and disclosure, they did not provide specific eligibility criteria about what is green, so concerns around greenwashing persisted.

In response, public authorities moved to a more detailed and mandatory set of eligibility criteria in the form of a taxonomy. China was the first jurisdiction to put forward a taxonomy for assessing and approving the issuance of green bonds. Its official title is the Green Bond Endorsed Project Catalogue, but it is referred to in this report as the China Taxonomy [2]. In 2016, the High-Level Expert Group on sustainable finance recommended that the European Commission develop a European taxonomy, which culminated in the EU Taxonomy Regulation [3] and Climate Delegated Act [4]. Further development of the European taxonomy is being carried out by the Platform on Sustainable Finance, established by the European Commission.

The concept of regulatory guidance on what constitutes a climate investment has been widely embraced, and a variety of national and regional classification systems, or labelled taxonomies, are currently in development all around the world.

1.1.2 What Is a Taxonomy?

The term *taxonomy* is used in scientific fields to describe a system for the identification and classification of information. In *green* finance, the term *green* or *sustainable* taxonomy refers to a classification system that identifies activities, assets, or revenue segments that deliver on key environmental objectives.

The key differences between a taxonomy and ESG guidance³ is that taxonomies are generally:

1. **Granular:** Providing detailed (often binary or numerical) information on what is eligible as green or sustainable. This reduces the need for interpretation and greenwashing.
2. **Publicly available:** Widely accessible and not based on proprietary methodologies, which means they can be easily understood, commonly accepted, and used across a wide range of actors.
3. **Science-based:** Informed by science as much as possible, instead of national priorities or opinions. The approach to taxonomy development may involve a mix of public, private, and non-government actors.
4. **Future-proof:** Focused on investments that align with a pathway that strives to limit global warming to 1.5°C above pre-industrial levels. An attempt is made to understand what the world needs to look like in 2050 and to build backwards to determine what is eligible now.

In comparison to a green taxonomy, a transition taxonomy⁴ may be used to guide activities and sectors characterized by high GHG emissions to reach alignment with the Paris Agreement (net-zero target) by 2050.

The line between activities that belong in a transition taxonomy rather than a green one is not definitive, which means that transition activities can be seen as a subset of wider sustainable finance activities. As a result, some jurisdictions may separate transition and green definitions while others may not. The EU, for example, puts most transitional activities, such as cement and steel, into the broader sustainable taxonomy with thresholds that are green but are not currently near zero and expected to ratchet down over time. Another approach, used by the Association of Southeast Asian Nations (ASEAN), is to separate green and transition using a traffic light system, but it is purely conceptual at this stage.

1.1.3 Current Status

At the time this report was written, over 20 jurisdictions around the world had taxonomy processes in development, in discussion, or in place. Figure 1 provides a map of countries with a taxonomy currently in place or in development.

While all of the taxonomies aim to provide transparency and clarity for the financial market by outlining criteria that economic activities have to meet in order to support a given objective, each framework differs to match national priorities. In that sense, taxonomies reconcile science-based and individual strategic objectives.

One common concern is that the emergence of individual taxonomies may lead to market fragmentation, highlighting the need for high interoperability between different approaches. However, it is important to note that most taxonomy efforts are based on common principles: they are science-based, dynamic, and conscious of the importance of harmonizing with other taxonomies to avoid barriers to cross-border flows of green capital.

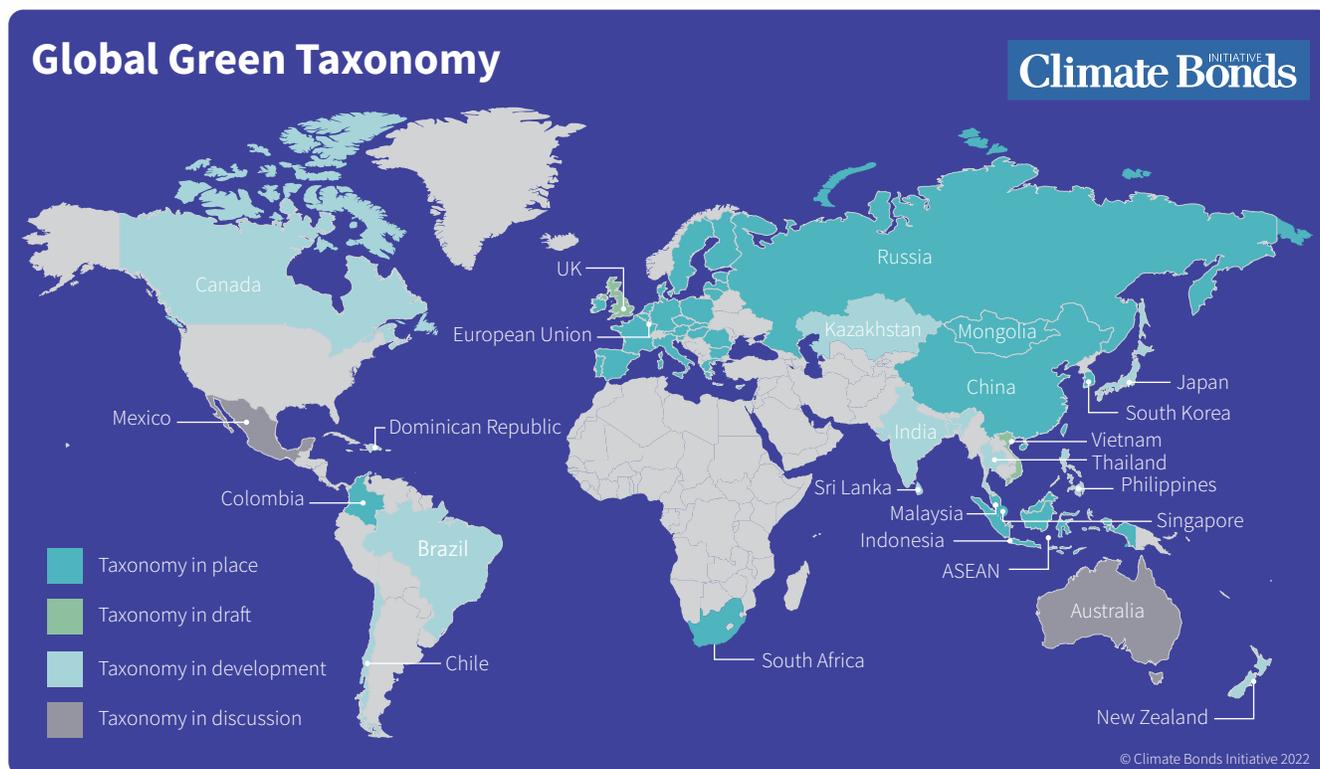
1.2 Transition Challenge: The Canadian Perspective

While achieving the net-zero target by 2050 is a substantial challenge for all Paris Agreement signatories, the climate action gap is smaller for

³ ESG was the term used prior to the existence of a taxonomy.

⁴ Not a universally agreed-upon term.

Figure 1: Taxonomy development processes around the world



As of July 11, 2022. Reproduced with permission from Climate Bonds Initiative. [12]

some economies than it is for others. The difference in starting points depends on several factors, including geography, state of economy, and historical background. In this context, due to the strong dependency on natural resources and the role they play in the Canadian economy, Canada's transition is intrinsically linked to the natural resource sectors, which account for 21.61% of Canada's GDP and more than 6% of jobs in Alberta [5].

For Canada, achieving the target of net-zero emissions requires industries with some of the highest emissions levels to reimagine themselves, planning and implementing transition pathways in a world that has renewed priorities for GHG management and climate resilience. Given the urgency of the transformation and the scale of the actions required, it is crucial to support the reimagining process to ensure that it meets the objectives of the Paris Agreement.

1.2.1 Purpose of This Research

This research conducted for this report explored the characteristics and approaches of international taxonomies within the Canadian context. It included a review of international taxonomies, focusing on their approaches toward low-carbon transition, along with the application of these approaches to the Canadian economic context.

Through this exploration, the challenges and opportunities for the development of a Canadian taxonomy were identified and are presented in this report. Market best practices and transition taxonomies currently under development are also presented, along with recommendations that could inform a future Canadian transition taxonomy.

1.3 Financing the Transition

The discussion about sustainable finance has shifted dramatically in the last several years, including the expectation and ambition of the scale, scope, and pace of decarbonization of the global economy. This evolution has been associated with:

1. **Increased national climate ambition:** More than 70 countries, covering over 75% of global emissions, have net-zero commitments in place [6].
2. **Increasingly stringent policies:** For example, 20 countries have committed to stop public financing for fossil fuel projects abroad [7].
3. **Increased private sector engagement:** At least one fifth of the world's 2,000 largest public companies have set a net-zero target [8].
4. **Increased sectoral ambition:** The Network for Greening the Financial System, a network of 83 central banks and financial supervisors, is undergoing a stress test exercise [9].
5. **Increased climate finance flows:** At COP26, more than 400 financial sector stakeholders, who control over \$130 trillion in assets, committed to aligning their portfolios to net-zero by 2030, and developed countries agreed to at least double their funding for adaptation by 2025 (total would amount to at least \$40 billion) [10].

This rapid shift has filtered through to the financial market, where the green debt market has recorded a growth rate over 50% in the last five years, reaching over half a trillion (USD517.4bn) in 2021 [11].

As the sustainable finance market has grown, so has the breadth of assets and activities being financed. The challenge has become dual in nature. The focus is no longer just on scaling solutions that are already zero-emission, but also on how to transform industries with the largest negative impact on decarbonization efforts and the largest share of GHG emissions in the economy.

Historically, large GHG emitters were often absent from green finance discussions, despite their vital role in reducing global emissions and their role as key constituents in mainstream investment portfolios. However, the market has started to use labelled transition instruments (e.g., transition bonds), which provide an avenue for large emitters. The

biggest challenge in mainstreaming the use of these instruments is to ensure transparency, given that there are currently no well-established definitions of what is meant by or required from the transition process.

To date, sustainable transactions labelled as transition have used different approaches, making it difficult for investors to assess the credibility of the frameworks put forward. Some investors have expressed concerns around the lack of robust, industry-adopted standards for transition instruments and noted that this absence lends itself to potential greenwashing — that is, investing in activities that are labelled transitional even though there is insufficient proof to ensure credible transition.

The transition concept and any associated label could be a useful tool for identifying sectors and entities that are making ambitious transitions as a supplement to the existing green label. As the market expands to encompass new sectors and issuers that need to be rapidly decarbonized, a common, coherent, and scientifically credible framework for this transition is required.

1.3.1 Transition in Taxonomies

Green and sustainable taxonomies have become increasingly important tools to scale-up low-carbon investments, but there is ongoing debate about how to use and **design taxonomies to guide the transition** of carbon-intensive sectors.

Most taxonomies include some narrative on transition, and many incorporate transition activities into their green-oriented frameworks. However, the framing and definition of transition is not universal and there is currently no global consensus on what transition pathways for high GHG emitting sectors look like.

The term *transition* broadly covers two types of transition:

- **Transition within (decarbonization):** Refers to the need to decarbonize existing activities over time. For example, the cement manufacturing process will need to be decarbonized using various technologies in order to have green/zero emissions cement in 2050.
- **Transition away (switching):** Refers to the need to replace some activities with low-carbon alternatives. For example, replacing fossil fuel electricity with renewables or internal combustion engine vehicles with electric or fuel cell vehicles.



"Transition does not mean that the activity is green right now. It is a journey, over time, to green."

Transition is...

... to a common goal

Globally, the transition finance space remains at a nascent stage, so there is no single global definition of transition. However, across all currently available definitions, there is the notion that all transitions are toward a common goal that, in the case of climate mitigation, is aligned with the Paris Agreement. As such, transition finance aims to mobilize finance in support of the Paris climate goals regarding GHG emissions reduction.

The focus of this report is on the transition from the current high GHG emissions to levels commensurate with meeting the 1.5°C goal of the Paris Agreement: a climate mitigation transition to net-zero carbon emissions by 2050.

... change over time: it is a journey, not just a destination

Transition does not mean that the activity is green right now. It is a journey, over time, to green. However, given the steep decarbonization required to meet the goals of the Paris Agreement, the journey cannot last forever. The time component is critical to whether or not the world can stay within 1.5°C of warming. Any associated sector or entity-level transition pathway must be accompanied by science-based and ambitious time frames that consider sectoral and global carbon budgets to achieve the Paris-aligned targets and milestones along the way.

The EU Platform's Transition Finance Report [13] notes that "One trait shared by all the [transition] frameworks is a focus on the emissions performance of a portfolio of activities, and how this evolves over time."

... inclusive of high GHG-emitting sectors

While most activities and entities will need to initiate some level of transition to meet the goals of the Paris Agreement, the transition concept primarily refers to high GHG-emitting sectors and activities and how to aid their sustainable transition. This is in recognition that such actors have a more difficult pathway to transition with significant economic and technological barriers to overcome.

The distinction by the level of emissions is important, as such high GHG-emitting actors have not played a significant role in the green finance market to date, despite their vital role in reducing global emissions and greening investment portfolios.

... encompassing interim activities

The Climate Bonds white paper, Financing Credible Transitions [14], which focuses on transition to net-zero by 2050 in line with the 1.5°C goal, proposes that a transition label should also be applicable to **interim activities** — investments that are making a substantial contribution to halving global emissions by 2030 and reaching net-zero by 2050, but do not have a long-term role to play post-2050.

... not light green

The transition concept is not a catch-all for activities that are only a slight change from business as usual. To transition in line with the Paris Agreement requires a complete reorientation of the global economy and, for some entities and activities, a complete transformation. The transition concept captures the ambitious journey that each activity and entity needs to make for the world to avoid catastrophic climate change.

2 Methods

2.1 Environmental Scan: The Taxonomy Evaluation Methodology

Twenty-one taxonomies were reviewed for this research, including both:

- Frameworks that have already been developed and are in place (e.g., China [2], EU [3], and Mongolia [15]); and
- Frameworks that are currently being developed or are at the inception phase (e.g., Singapore [16], South Africa [17], and the United Kingdom [18]).

Given that the structure of each taxonomy differs in its aims, objectives, and individual components based on its national or regional context, this analysis

identified a set of common features that constitute the foundation of any taxonomy. Table 1 presents selected dimensions from the analysis that are most relevant to the Canadian economic context.

To complete the assessment of how each of these features has been addressed by individual taxonomies, the review included:

- Publicly available texts of existing taxonomies;
- Publicly available documents related to the process of developing individual taxonomies (e.g., presentations for public consultations, stakeholder meetings, etc.); and
- Publicly available reports and assessments carried out by the International Platform on Sustainable Finance (IPSF) [19].

Table 1: Taxonomy Features

Feature	Description
Country/region	While most taxonomies are being developed at the national level, some (such as the EU [3] or ASEAN [20]) offer classification systems pertinent to economies within the broader region.
Status	Although the use of a taxonomy as a tool for the financial sector began a decade ago, the process of developing national taxonomies only picked up speed in 2019. While some taxonomies have already become law and are fully operationalized, others are in the process of public consultations, and some are at a much earlier, conceptual phase of development.
Objectives covered	<p>The objectives of a taxonomy depend on the strategic priorities set at the national or regional level, whether they relate to climate protection, environment, or social aspects.</p> <p>All taxonomies analyzed for this report cover climate change mitigation and/or GHG reduction to some extent.</p> <p>In addition to existing taxonomies that identify economic activities to support environmental protection, including biodiversity, circular economy, climate adaptation, marine conservation, and pollution prevention, new ones are also emerging (e.g., sustainable water management and resource efficiency).</p> <p>Taxonomies that address either environmental or climate change objectives are often referred to as green taxonomies. Given the capaciousness of the term <i>green</i>, the development of these frameworks is usually envisaged as a stepwise process to address all dimensions of environmental protection.</p> <p>Taxonomies designed to address social objectives are at the very early stages of development.</p>
Link to net-zero/other targets and policy	<p>In all taxonomies with a climate protection objective, the process of identifying eligible economic activities is set within the context of the regulatory environment governed by, <i>inter alia</i>:</p> <ul style="list-style-type: none"> ▪ Paris Agreement; ▪ Regional frameworks; and ▪ National strategies, such as Nationally Determined Contributions (NDCs), and regulations. <p>Taxonomies enable the achievement of national/regional strategic priorities. Thus, taxonomy links to net-zero targets are a reflection of the links between national/regional strategy objectives and decarbonization ambitions.</p> <p>While some taxonomies have been established to achieve emissions reduction targets aligned with decarbonization pathways compliant with the 1.5°C scenario, others identify NDC compliant investments that are currently insufficient to meet the net-zero targets.</p>

Feature	Description
Sectors covered	The selection of sectors depends on the objective of the taxonomy and its purpose. It often takes into account the impact of a given sector on the objective (e.g., share of the sector’s emissions for the climate change mitigation objective) or the importance of the sector in the economy (e.g., GDP indicator).
Approach to eligibility	<p>Different taxonomies have different approaches to defining the eligibility of economic activities, including:</p> <ul style="list-style-type: none"> ▪ Principles-based approach; ▪ Pass list approach; ▪ Thresholds and criteria; ▪ Umbrella clauses (usually in addition to the above); or ▪ Any combination of the above <p>Principles-based: Eligibility is determined through the use of principles. Can be easy for users to adopt the taxonomy but is open to interpretation by the user. This approach has been used by Malaysia [21].</p> <p>Pass list: Eligibility is determined through the use of technology lists. If the activity/technology/asset is on the pass list, it is assumed to be eligible; if not, it is ineligible. Given that these are explicitly about the activity type/technology, they are not technology neutral. This approach has been used by China [2].</p> <p>Thresholds: Eligibility for each activity is determined through the use of quantitative thresholds. They are technology neutral in that any technology that meets the numerical threshold can be included. This approach has been used by the EU [3].</p> <p>Umbrella clauses: Some taxonomies (e.g., the EU [3] and South Africa [17]) choose to include universal requirements that each activity must meet. Such clauses could include provisions regarding do no significant harm (DNSH) or minimum social safeguards. These are used along with the other types of eligibility criteria.</p>
Based on another taxonomy?	<p>Given the scale of the challenge in developing a taxonomy, new undertakings, wherever relevant, often leverage already existing frameworks and adjust the structures and provisions to match the specificities of their country or region.</p> <p>Given that a limited number of taxonomies are already in place, and a majority focus on the climate objective, new solutions to tackle the challenge of addressing the remaining objectives are necessary.</p>
Colour of the taxonomy (its purpose)	<p>Green: Increasing number of investments aligned with the taxonomy’s objective (taxonomy focuses on identifying only eligible investments).</p> <p>Amber: Supporting the transition of already existing assets to meet the objective of the taxonomy (taxonomy focuses on identifying all investments that will support the asset to become green).</p> <p>Traffic light system: Economy-wide shift toward the objective of the taxonomy (taxonomy identifies the eligible, transition, and ineligible investments).</p>
Sector classification	The industry sector classification, if used (e.g., ISIC, NACE, etc.).
Do no significant harm (DNSH)	<p>Early taxonomies embedded the concept of DNSH into their frameworks. It has become practice to ensure that a given investment that supports a selected objective does not generate additional risks and does not negatively impact the remaining taxonomy objectives.</p> <p>Although most taxonomies have incorporated DNSH, it has been integrated in different ways, with the most common approaches being:</p> <ul style="list-style-type: none"> ▪ Sector-specific DNSH provisions: transposing already existing environmental regulations into the taxonomy; and ▪ Providing universal high-level DNSH requirements.

Feature	Description
Social objectives/safeguards covered	<p>Although most taxonomies focus on climate and the environment, it has become common practice to include provisions to ensure that investments do not infringe on social objectives and human rights.</p> <p>The most common approach to the inclusion of the social safeguards in taxonomies is to refer to the three internationally recognized frameworks:</p> <ul style="list-style-type: none"> ▪ International Labour Organization (ILO) Fundamental Conventions; ▪ OECD guidelines for multinational enterprises; and ▪ UN Guiding Principles on Business and Human Rights. <p>Social taxonomies to identify activities that substantially contribute to social objectives are in discussion around the world but remain at the nascent stage.</p>

3 Landscape Discussion

This section presents a summary of the landscape review based on the following core components of a taxonomy:

- **Foundations:** The background and contextual purpose of a taxonomy’s creation.
- **Sector/activity selection:** How sectors were selected and where the overlap is between taxonomies on sector/activity coverage.
- **Objectives:** Core objectives of the taxonomy and how these are covered.
- **Eligibility:** How eligibility is defined (thresholds, principles).
- **Other eligibility features:** For example, minimum safeguards.

3.1 Foundations

The foundational assumptions and starting points for each taxonomy are not always well defined, but they are noted here because the starting point for Canada may be different from global comparators.

3.1.1 Drivers for the Taxonomy Development Process

Table 2 presents some of the different motivations behind the taxonomy development process in a selection of countries and regions around the world.

Since the establishment of the first taxonomies (Climate Bonds Initiative [24], China [2], and the EU [3]), more countries are seeing this tool as necessary to drive investments in the green economy and to

drive investments that are consistent with the Paris Agreement.

For Canada, there are both similarities and challenges in the conceptual foundation of a taxonomy. For example, a Canadian taxonomy would likely reference net-zero by 2050 and be used as a tool to align investments with this overarching goal. The main challenge is addressing the specific context of a natural resource-based economy. Specifically, what does a science-based transition for such an economy look like? This is a necessary starting point for Canada.

Other taxonomies that reference current starting points as important primarily focus on economic development, such as Malaysia [21] and China [2], whose taxonomies both note the state of economic development as key considerations. This points to a critical question as to how taxonomies are established conceptually:

- **“Must Do” taxonomy:** The taxonomy assumes a necessary **end point** (net-zero by 2050) and works backwards from that point to establish criteria and thresholds for the current point in time.
- **“Can Do” taxonomy:** The taxonomy looks forward from the current state of development to put a likely/possible/realistic **pathway** forward from the starting point.

These two approaches are not mutually exclusive, and all taxonomies reviewed for this report use both approaches to some extent. From a climate science perspective, the 'can do' approach may hamper whole economy transformation as it does not make the 1.5°C target an absolute imperative that the global economy must meet.

Table 2: Motivations for the Taxonomy Development Process

Country or Region	Motivation
EU [3, Cl. 6]	<i>“One of the objectives set out in that action plan is to reorient capital flows towards sustainable investment in order to achieve sustainable and inclusive growth.”</i>
South Africa [17, p. 2]	<i>“...to develop or adopt a taxonomy for green, social and sustainable finance initiatives, consistent with international developments, to build credibility, foster investment and enable effective monitoring and disclosure of performance.”</i>
Mongolia [15, p. 6]	<i>“The development of a commonly agreed green taxonomy is a building block to create an operational sustainable financial system and will help re-orient capital to sectors and projects that substantially contribute to environmental sustainability and emission reduction.”</i>
Malaysia [21, p.5]	<i>“FIs should play a pivotal role in accelerating their customers’ transition towards more sustainable practices in their business operations.”</i> <i>“The principle-based approach considers the state of economic development of the country and the nascent stage of climate risk management ... By taking a more nurturing approach, this could avoid disruptive exclusions and dislocations thus ensuring an orderly transition of the economy.”</i>
China [22, p.19]	The China Taxonomy [2] should: <i>“Adhere to a set of science-based and consistent measures” for project screening to determine the eligible project.</i> <i>“Take account of China’s present stage of economic and social development, industrial conditions, and ecological environment.”</i>
Indonesia [23, p. 26]	<i>“Green Taxonomy is expected to be a transitional tool in providing access to finance for sustainable projects, assets, and activities.”</i>

3.1.2 Definition of Transition: Transition Away and Transition Within

Most of the existing taxonomies reviewed for this report are either green taxonomies or sustainable finance taxonomies. Only Russia [25] has developed two separate taxonomies, a green taxonomy and an “adaptational taxonomy”⁵ that covers transition activities. Nevertheless, most taxonomies include some narrative on transition, and many incorporate transition activities into their green/sustainable taxonomies.

- **Available transition taxonomy:** Russia (adaptational taxonomy) [25].
- **Separate transition taxonomies being considered:** EU [3], South Africa [17], and Russia [25].

- **Transition activities as part of the taxonomies:** EU [3], Indonesia [23], Malaysia [21], Singapore [16], South Africa [17], South Korea [26], and Vietnam [27].

Table 3 breaks down the transition concept showing how different taxonomies approach individual aspects of transition.

The key question is which activities require decarbonization and which require replacing or switching?

Article 10 of the EU taxonomy [3] tackles this critical question most directly by defining a transitional activity as “an economic activity for which there is **no technologically and economically feasible low-carbon** alternative.” In other words, only activities that have no feasible replacement will be decarbonized; the rest will require a transition away.

⁵ Note that here, adaptation refers to “change” rather than in the climate application of the word.

Table 3: Best Practice Approaches for Defining Transition in Taxonomies

Transition concept	Best practice approaches	Examples
What are transition activities?	Usually seen as high-carbon activities where transition to net-zero will occur over time.	EU [3], South Africa [17], Vietnam [27]
Role in the low-carbon economy	Most taxonomies frame activities based on their role in a low-carbon economy – that is, whether their presence in 2050 will be compliant with the Paris-aligned transition of the economy.	EU [3], South Africa [17], Vietnam [27]
Lock-in	Explicit provisions exclude the lock-in of high-carbon technologies – that is, they aim to prevent investments that prolong the lifetime and existence of highly emissive assets and activities beyond timeframes that are compliant with Paris-aligned transition pathways.	EU [3], South Africa [17], Malaysia [21]
Transition away (technology switching) vs Transition within (decarbonization)	Most taxonomies identify both activities that transition away by replacing the activity with a new technology (e.g., renewable energy replacing gas) and activities that require a transition within (i.e., need to be decarbonized as there is no low carbon replacement).	EU [3], South Africa [17], Vietnam [27]
Interim activities	Some taxonomies include interim activities or measures for the short-term that are not part of a low-carbon economy.	South Africa [17], South Korea [26]
Phase-out	To date, limited detail on phase outs is provided in taxonomies beyond conceptual.	South Africa [17]

The EU taxonomy goes on to state that those transitional economic activities “shall qualify as contributing substantially to climate change mitigation **where it supports the transition** to a climate-neutral economy consistent **with a pathway to limit the temperature increase to 1.5°C** [...] including by phasing out GHG emissions, in particular emissions from solid fossil fuels, and where that activity:

- has greenhouse gas emission levels that correspond to the best performance in the sector or industry;
- does not hamper the development and deployment of low-carbon alternatives; and
- does not lead to a lock-in of carbon-intensive assets, considering the economic lifetime of those assets” [3].

In line with the EU provisions, transitional activities “play a crucial role in mitigating climate change by substantially reducing their currently high-carbon footprint, including by helping to phase out reliance on fossil fuels” [3]. In other words, they help to shift the economy away from high emissions scenarios toward a net-zero, Paris-aligned economy in 2050.

Transitional activities in the EU taxonomy have been identified predominantly in the manufacturing (iron and steel), transport (freight rail and non-zero direct tailpipe emissions), and buildings (renovation of existing buildings) sectors.

Other countries have used a similar approach and definition of transition, including South Africa [17] and Colombia [28]. In addition to identifying eligibility criteria for individual activities, they outline principles to verify that:

- Transition activities are only approved **if there are no low-carbon alternatives** (EU [3], Singapore [16], and Vietnam [27]).
- Transition activities **do not hamper the development of low-carbon alternatives** (EU [3], Malaysia [21], South Africa [17]).
- Transition activities **comply with the DNSH** (EU [3], Russia [25], South Africa [17], Vietnam [27]).
- Transition activities **do not lead to a lock-in of carbon-intensive assets** (EU [3], Malaysia [21], South Africa [17]).

3.2 Sector Selection

3.2.1 Comparison of Taxonomies

Key sectors in the Canadian context can be classified into the following four categories:

- 1. Fossil fuel-based sectors:** A range of fossil fuel subsectors play a significant role in the Canadian economy, including oil sands, oil refining, and so on. These are broken down and compared with other taxonomies in Table 5. Most taxonomies do not include the oil and gas extraction sector.
- 2. Industry transition sectors:** A number of hard-to-abate industrial activities, such as cement and steel, are included in most taxonomies around the world. These are often called transition sectors because they currently have no low carbon alternative so they will require transitions within.
- 3. Green sectors:** As with green activities, sectors that are already zero-emission (e.g., production of energy from wind power, solar power, etc.) are generally not controversial and tend to be included in sustainable finance taxonomies around the world.
- 4. Noteworthy sectors:** A few jurisdictions (Indonesia [23], Mongolia [15], New Zealand [29], Russia [25], and South Korea [26]) have published taxonomies that include agriculture sectors. None of the existing taxonomies address the challenge of assessment of activities related to mineral mining, for which the importance of transition will increase substantially over next couple of years. Given that activities in both of these sectors can negatively impact other environmental and social objectives of sustainable development, if included they should have a comprehensive set of DNSH principles.

The full list of sectors that have either been considered or are currently covered in other taxonomies are listed in Table 4.

Table 4: Sectoral Coverage of Taxonomies

Sector	Coverage in other taxonomies
Agriculture	Rare but increasing
Aluminum	Common
Cement and concrete	Common
Forestry	Common
Mineral mining	Rare
Oil and gas	Rare
Steel	Common
Electricity generation	Common
Transport	Common
Buildings and construction	Common
Chemicals	Rare but increasing
Waste	Common

3.3 Objectives

Most global taxonomies outline a range of environmental objectives (Table 6). Most taxonomies also include climate mitigation and adaptation as the starting point for phase 1, with other objectives being addressed in future phases. For example, this was the process followed by the EU and South Africa. However, some taxonomies have identified different initial priorities. For example, one aim of China’s taxonomy is to prevent pollution, while Indonesia’s taxonomy, which has a much broader scope, includes activities that contribute to sustainability, including transition.

3.4 Eligibility

Taxonomies use different approaches to defining an eligible green/sustainable/transition investment. The approaches used by different taxonomies are presented in Table 7 and can be broadly summarized as:

1. Principles-based
2. Pass list
3. Thresholds

Table 5: Coverage of Oil and Gas Sectors Activities in Selected Taxonomies

Activity	EU [3]	China [2]	South Africa [17]	Colombia [28]	Indonesia [23]	Russia [25]
Production of crude oil from oil sands (in situ)	No	No	No	No	Type not specified “petroleum mining” No green criteria	Does not specify the type of “petroleum extraction”
Production of crude oil from oil sands (mining)	No	No	No	No		Limited to existing facilities (AT)
Production of crude oil from conventional sources	No	No	No	No		
Production of oil from offshore sources	No	No	No	No		
Production of natural gas	No	No	No	No		Existing facilities only (AT)
Production of biomass, biogas, and biofuels for use as renewable fuels	Yes	Yes	Identified for further future consideration	Yes	Not clear	Use not production
Hydrocarbon upgrading for use in the production of non-combustion products	No	No	No	No	Yes	Yes
Midstream: Liquids and oil distribution infrastructure	No	-	No	No	No	No
Downstream: Natural gas transmission, distribution, and storage infrastructure	Only for renewable gases	Yes	No	No	Yes	Existing facilities only (AT)
Gas processing and upgrading	No	No	No	No	Yes	No
Refining	No	No	No	No	Yes	Existing facilities only (AT)
Gaseous energy production, transmission, and distribution	No	No (manufacture of gas turbines included)	No	No	Yes (distribution)	Yes (AT)
Carbon utilization or removal	CCS, not utilization	Yes	CCS, not utilization	CCS only	No	Yes (AT)

Note: AT: adaptational taxonomy; CCS: carbon capture and storage.

Table 6: Objectives Covered by Selected Taxonomies

Country/region	Objectives covered
EU	<ul style="list-style-type: none"> i. CCM ii. CCA iii. Sustainable use and protection of water and marine resources iv. Transition to a circular economy v. Pollution prevention and control vi. Protection and restoration of biodiversity and ecosystems
China	<ul style="list-style-type: none"> i. Environmental improvement ii. Addressing climate change iii. More efficient resource utilization
Colombia	<ul style="list-style-type: none"> i. CCM ii. CCA iii. Ecosystems and biodiversity iv. Water management v. Soil management vi. Circular economy vii. Pollution
South Africa	<ul style="list-style-type: none"> i. CCM ii. CA iii. Sustainable use of water and marine resources iv. Pollution prevention v. Sustainable resource use and circularity vi. Ecosystem protection and restoration
ASEAN	<ul style="list-style-type: none"> i. CCM ii. CCA iii. Protection of healthy ecosystems and diversity iv. Promotion of resource resilience and transition to circular economy
Mongolia	<ul style="list-style-type: none"> i. CCM and CCA ii. Pollution prevention iii. Resource conservation iv. Livelihood improvement
Malaysia	<ul style="list-style-type: none"> i. CCM ii. CCA
Singapore	<ul style="list-style-type: none"> i. CCM ii. CCA iii. Protect biodiversity iv. Promote resource resilience

Note: CCM: climate change mitigation; CCA: climate change adaptation.

Table 7: Approaches to Defining Eligible Investments in Selected Taxonomies

Principles-based approach	Pass list	Thresholds
Malaysia [21]	China [2] Indonesia (some additional requirements) [23]	Colombia (draft) [28] EU [3] South Africa [17]

3.4.1 Principles-Based Approach

A principles-based approach determines eligibility through the use of overarching principles, which makes it easy for users to adopt the taxonomy, but principles can be open to interpretation by the user.

Using a principles-based approach instead of developing a close-ended list of activities (either through thresholds and criteria or a pass list) is more accommodating as it can be moulded to the user’s individual needs. The approach puts responsibility on the user to define an activity’s eligibility and creates room for interpretation.

The principle-based approach is seen as particularly useful in emerging economies where the data required to meet thresholds is often not available. This is explicitly stated in the rationale of the Malaysian taxonomy [21], which uses a principles-based approach for defining eligibility.

As noted in Section 1, the history of taxonomy development has been moving away from broad-based guidance toward more stringent thresholds due to persistent concerns around greenwashing. Therefore, for developed economies, such as Canada, a more robust threshold-driven approach should be considered.

3.4.2 Performance Thresholds and Pass List Approach

As noted in Section 1, the shift in trajectory toward more stringent threshold-based or pass list approaches to defining eligibility was to reduce a number of concerns.



"The history of taxonomy development has been moving away from broad-based guidance toward more stringent thresholds due to persistent concerns around greenwashing."

Usability

Lack of specific, universal criteria and thresholds associated with each activity means that transition activities must be defined independently for each individual company. This would increase operation costs, as institutions do not usually have the expertise at hand and cannot use the effect of scale, and must therefore engage in a time and resource consuming process.

Interoperability

A principles-based approach requires a degree of interpretation by the user, which may be inconsistent across users. This could reduce global interoperability and ongoing harmonization efforts to avoid market fragmentation (e.g., IPSF [19]). Pass lists or thresholds can reinforce a common language for green finance across jurisdictions by making taxonomies more comparable, for example, by using the same metrics to define eligibility.

Credibility

Meeting climate goals requires specific and measurable GHG emissions and temperature targets. Science-based thresholds are instrumental in reinforcing these targets in a way that is credible. Because principles are open to user interpretation, it can cause credibility concerns.

Globally, a more stringent pass list or thresholds-based approach for defining eligibility is seen as more robust and therefore best practice.

3.4.3 Challenges in Defining Eligibility

3.4.3.1 Retirement and Switching

Given that one of the objectives of a taxonomy is to provide a tool for financial institutions that allows for risk management, it is important that a taxonomy acknowledges at the outset that the transition pathway for selected sectors and economic activities may translate into phase-out or switching. This is especially the case for activities that cannot be brought in line with global warming targets and have an alternative, low-emissions substitute, such as switching from coal to electricity generation.

3.4.3.2 Downstream Scope 3 Emissions in Resource Economies

A particular challenge in the creation of taxonomies is how to deal with emissions that are not in direct control of an entity (scope 3 emissions). This is of special concern for the oil sector, where only a small proportion of total emissions are within the control of an entity. For oil production (of all types), only 10% to 30% of emissions come from direct operations, whereas indirect emissions make up about 70% to 90% of emissions [30]. This is one of the reasons why most taxonomies do not include the oil and gas extraction sectors (see Table 5).

This is a particular challenge for Canada's context given the importance of oil sands to the economy. The Canadian government's 2030 Emissions Reduction Plan [31] focuses on reducing scope 1 and 2 emissions

from the oil and gas sector by 31% by 2030. This is critical for Canada because emissions from the oil and gas sector account for 26% of emissions in Canada, but the plan does not account for scope 3 emissions.

Although the EU does not explicitly refer to scope 3 emissions, it was noted at the early stage of the taxonomy development process that “while all economic activities have a role to play, not all economic activities will substantially contribute to environmental goals” [32].

Emission Scopes

GHG emissions are categorized into three scopes.

The concept first appeared in the Greenhouse Gas Protocol, a globally recognized accounting tool for entities to measure and manage their GHG emissions [33]. Scopes help to identify the source and level of control that a given entity has over its emissions.

Scope 1: Direct emissions that originate from owned or managed sources.

Scope 2: Indirect emissions from generation of the purchased energy.

Scope 3: Other indirect emissions that occur in the value chain of the company (upstream and downstream).

To date, companies have focused on scopes 1 and 2, which are in their direct control and easier to manage through strategic choices. Scope 3 emissions are the most difficult to address, but they are often critical from the perspective of GHG emissions reduction, because sectors such as oil and gas could have the greatest share in the carbon footprint for a given economic activity. While companies can have an influence on the upstream scope 3 emissions through purchasing decisions, to a certain extent (mainly through product design), the company can also influence the emissions associated with the product once it leaves the company (i.e., downstream scope 3 emissions).

3.4.3.3 Using Best Available Technologies to Define Eligibility

Best available technologies (BAT) are used in most taxonomies (e.g., EU [3] and Russia [25]) to determine eligibility for certain activities. For example, the EU uses current BAT to define emissions thresholds in relation to manufacturing or other low-carbon technologies where they are eligible if they “demonstrate substantial life-cycle GHG emission savings compared to the best performing alternative technology/product/solution available on the market.”

However, BAT is also seen as challenging and may not be sufficient to achieve the transition goal when coupled with the “economic feasibility” concept. For example, most scientists and commentators see green hydrogen as a key enabler of the green economy, even though it is currently prohibitively expensive. It is put forward as eligible on the assumption that this will increase demand and influence the price in the future. It is also assumed that hydrogen will be a large part of the pathway for high emissions sectors, such as steel and cement, in a future where the price has come down.

For this reason, BAT is often used as a starting point and not as the end objective of change. Consequently, BAT is often coupled with additional caveats, such as in the EU example above, where the activity needs to demonstrate significantly better emissions savings than the BAT.

While slightly different to BAT, “best in class” indicators are also used to determine thresholds in taxonomies. For example:

- Climate Bonds [24] and the EU [3] taxonomies both use the top 15% of performing buildings to set a threshold for existing buildings. However, this is only used as a starting point for the initial threshold. After this, the threshold decreases to zero, in line with what is required by science.
- Similarly, the EU [3] uses a best-in-class approach for the thresholds for some industrial sectors, such as cement manufacturing. The thresholds relate to the best performers in the industry as the starting point from which the criteria will be ratcheted down over time.

3.5 Other Eligibility Elements

3.5.1 DNSH

The concept of DNSH, introduced by the EU's taxonomy [3], has become a widely adopted market standard. Most of the existing taxonomies highlight the requirement for activities to avoid (and/or mitigate) negative environmental impacts. Whether implementation of the DNSH principle at the national level translates into a robust compliance process (e.g., EU [3] and South Africa [17]) or simply a requirement to follow national environmental regulations or standards (e.g., Russia [25]), the concept is driven by science and evidence-based arguments.

While DNSH often reinforces and uses local environmental laws to avoid harm, it also goes beyond local laws. For example, the EU taxonomy [3] puts forward requirements for waste minimization in line with the objective to transition to a circular economy that go beyond existing regulation to assess the options for reuse and recyclability of products.

3.5.2 Minimum Safeguards

Although most taxonomies focus on sustainable investments from the climate perspective, it has become common practice to include provisions that ensure investments do not infringe on social objectives and human rights. The most common approach to the inclusion of the social component in taxonomies is to refer to the following three internationally recognized frameworks:

- ILO's Eight Fundamental Conventions;
- OECD guidelines for multinational enterprises; and
- UN Guiding Principles on Business and Human Rights.

Although most taxonomies include these frameworks as a point of reference, not all of them make it a compulsory component of eligibility.

The review of existing taxonomies also showed that, to date, green taxonomies do not address or aim to resolve specific social objectives. However, there is increasing awareness regarding the need to establish frameworks for inclusion of social aspects, especially given that currently available guidance is limited.

4 Conclusions

4.1 Foundations for a Transition Taxonomy

A Canadian transition taxonomy, if developed, will position Canada as a point of reference for other transition guidelines and frameworks that are currently being developed around the world. To ensure robustness of a potential transition taxonomy, a Canadian framework should embed well-established global best practices for both the architecture of the taxonomy and the requirements defining the transition.

4.1.1 Principles for Developing Taxonomies

When considering principles for developing a Canadian taxonomy, it is important to refer to guidance issued by the G20 Sustainable Finance Working Group [34], which put forward the following principles for the development of approaches for taxonomies:

- **Principle 1:** Ensure material positive contributions to sustainability goals and focus on outcomes;
- **Principle 2:** Avoid negative contribution to other sustainability goals (e.g., through DNSH to any sustainability goal requirements);
- **Principle 3:** Be dynamic in adjustments reflecting changes in policies, technologies, and state of the transition;
- **Principle 4:** Reflect good governance and transparency;
- **Principle 5:** Be science-based for environmental goals and science- or evidence-based for other sustainability issues; and
- **Principle 6:** Address transition considerations.

4.1.2 Principles for Transition

There are several organizations that have developed principles-based approaches for transition. Examples of these include the Climate Bonds Initiative (CBI) [14], the International Capital Markets Association (ICMA) [36], as well as other national taxonomies. As an example, the CBI has proposed five principles for a credible transition, including [14]:

- **In line with 1.5°C trajectory:** All goals and pathways need to align with zero carbon by 2050 and nearly halving emissions by 2030.

- **Established by science:** All goals and pathways must be led by scientific experts and be harmonized across countries.
- **Offsets don't count:** Credible transition goals and pathways do not count offsets, but should count upstream scope 3 emissions.
- **Technological viability trumps economic competitiveness:** Pathways must include an assessment of current and expected technologies. Where a viable technology exists, even if relatively expensive, it should be used to determine the decarbonization pathway for that economic activity.
- **Action, not pledges:** A credible transition is backed by operating metrics rather than a commitment/pledge to follow a transition pathway at some point in the future. In other words, this is NOT a transition to a transition.

4.2 Considerations for a Transition Taxonomy

In addition to the principles noted above, a Canadian transition taxonomy should consider the following points.

A Nuanced and Inclusive Definition of Transition

Transition is a complex process. To create clarity on the definition of transition and to take a leading role in the global shaping of transition finance, transition should cover the following concepts :

- **Transition toward:** Supporting the creation of demand for zero-emission solutions.
- **Transition within:** Activities that will be required beyond 2050 but will require extensive decarbonization to be aligned with net-zero.
- **Transition away:** Managing and fast-tracking the decline of emissions-intensive economic activities for which there is an alternative.

Address and Manage Phase-Out

A Canadian taxonomy should address a managed phase-out for transition away activities within the timeframes recommended by science, taking short-, medium-, and long-term perspectives into account. International investors will be looking for this information. Note that it is only credible to include high-carbon sectors as eligible if there is a pathway for their phase-out.

Fossil Fuels

Introducing new fossil fuel extraction into any definition of transition is one of the most challenging areas of transition taxonomy development. This will require careful consideration and consensus-building to help ensure appropriate methods are incorporated to meet science-based transition expectations. The newest report from the Intergovernmental Panel on Climate Change states that “projected cumulative future CO₂ emissions over the lifetime of existing and currently planned fossil fuel infrastructure without additional abatement exceed the total cumulative net CO₂ emissions in pathways that limit warming to 1.5°C (>50%) with no or limited overshoot” [35].

Put the Paris Agreement at the Heart of the Transition Finance Principle

While the principles outlined above require achievement of the net-zero target by 2050, there are no requirements that net-zero commitments are also Paris-aligned to achieve to 1.5°C. Meeting the Paris Agreement objectives will require significant emissions reduction before 2030 and for some activities to decarbonize before 2050.

Use of Thresholds

Taxonomies use different approaches to defining an eligible green/sustainable/transition investment. Globally, a stringent pass list or thresholds-based approach for defining eligibility within a taxonomy is seen as a best practice. For developed economies such as Canada, a robust threshold-driven approach should be considered to maintain credibility.

References

- [1] International Capital Market Association (ICMA), “Green bond principles: Voluntary process guidelines for issuing green bonds,” ICMA Paris, France, 2021. [Online]. Available: <https://www.icmagroup.org/assets/documents/Sustainable-finance/2021-updates/Green-Bond-Principles-June-2021-100621.pdf>
- [2] People's Bank of China, National Development and Reform Commission (NDRC), and China Securities Regulatory Commission, “Green bond endorsed projects catalogue (2021 edition),” People's Bank of China, Beijing, China, 2021. [Online]. Available: <http://www.pbc.gov.cn/goutongjiaoliu/113456/113469/4342400/2021091617180089879.pdf>
- [3] European Union. *Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088*. [Online]. Available: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020R0852>
- [4] European Commission. *Commission Delegated Regulation of 4.6.2021 supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives*. [Online]. Available: https://eur-lex.europa.eu/resource.html?uri=cellar:d84ec73c-c773-11eb-a925-01aa75ed71a1.0021.02/DOC_1&format=PDF
- [5] Government of Canada. “CER – Energy in Canada.” Canada Energy Regulator. <https://www.cer-rec.gc.ca/en/about/publications-reports/annual-report/2018/energy-in-canada.html> (accessed March 18, 2022).
- [6] United Nations. “Net-zero coalition.” UN.org. <https://www.un.org/en/climatechange/net-zero-coalition> (accessed March 18, 2022).
- [7] K. Abnett and S. Jessop. “U.S., Canada among 20 countries to commit to stop financing fossil fuels abroad.” Reuters.com. <https://www.reuters.com/business/cop/19-countries-plan-cop26-deal-end-financing-fossil-fuels-abroad-sources-2021-11-03/> (accessed March 18, 2022).
- [8] R. Black et al., “Taking stock: A global assessment of net zero targets,” Energy & Climate Intelligence Unit and Oxford Net Zero, Oxford, United Kingdom, 2021. [Online]. Available: https://ca1-eci.edcdn.com/reports/ECIU-Oxford_Taking_Stock.pdf?v=1616461369
- [9] Network for Greening the Financial System (NGFS), “Scenarios in action. A progress report on global supervisory and central bank climate scenario exercises,” NGFS, France, 2021. [Online]. Available: <https://www.ngfs.net/sites/default/files/medias/documents/scenarios-in-action-a-progress-report-on-global-supervisory-and-central-bank-climate-scenario-exercises.pdf>
- [10] H. Mountford et al. “COP26: Key outcomes from the UN climate talks in Glasgow.” Wri.org. <https://www.wri.org/insights/cop26-key-outcomes-un-climate-talks-glasgow> (accessed March 18, 2022).
- [11] Climate Bonds Initiative. “\$500bn green issuance 2021: social and sustainable acceleration: Annual green \$1tn in sight: Market expansion forecasts for 2022 and 2025.” Climatebonds.net. <https://www.climatebonds.net/2022/01/500bn-green-issuance-2021-social-and-sustainable-acceleration-annual-green-1tn-sight-market> (accessed March 18, 2022).

- [12] Climate Finance Leadership Initiative (CFLI), “Financing the low-carbon future: A private sector view on mobilizing climate finance.” CFLI, 2019. [Online]. Available: https://data.bloomberglp.com/company/sites/55/2019/09/Financing-the-Low-Carbon-Future_CFLI-Full-Report_September-2019.pdf
- [13] Platform on Sustainable Finance, “Public consultation report on taxonomy extension options linked to environmental objectives,” European Commission, Brussels, Belgium, 2021. [Online]. Available: https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/sustainable-finance-platform-report-taxonomy-extension-july2021_en.pdf
- [14] A. Creed, M. Adamini, P. Vaze, and B. Boule, “Financing credible transitions. How to ensure the transition label has impact,” Climate Bonds Initiative, London, United Kingdom, 2020. [Online]. Available: https://www.climatebonds.net/files/reports/cbi_fincredtransitions_final.pdf
- [15] Mongolian Sustainable Finance Association (MFSA), “Mongolian green taxonomy,” MFSA, Ulaanbaatar, Mongolia, 2019. [Online]. Available: <https://www.ifc.org/wps/wcm/connect/0c296cd3-be1e-4e2f-a6cb-f507ad7bdf9/Mongolia+Green+Taxonomy+ENG+PDF+for+publishing.pdf?MOD=AJPERES&CVID=nikyhlh>
- [16] Green Finance Industry Taskforce, “Identifying a green taxonomy and relevant standards for Singapore and ASEAN,” Monetary Authority of Singapore, 2021. [Online]. Available: <https://www.greenfinanceplatform.org/policies-and-regulations/green-finance-industry-taskforce%E2%80%99s-taxonomy-and-environmental-risk>
- [17] South Africa Sustainable Finance Initiative. “Taxonomy working group.” sustainablefinanceinitiative.org.za <https://sustainablefinanceinitiative.org.za/working-groups/taxonomy/> (accessed March 18, 2022).
- [18] Green Finance Institute, “The green technical advisory group.” greenfinanceinstitute.co.uk. <https://www.greenfinanceinstitute.co.uk/programmes/uk-taxonomy-gtag/> (accessed March 18, 2022).
- [19] European Commission. “International platform on sustainable finance.” eu.europa.eu. https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/international-platform-sustainable-finance_en (accessed March 18, 2022).
- [20] ASEAN Taxonomy Board, “ASEAN taxonomy for sustainable finance: Version 1,” ASEAN, Jakarta, Indonesia, 2021. [Online]. Available: <https://asean.org/wp-content/uploads/2021/11/ASEAN-Taxonomy.pdf>
- [21] Central Bank of Malaysia, “Climate change and principle-based taxonomy,” Central Bank of Malaysia, Kuala Lumpur, Malaysia, 2021. [Online]. Available: <https://www.bnm.gov.my/documents/20124/938039/Climate+Change+and+Principle-based+Taxonomy.pdf>
- [22] International Platform on Sustainable Finance, “Common ground taxonomy – Climate change mitigation. Instructional Report,” 2021. [Online]. Available: https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/211104-ipsf-common-ground-taxonomy-instruction-report-2021_en.pdf
- [23] Sustainable Finance Indonesia, “Indonesia green taxonomy: Edition 1.0,” Sustainable Finance Indonesia, Jakarta, Indonesia, 2022. [Online]. Available: https://www.ojk.go.id/keuanganberkelanjutan/Uploads/Content/Regulasi/Regulasi_22012011321251.pdf
- [24] Climate Bonds Initiative, “Climate bonds taxonomy,” Climate Bonds Initiative, London, United Kingdom, 2021. [Online]. Available: https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf

- [25] VEB.RF. “Russian national green finance system: Methodology.” veb.rf/en. <https://xn--90ab5f.xn--p1ai/en/sustainable-development/green-finance/?tabs=methodology> (accessed March 18, 2022).
- [26] Ministry of the Environment, “K-taxonomy: Korean green classification system guidelines,” Financial Services Commission, Seoul, Republic of Korea, 2021. [Online]. Available: [http://me.go.kr/home/web/board/read.do;jsessionid=IhdmJdt8Ed+fSYut9gcnPtal.mehome1?pagerOffset=10&maxPageItems=10&maxIndexPages=10&searchKey=&searchValue=&menuId=10525&orgCd=&boardId=1498700&boardMasterId=1&boardCategoryId=&decorator=Taxonomy\)%20EA%B0%80%EC%9D%B4%EB%93%9C%EB%9D%B-%EC%9D%B8%EC%B5%9C%EC%A2%85%EB%B3%B8.pdf](http://me.go.kr/home/web/board/read.do;jsessionid=IhdmJdt8Ed+fSYut9gcnPtal.mehome1?pagerOffset=10&maxPageItems=10&maxIndexPages=10&searchKey=&searchValue=&menuId=10525&orgCd=&boardId=1498700&boardMasterId=1&boardCategoryId=&decorator=Taxonomy)%20EA%B0%80%EC%9D%B4%EB%93%9C%EB%9D%B-%EC%9D%B8%EC%B5%9C%EC%A2%85%EB%B3%B8.pdf)
- [27] Financial instruments for green growth in Viet Nam <https://www.greenfinanceplatform.org/country/viet-nam>
- [28] Superintendencia Financiera de Colombia. “Sustainable finance: Taxonomy.” superfinanciera.gov.co. <https://www.superfinanciera.gov.co/inicio/industrias-supervisadas/finanzas-sostenibles/taxonomia-10104719> (accessed March 18, 2022).
- [29] Sustainable Agriculture Finance Initiative (SAFI), “Phase one guidance for sustainable agriculture finance for crops (perennials and non-perennials),” SAFI, Auckland, New Zealand, 2021. [Online]. Available: <https://static1.squarespace.com/static/60c02ff322ae60116ad716c7/t/61a7fb0afcab494766538b2f/1638398731003/Phase+One+SAFI+Guidance+for+Crops+%28perennials+and+non-perennials%29+%28July+2021%29.pdf>
- [30] S. Dietz, V. J. Jahn, D. Gardiner, and J. Noels. “Emissions targets in the oil and gas sector: How do they stack up?” LSE.ac.uk. <https://www.lse.ac.uk/granthaminstitute/news/emissions-targets-in-the-oil-and-gas-sector-how-do-they-stack-up/> (accessed March 18, 2022).
- [31] Environment and Climate Change Canada (ECCC), “2030 emissions reduction plan: Canada’s next steps for clean air and a strong economy,” ECCC, Gatineau, QC, Canada, June, 2022. [Online]. Available: <https://publications.gc.ca/pub?id=9.909338&sl=0>
- [32] EU Technical Expert Group on Sustainable Finance, “Taxonomy: Final report of the technical expert group on sustainable finance,” European Commission, Brussels, Belgium, 2020. [Online]. Available: https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy_en.pdf
- [33] Greenhouse Gas Protocol. “FAQ: Emission scopes.” <https://www.ghgprotocol.org>. https://ghgprotocol.org/sites/default/files/standards_supporting/FAQ.pdf (accessed March 18, 2022).
- [34] G20 Sustainable Finance Working Group (SFWG), “G20 sustainable finance roadmap,” G20 SFWG, 2020. [Online]. Available: <https://g20sfwg.org/wp-content/uploads/2021/10/G20-Sustainable-Finance-Roadmap.pdf>
- [35] J. Skea et al. “Climate change 2022: Mitigation of climate change,” Intergovernmental Panel on Climate Change, Geneva, Switzerland, 2022. [Online]. Available: https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_FullReport.pdf
- [36] International Capital Market Association, “Climate transition finance handbook. Guidance for issuers,” 2020. [Online]. Available: <https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/Climate-Transition-Finance-Handbook-December-2020-091220.pdf>

CSA Group Research

In order to encourage the use of consensus-based standards solutions to promote safety and encourage innovation, CSA Group supports and conducts research in areas that address new or emerging industries, as well as topics and issues that impact a broad base of current and potential stakeholders. The output of our research programs will support the development of future standards solutions, provide interim guidance to industries on the development and adoption of new technologies, and help to demonstrate our on-going commitment to building a better, safer, more sustainable world.