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Sustainable finance taxonomies – enabling the transition towards net zero?
A transition score for international frameworks*

Catherine Marchewitz[1], Fernanda Ballesteros[1], Franziska Schütze[1]
Nesrine Hadj Arab[2]

Abstract
A plethora of sustainable finance taxonomies are emerging worldwide to support shifting trillions for climate action. Employing a qualitative research approach, we use document analysis to assess 26 sustainable finance taxonomy frameworks worldwide that are in the developing phase or have been published and/or adopted. Based on literature and data we build a transition score (TS) to evaluate the framework's contribution to transition to climate neutrality. We find that only few taxonomies meet most of our criteria for supporting the transition to carbon neutrality, although they are well embedded in environmental policy goals and cover the most important sectors in terms of emissions. The screening approach for economic activities is often not dynamic or aligned with a clear path to climate neutrality and the frameworks target often only specific financial products or a limited group of market participants. Most sustainable finance taxonomies do not carry disclosure and reporting obligations.

Keywords: Sustainable Finance Taxonomy, Green Finance, Transition Finance, EU Taxonomy, climate policy, transition plans

JEL CODES: G18, P00, Q01, Q58

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1 Introduction

Since the 2000s, the challenges of a rapidly warming planet and other aspects of environmental degradation have motivated a call for all societal actors, including the financial sector, to take responsibility for environmental sustainability (Hussain et al., 2020). In its Sixth Assessment Report (AR6), the IPCC notes that while "average annual modelled investment requirements for 2020 to 2030 in scenarios that limit warming to 2°C or 1.5°C are a factor of three to six greater than current levels, there is sufficient global capital and liquidity to close global investment gaps, given the size of the global financial system" (IPCC, 2022, p. 47). However, the shifting of global capital into more sustainable activities to enable the transition toward a low-carbon and climate-resilient economy requires not just clear signaling by governments and the international community, including higher levels of public sector climate finance, but also a stronger alignment with policy and the reduction of uncertainty and transition risks for the private sector (ibid..). Thus, various countries, jurisdictions, and international organizations have started to create policy frameworks by developing sustainable finance[3] taxonomies to help shift the capital needed for climate action.

In 2018, as one of the first actors, China released a green finance taxonomy called the "Green Industry Guidance Catalogue," which sets out specific criteria for identifying industries and technologies that promote environmental sustainability (Zhang et al., 2022).[4] Other players, like Malaysia and the EU, followed shortly thereafter. The EU developed an action plan to finance sustainable growth and established a classification system for sustainable economic activities: the Taxonomy Regulation (European Union, 2020), which entered into force in 2020. Since then other countries and jurisdictions have developed, are in the process of developing, or are considering developing their own country-specific taxonomy to establish clear definitions of sustainable activities or investments. With 51 countries or jurisdictions, the global challenge is to determine how a country-specific taxonomy can tackle diverging decarbonization challenges, while keeping it internationally comparable. Regarding the latter, the International Platform on Sustainable Finance (IPSF) published its first version of the Common Ground Taxonomy (CGT) to improve the comparability and future interoperability of different taxonomies. The IPSF working group on taxonomies was established by the EU and China in July 2020 with the goal of conducting a thorough examination of the existing taxonomies for environmentally sustainable investments, including identifying similarities and differences in their respective methodologies and results (IPSF, 2021).

Yet, to be able to successfully contribute to financing decarbonization, these frameworks may require a nuanced understanding of what sustainable finance is. To date, different sustainable finance definitions and taxonomies are not fully aligned amongst themselves and not in all cases does a legislative definition fall into the strict category of a "taxonomy" comparable to that of the EU, for example. However, sustainable finance taxonomies may act as policy lever and their use can establish standards for identifying sustainable practices and to scale-up sustainable investment.

A taxonomy as a classification scheme can be considered a climate policy instrument helping to reduce uncertainty amongst market participants and increase effectiveness, efficiency, and integrity in the market. Even if the taxonomy frameworks may not constitute a legislative definition in the strict sense, "the way in which a government implements sovereign green bond financing is indicative of its thinking on green finance and eligible green activities" (OECD, 2020, p. 18). If a framework exclusively promotes green activities but leaves out "transition" and corresponding economic activities, this can exclude important parts of the economy that still need to be transformed. Hence, on the practical implementation part of a taxonomy, it is crucial to select the appropriate threshold levels. Setting

[3] In this article we use the general term of sustainable finance taxonomies if not named specifically green finance taxonomy.
[4] Already in 2015, the People's Bank of China (PBOC) issued the green bond catalogue, often referred as "Chinas green bond taxonomy."

thresholds too low could result in carbon lock-in effects where fossil fuel-based infrastructure and high-emission technologies persist for several decades (Schütze & Stede, 2021; Zetzsche & Bodellini, 2023). Conversely, overly stringent requirements may only classify a limited number of assets as sustainable, resulting in higher investment costs for the transition to low-emission industries. This concern comes as momentum behind sustainable finance taxonomies grows in anticipation of structural changes brought on by new reporting requirements, such as the European Corporate Sustainability Reporting Directive (CSRD) and the SEC reporting requirements in the US, as well as international standards from the International Sustainability Standards Board (ISSB). Hence, to successfully contribute to the decarbonization of the economy, sustainable finance frameworks need to find a balance between financing and scaling of already sustainable activities, on the one hand, and financing the shift of both emission-intensive firms to cleaner activities and government funding toward climate protection, on the other hand (Tandon, 2021).

So far, academic qualitative research on sustainable finance taxonomies is rare, despite its increasing relevance in practice. Previous studies and articles analyze, on a general level, the classification of green finance approaches or refer to the already existing examples of application of sustainable and green finance frameworks in selected countries. Two of the few studies that provide a systematic overview of existing taxonomy approaches are the inputs provided for the G20 Sustainable Finance Working Group (SFWG) by the UN-DESA and the International Platform on Sustainable Finance (IPSF); however, these remain more descriptive, focusing on the alignment of these different approaches (G20 SFWG. (2022); IPSF. (2021)). There is a lack of a systematic comparative analysis of existing taxonomies worldwide addressing the question on how taxonomies support financing the transition and decarbonization of economies.

Given the status of the frameworks and short period of implementation, conducting a comparative quantitative ex-post evaluation of their contribution to transition is currently unfeasible. Consequently, our analysis employs an ex-ante criteria-based qualitative approach to assess these frameworks. We use document analysis to assess all sustainable finance taxonomy frameworks worldwide that are in the developing phase or have been published and/or adopted. Based on literature and data we build a transition score (TS) to evaluate the framework's contribution to transition to climate neutrality.

The article is structured as follows: Section 2 provides a background and overview of the global development of taxonomies as well as a review of the recent literature on sustainable finance taxonomies and on the concept of transition finance. We describe the data sources and methodology in section 3. Section 4 presents and discusses the results and in section 5 we outline our main conclusions, policy recommendations, and suggestions for further research.

2 Literature review and background

2.1 Global development and types of sustainable finance taxonomies

The concept of sustainable finance originated in the 1990s, when the idea of sustainable development gained popularity during the 1992 United Nations Conference on Environment and Development. There was a common understanding that, next to public finance, private financing was also necessary to achieve all three dimensions – economic, social, and environmental – of sustainable development. The UNEP Finance Initiative (UNEP FI), established in May 1992, has worked since then with the global financial sector, including investment firms, insurance companies, and banks, to integrate environmental, social, and governance (ESG) concerns into core financial analysis, decision-making, and reporting processes (Gerster, 2011). The link between the financial system and sustainability grew over the following decades, culminating in 2015 at the Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC) in Paris. For the first time, the COP placed equal emphasis on issues related to financing the environmental transition and more conventional

environmental concerns, such as reducing greenhouse gas (GHG) emissions. COP 21 also marked a first-of-its-kind emphasis on the importance of financial players' participation. To reach the ambitious goal of making finance flows consistent with low GHG emissions and climate-resilient pathways through appropriate mobilization and provision of financial resources, a new technology framework and enhanced capacity-building were also developed. The Agreement also required all Parties to put forward their best efforts through Nationally Determined Contributions (NDC) and to strengthen these efforts in the years ahead (Migliorelli & Dessertine, 2019). Around at the same time, the UN approved the 17 Sustainable Development Goals (SDGs), which were established in accordance with the Millennium Development Goals' (MDGs) development process. These became effective at the beginning of 2016, with a 15-year tenure (until 2030). The SDGs are universally applicable, in contrast to the MDGs that focused on developing countries (Migliorelli & Dessertine, 2019). These two frameworks – the Paris Agreement and the SDGs – have significantly accelerated the emergence of sustainable finance taxonomies by various countries, jurisdictions, and international organizations, addressing questions around the definition of sustainable activities and investments, concerns on the appropriate identification and classification of different types of economic activities, as well as the need to mitigate the risks of greenwashing (ibid., Hussain et al., 2020). As of December 31, 2023, a total of 51 countries or jurisdictions have initiated, are developing, or have adopted or paused their own sustainable finance taxonomies (see Table 1).

Table 1: Sustainable Finance Taxonomies Worldwide: process maturity

Initiation phase (23)[a]	**Developing phase (9)[b]**	**Published or adopted (18)[c]**	**Paused (1)[d]**
Argentina	Brazil	ASEAN	Canada*
Australia	Hong Kong	Bangladesh	
Cambodia	Indonesia	China	
Chile	Israel	Colombia	
Costa Rica	Kyrgyzstan**	European Union	
Dominican Republic	Mexico	Georgia	
Ecuador	Rwanda	Japan	
Egypt	Singapore	Kazakhstan	
Fiji	Thailand	Latin America and the Caribbean	
India		Malaysia	
Jordan		Mongolia	
Kenia		Philippines	
Lao PDR		Russia	
Morocco		South Africa	
Nepal		South Korea	
New Zealand		Sri Lanka	
Panama		Uzbekistan	
Peru		Vietnam	
Senegal			
Tanzania			
Turkey			
United Arab Emirates			
United Kingdom			

Source: Classification based on WWF & Climate & Company (2022) refined and updated as of December 31, 2023.
** The Sustainable Finance Action Council (SFAC) has released its Taxonomy Roadmap Report in March 2023 containing recommendations on the implementation of a Canadian Green and Transition Financial Taxonomy Framework.*
*** Draft is publicly not available and therefore not included in the analysis.*
[a]Initiation phase: Governments or relevant authorities have expressed interest in developing their own taxonomies, and/or have established a working group on sustainable finance taxonomies. [b] Developing phase: Governments or relevant authorities have developed or shared first drafts of their taxonomies in the form of a working or consultation paper or action plan available

to the public. [c]Published or adopted: Governments or relevant authorities have adopted their sustainable finance taxonomies through national/regional regulation or published guidance frameworks that are not labelled as draft. [d]Paused: Governments or relevant authorities have stopped the development of their taxonomies due to various reasons.

The names of the taxonomies vary, including the words "sustainable", "green", "transition", and "social" in their titles, indicating different types of taxonomies. In general, a *sustainable taxonomy* is the most comprehensive, as it entails all environmental and social aspects. A *green taxonomy* focuses on *pure* green activities or activities that are considered unconditionally *green* in the sense that they positively contribute to the environmental objectives covered by the taxonomy. The granularity, scope, criteria, and environmental objectives of these taxonomies can vary greatly. By contrast, *transition taxonomies* are allegedly more dynamic in the sense that they seek to identify and award companies that are transitioning and reducing their GHG emissions (Ehlers et al., 2021). Another form are *social taxonomies* that focus on the positive contribution to social objectives, such as decent work and adequate living standards (EU Platform on Sustainable Finance, 2022). However, a green or sustainable taxonomy can also contain elements of transition activities.

2.2 Academic literature on sustainable finance taxonomies

With regards to the genesis and origin of sustainable finance taxonomies, some studies elaborate on the emergence of taxonomies as part of sustainable finance regulation and action plans (de Arriba-Sellier, 2023) alongside defining sustainability goals as well as establishing and identifying suitable metrics for taxonomies (Tripathy et al., 2020). Various authors provide a conceptual framework against divergent theoretical backgrounds to classify different approaches to green finance and green monetary policy (Dziwok & Jäger, 2021) as well as to classify and compare sustainable finance taxonomies (Ehlers et al., 2021; Verougstraete et al., 2022). Others investigate pathways for green finance taxonomy development (Chan et al., 2022) analyzing the contribution of a taxonomy to address greenwashing by explicitly defining eligible sectors and activities, using clear labels as well as defining sufficient disclosure standards (Migliorelli, 2021).

The EU Taxonomy has been subject of research in various aspects. Studies review the evolution and the future application of the EU Taxonomy (Marcos & Castrillo, 2022) or highlight its role with regards to creating more transparency and comparability by providing a standardized definition of sustainable investments, thus having the potential to serve as a blueprint for a standard global definition of sustainable economic activities (Schütze et al., 2020). Further studies of the EU Taxonomy discuss its relation to ESG ratings (Dumrose et al., 2022) or its financial market effects (Sautner et al., 2022). Others elaborate on its impact beyond the Capital Market Union on other legal sources of financial regulation that applies to credit institutions, investment firms, investment fund managers, and insurance companies, thus helping to contribute to decarbonization mechanisms beyond the taxonomy's scope (Gortsos, 2021). Further research focuses on the economic effects of the EU Taxonomy (Fuest & Meier, 2022) and its contribution to climate neutrality by analyzing the stringency of technical thresholds for specific sectors (Schütze and Stede, 2021); its role as legal framework in the context of the European Action Plan and financing sustainable growth (Alessi et al., 2022); or in relation to the rise of ESG financial products (Driessen, 2021). The greenness of financial portfolios, in terms of alignment to the EU Taxonomy, and their exposure to climate-related transition risk (Alessi & Battiston, 2022, 2023); and the performance of portfolios of EU-Taxonomy orientated and renewable European electric utilities (Cauthorn et al., 2023) add to the list. The polarized debate around the EU taxonomy, particularly with regard to the classification of certain gas and nuclear energy activities as sustainable, is also subject of research serving to illustrate that such inconsistencies can affect the effectiveness of taxonomies (Kammourieh & Vallée, 2021). Recent studies examine the implementation of the EU Taxonomy by companies in Germany (Arnold et al., 2023) and in Europe (Hummel & Bauernhofer, 2024) and its

usage by various actors as toolkit for transition planning (CDP, 2023; EU Platform on Sustainable Finance, 2024).

The sustainable finance policies and frameworks in other countries and jurisdictions have also been subject of research, such as in Asia (Ariyapruchya & Volz, 2022; Diaz-Rainey et al., 2023; Schoenmaker & Volz, 2022), Australia (Reserve Bank of Australia, 2023), Indonesia (Setyowati, 2023) and South Africa (Hilbrich et al., 2023). Another strand of literature starting to emerge is on the impact which taxonomy misalignment may have on the effectiveness of endorsing the taxonomies of emerging markets (Chan et al., 2023).

Regarding the harmonization and alignment of international taxonomies, the G20 SFWG provided a review of existing approaches to sustainable finance of 26 countries, union/federation of states, and initiatives like the Climate Bonds Initiative (CBI) (G20 SFWG, 2022).

To the best of our knowledge, the aspect of supporting and financing transition activities in the context of sustainable finance taxonomies is not yet addressed, especially not in the context of a global comparison.

2.3 Financing the transition to a low-carbon and climate-resilient economy

Achieving the transition to a sustainable, net zero emissions, and resilient world will require massive investments into adaptation and mitigation solutions, such as financing clean technologies, new sources of energy, and the decarbonization of hard-to-abate sectors (CPI, 2022). The push to finance this transition to a low-carbon and climate-resilient economy (Boissinot et al., 2016, p. 8; Caldecott, 2022) has resulted in the introduction of a new term: "transition finance."

The transition finance landscape can be separated into three building blocks: (i) non-financial corporates – also named the real economy; (ii) financial institutions and investors; and (iii) the (evolving) policy and disclosure framework, all supported by private sector initiatives (Erdmann et al., 2023). Practitioners in sustainable finance (for example, see Duteil, 2021a, 2021b; HSBC, 2020 and Michaelsen & Mylläri, 2021) as well as governments (for example see METI, 2022) and organizations (for example BII, 2022; ICMA, 2020 and Jun & Terada-Hagiwara, 2022) have started to use and discuss the term, but there is no commonly accepted definition of it in the literature as of 2023, making it difficult to track progress. In the context of Official Development Assistance (ODA) the definition focuses often on finance flows from developed to developing countries (OECD, 2021).

The term "transition finance" is mostly used in combination, and/or in context, with climate change referring to capital and debt financing for polluting firms to shift to cleaner activities and reduce GHG-emissions, but also to government funding directed toward climate protection (Caldecott, 2022). Thus, rather than providing funding to activities that are already green, transition finance focusses on creating better financing conditions to transform the so-called "brown" emission-intensive and hard-to-abate sectors – such as steel, cement, chemical, paper making, aviation, and construction – that are on their way to become green or, as some suggest, less brown (Duteil, 2021b). It differs from the term "sustainable finance," which refers to financial services and products that integrate ESG considerations into business operations and investment decisions. Aiming to promote sustainable economic growth and development while minimizing negative impacts on the environment and society, it includes investments in renewable energy, green infrastructure, and socially responsible companies, among others (Cunha et al., 2021). In contrast, "green finance" supports different environmental objectives and "climate finance" focuses more specifically on any finance supporting climate change mitigation and adaptation.[5]

[5] For a more detailed discussion of the different terms and definitions, see (Shishlov & Censkowsky, 2022).

Regardless of their abundance, most definitions have various features in common, such as the setting of science-based targets that are quantitatively measurable, the development of credible transition plans,[6] and strategies to achieve long-term goals aligned with the Paris Agreement including a recommendation to disclose the strategy roadmaps (Caldecott, 2022; Duteil, 2021b; ICMA, 2020; METI, 2022; Shrimali, 2022; Tandon, 2021). Keeping in mind that issuers are generally at different starting points and on different pathways, transition plans must be tailored to the sector and operating geographies of each issuer (ICMA, 2020).

Others also highlight the principle of commitment, which means that, in order to contribute to long-term climate goals, capital raised must be used to finance the solutions, investments, and expenditures required to reduce emissions in accordance with a predetermined low-carbon trajectory.[7] Further, the principle of substitutability must be avoided: substitutability means that there must be no feasible green alternatives or realistic decarbonization pathways in the industry (of the issuer or asset). This means that if a green option becomes feasible in the future, the intervention supported by transition funds must not obstruct the implementation of this new green option (Tandon, 2021).

In this article, we understand transition finance as "*the provision and use of financial products and services to support counterparties, such as companies, sovereigns, and individuals, realize alignment with environmental and social sustainability"* (Caldecott, 2022, p. 936) as well as supporting a "*whole-of-economy transition, in the context of the Sustainable Development Goals (SDGs), towards lower and net-zero emissions and climate resilience, in a way aligned with the goals of the Paris Agreement"* (G20 SFWG, 2022, p. 20).

Reaching the internationally agreed climate targets requires large-scale investments especially in the emission-intensive sectors. Further, transition finance needs a common understanding of the relevant activities in each sector that support the transition to a net zero economy. Thus, it is important that the taxonomies include transitional aspects to fulfil their potential to shift the capital flows.

3 Materials and methods

3.1 Data sources and collection

From the initial 51 countries and jurisdictions, our qualitative research approach is based on an extensive evaluation the 26 taxonomies (see Table 2) that are either in the developing phase or have been Published or adopted as a taxonomy framework.[8] We only examine sustainable finance taxonomies that are included in legislation, issued, or mandated by government bodies or other public bodies. Given the status of the frameworks and short period of implementation, conducting a comparative quantitative ex-post evaluation of their contribution to transition is currently unfeasible.

Consequently, our analysis employs an ex-ante criteria-based qualitative approach to assess these frameworks. We use document analysis (Bowen, 2009; Flick, 2022; Merriam & Tisdell, 2015; Morgan, 2022; Patton, 2015) and, to ensure authenticity, credibility, representativeness, and meaning (Flick, 2022), we systematically reviewed and evaluated the primary sources, i.e., the legal texts, frameworks, reports, or guidance documents identified as reference documents for each respective country (see Table 2) that were made available by governments or relevant authorities by December 31, 2023. Where needed, we used the translation service Deepl and Google Translate. In specific cases, other secondary

[6] A mandatory reporting standard on a "comply or explain" basis of transition plans for listed companies, asset managers, and regulated asset owners is being developed by the Transition Plan Taskforce (TPT, 2022).

[7] For a proposal for an improved credit scheme to finance the Paris Agreement and create stronger financial incentives to decarbonize see (Edenhofer et al., 2022).

[8] We have only looked at drafts that were publicly available. Kyrgyzstan is there not included in the assessment.

sources were added, if these complement the information in the actual primary source in a relevant way. In each case, we took the last available source as a starting point if documents had already been revised. We refer to the countries in the analysis using the ISO country code.

Furthermore, we employed emissions data from the World Emissions Clock (WEC) of the World Data Lab in collaboration with the Vienna University of Economics,[9] to assess whether the respective taxonomy covers the emissions from the most relevant sectors in that country. For the analyzed countries and regions, we use the total emission data for 2022 as well as the emissions for the sectors of agriculture, construction and buildings, energy, industry, and transport, which consist of different subsectors.

Table 2: Sustainable Finance Taxonomies Worldwide: Selected countries and jurisdictions for analysis

Developing phase (8)	Published or adopted (18)
Brazil - BR	ASEAN - AS
Hong Kong - HK	Bangladesh - BD
Indonesia - ID	China - CN
Israel - IL	Colombia - CO
Mexico - MX	European Union - EU
Rwanda - RW	Georgia - GE
Singapore - SG	Japan - JP
Thailand - TH	Kazakhstan - KZ
	Latin America and the Caribbean - LA
	Malaysia - MY
	Mongolia - MN
	Philippines - PH
	Russia - RU
	South Africa - ZA
	South Korea - KR
	Sri Lanka – LK
	Uzbekistan - UZ
	Vietnam - VN

3.2 Transition score (TS) and criteria for analysis

The primary goal of this analysis is to assess the contribution of the respective sustainable finance taxonomy frameworks in regard to financing the transition to climate neutrality. As countries undertake transition in different ways, we consider a scoring model a valuable approach as it helps to cluster the information we assess in the documents in a stringent way. The existing literature offers various methods for classifying taxonomies (see also section 2). Given our primary focus on assessing the contribution of taxonomies on facilitating the transition, we find the outcome-based approach put forth by Ehlers et al. (2021) to be particularly relevant. This approach evaluates taxonomies based on their objectives, scope, audience, and output. We also considered insights from the grey literature (e.g. G20 SFWG, 2022; UN-DESA & IPSF, 2021) to refine and expand upon these criteria and to develop sub-criteria. Consequently, our document analysis is guided by a so-called transition score (TS) consisting of five criteria (i) policy embeddedness, (ii) sectoral coverage, (iii) screening approach, (iv) usability, and (v) reporting and disclosure.

[9] Available at: https://worldemissions.io/ The WEC provides trajectories of GHG emissions until 2050 covering a sample of 180 countries, five sectors, and up to 24 sub-sectors. It represents one of the most comprehensive, consistent, and granular dataset of its kind to date that is also publicly available WEC (2023). While the sectors are presented here in a somewhat aggregated manner with low granularity, they are available in open-source form, see also https://worldemissions.io/Methodology/methodology.html.

For all criteria, we define four stages of fulfilment with assigned scores: *no contribution [1]*; *little contribution [2]*; *moderate contribution [3],* or *significant contribution [4]* to financing the transition. Further, we apply a weighting of the criteria, as explained below. The weighting approach adopted for this paper is widely used in multi-criteria choice and evaluation methods (see e. g., Hinloopen & Nijkamp, 1990; Wang et al., 2009 and Zardari et al., 2015).

Table 3 gives an overview of the scoring methodology. The five criteria for the TS are explained in depth in the following.

Table 3: Transition Score (TS) – overview of criteria

Criteria	Stages of fulfilment				Weighting [in%]
	No contribution [1]	*Little contribution [2]*	*Moderate contribution [3]*	*Significant contribution [4]*	
Policy embeddedness: The framework clearly defines which environmental goals are supported and how this translates into high-level policy goals.	No clear objective identifiable	Clearly defined environmental goals mainly focusing on climate (e. g., SDGs, Paris Agreement, 1.5°-Goal)	Clearly defined environmental goals mainly focusing on climate as well as part of greater national or regional policy decarbonization strategy (NDCs, Climate protection laws).	Clearly defined environmental as well as sustainability goals (beyond climate, biodiversity, circular economy, resource efficiency, social goals) as well as part of greater policy decarbonization strategy (NDCs, Climate protection laws).	0.1
Sectoral coverage: The framework covers all relevant emission-intensive sectors and industries in bespoke country	The framework does not cover any emission intensive sectors and industries (≤ 10% covered).	Only little relevant sectors/industries are covered (≤50 %).	The framework addresses more than half of sectors/industries but could be more ambitious (>50-≤90%).	All relevant industries/sectors are covered in a sufficient manner. (e. g., most emitting sectors) (> 90 %).	0.25
Screening approach: The framework sets science-based thresholds that are measurable and dynamic.	The framework does not define any measurable threshold or screening criteria.	The framework defines thresholds, but the science-based or regulatory origin and/or regular update[a] of thresholds remains unclear.	The framework defines multiple/more dynamic thresholds and addresses the measurability or clear screening criteria, but the science-based origin of thresholds/principles could be more transparent.	The framework defines dynamic thresholds/criteria, addresses the measurability in a sufficient manner, and benchmarks are clearly aligned with science-based climate goals.[c]	0.25
Usability: The framework sets obligations for relevant market participants[b] and financial products.	The framework does not specify financial products or to whom the framework applies.	The framework sets either mandatory obligation for only a few market participants or the framework sets out a voluntary specification, but clearly defines potential users of the framework.	The framework sets mandatory obligations for a moderate number of market participants.	The framework sets mandatory obligations for most or all relevant market participants.	0.20
Disclosure and reporting: The data is disclosed and reported in an audited and granular manner.	The frameworks do not make any specifications on disclosure or reporting.	Disclosure on taxonomy-alignment is only voluntary or recommended, but the frameworks set out detailed specification, e. g. also link to existing reporting standards.	Granular data on taxonomy-alignment needs to be disclosed.	Granular data on taxonomy-alignment needs to be disclosed and audited by an independent third party.	0.20

[a] The word "development" indicates whether the framework sets out if there will be a regular check and update of the defined thresholds.
[b] Under this item, we neither examine the calculation of the thresholds, nor their ambition, i. e. alignment of these thresholds with specific climate targets. We only check whether the (scientific) origin of the criteria and thresholds is referenced transparently.
[c] Relevant market participants are all companies of the financial and industry sectors (in terms of size and type), covered by the taxonomy, that are important for the national economy of the country in focus.

1. Policy embeddedness

Policy embeddedness addresses the "objectives" of the framework. To successfully contribute to financing the transition, the framework should clearly define which sustainability and/or environmental goals are supported and how this translates into high-level policy goals and strategies. Providing standardization and greater comparability to guide capital market stakeholders in identifying sustainable economic activities, enables them to make informed investment decisions and encourages activities that help scale up sustainable development and contribute to specific environmental objectives. Thus, taxonomies should clarify how an activity or investment contributes to achieving high-level policy objectives as well as national environmental objectives and meeting associated measurable targets (Hussain et al., 2020; Ehlers et al., 2021). Broader environmental goals can be defined as "climate neutrality," a "low-carbon economy," or, more generally, to a "emissions reduction" according to the objectives of the Paris Agreement, while more clearly defined sustainability goals might refer to frameworks like the SDGs. If there is no reference at all, we assign "*no contribution*". If the references are made in general, we assign the score *"little contribution".* In addition to clear environmental goals, it should also be made clear to what extent the taxonomy is to be placed in a broader (national) policy context. For example, the taxonomy could be classified as a contribution to the Nationally Determined Contributions (NDCs) or as an implementation strategy for national and transnational climate protection legislation, because it can benefit from synergies with other areas. In addition, political accountability for achieving the goals and for successful implementation and enforcement is likely to be higher. If this is fulfilled, we assign the score *"moderate contribution."* Finally, taxonomies that not only consider climate-related elements in the context of their environmental goals, but also consider the protection of broader sustainability goals, like biodiversity, resource efficiency, and social goals, can be classified as even more ambitious, a *"significant contribution."*

2. Sectoral coverage

Under the "sectoral coverage" criterion, we address the scope of the framework, meaning the extent to which the taxonomy framework covers relevant economic sectors of that country. Some studies (in case of the EU taxonomy) refer to this as "taxonomy eligibility" ((Alessi & Battiston, 2023; Arnold et al., 2023). For example, if an economy emits a lot of its overall emissions in the construction sector, but this sector is not covered by the framework, the ambition potential according to this criterion is not completely exhausted. Thus, a distinction can be made between taxonomies that take no, few, sufficient, or all emissions-relevant sectors into account. To determine the level of emissions coverage provided by a taxonomy, we use a scoring system that evaluates whether specific sectors are included or explicitly excluded from the taxonomy. To assess the country specific GHG emissions per sector, we use the database of the World Emissions Clock (WEC) as described in 3.1. If the framework does not cover any or less than 10% of emissions, we assign "*no contribution*" and if it covers up to 50 percent of emissions "*little contribution*". If the framework addresses a reasonable number of sectors/industries between 50 and 90 percent of emissions covered, we assign "*moderate contribution*", while a "*significant contribution*" is assigned if more than 90 percent of emissions are covered. We credit all sectors that are explicitly mentioned in the framework (with or without screening criteria), but, in practice, decarbonization efforts in one sector have spill-over effects in other sub-sectors: e.g., the expansion of renewable energies in the energy sector reduces emissions from fossil fuels, like coal- or gas-powered power plants. Following the systems approach (OECD 2020) that recognizes that an economic activity cannot be considered fully sustainable independent of the wider system in which it operates, in our analysis, we indicate the "indirect coverage" for the purpose of completeness (see figure 2). While this indirect coverage is not factored into the assessment, it should not go unmentioned. While it may be controversial from the perspective of a classification systems that aims to address green economic activities, we argue that transition finance framework needs to follow a more nuanced logic addressing

also sectors and activities that are currently still classified as brown. If a taxonomy is sector-agnostic and not explicitly mentioning that certain sectors are disregarded, it automatically addresses all sectors and, thus, gets the highest score. An important drawback should be noted here. As already mentioned, the emission data for the sectors are not available in detail, the analysis of sector coverage can only be done at a more aggregated level. At the same time, some frameworks also omit entire sectors, which can be mapped well with the data.

3. Screening approach

Here, we investigate whether taxonomies set (technical) screening criteria for their coverage of economic activities. To successfully contribute to the transition challenges of economies, sustainable finance taxonomies should not just aim at financing already green and sustainable activities. They should also support activities of companies that may currently still be emission-intensive but can be transformed to low-carbon or climate neutral activities by means of new technologies and/or energy efficiency, as well as by resource efficiency or circular economy measures (Marchewitz et al., 2022). Further, they should be aligned with a credible transition pathway (Shrimali, 2022). Consequently, the screening approach of such frameworks needs to incorporate this accordingly. Hence, for the classification of taxonomies, at the lower bound, we differentiate between taxonomies that currently do not define any thresholds for measurability or screening criteria as *"no contribution".* Second, taxonomies that define broader thresholds and screening criteria but where measurability, science-based origin of thresholds/criteria, and their respective development/update over time remains unclear as *"little contribution*". More ambitious taxonomies define thresholds and regularly updated thresholds, offering a clear indication of how to measure it and how thresholds/criteria are aligned with science-based roadmaps or pathways; these are a *"moderate contribution".* Finally, a taxonomy that aims to support the transition will not only define clear thresholds for suitable activities, but also foresee a more differentiated approach for transition activities. These approaches are a *"significant contribution".* One example is the employment of a traffic light system (Zetzsche & Bodellini, 2023): Activities that are not yet sustainable but can demonstrate a credible decarbonization path could be classified as yellow whereas activities that cannot be decarbonized further and, therefore, fall under the binary thresholds should be classified as red.

If a company complies with the screening criteria of the taxonomy this is often called taxonomy "alignment" – as for example in the EU taxonomy (Alessi & Battiston, 2022 & 2023; econsense 2023).

4. Usability

The usability criterion examines which market actors of the financial sector and real economy as well as financial products (such as bonds, loans, guarantees, funds) are affected by the framework. Small- and medium-sized enterprises (SMEs) might still be excluded from such frameworks, although they are of crucial importance for many national economies. However, they can still apply the taxonomy guidelines on a voluntary basis and/or use as an internal steering instrument. Further, SMEs might be affected indirectly because financial instruments might be linked to taxonomy criteria. Disclosure on taxonomy criteria could therefore improve companies' access to private capital and lending opportunities. Thus, the usability criterion examines which companies (size and type) must disclose if they met the taxonomy criteria. If the framework does not specify to which financial product or to whom the framework applies, we assign "*no contribution*" to that criterion. If the framework sets either mandatory obligations for only a small number of market participants or the framework sets out voluntary reporting specifications, but clearly defines potential users of the framework, it represents "*little contribution*". Finally, if the framework sets mandatory obligations for some market participants or financial products it represents a "*moderate contribution*", while it represents a "*significant*

contribution" if the framework sets mandatory obligations for most or all relevant market participants and financial products.

5. Disclosure and reporting

To guide financial flows, a taxonomy framework relies on transparency through disclosure and reporting. Theoretically, the mandatory disclosure of environmental information through the utilization of the taxonomy has the potential to enhance the quality and quantity of information accessible to both investors in a firm and consumers of the products of a firm. This, in turn, can facilitate better decision-making by these stakeholders, as they are better equipped to evaluate the environmental impact of their investments and compare different financial products (Schütze & Stede, 2021). Various studies point out the positive financial effect that sustainability disclosure can have on financing access and firm valuation (García-Sánchez et al., 2019; Riordan & Nerlinger, 2022; Saka & Oshika, 2014). More consistent reporting could even save time for businesses that currently produce sustainability reports by eliminating the need to provide different data to various data suppliers. This could considerably enhance the comparability of businesses with financial institutions and reduce transaction costs (Easley & O'hara, 2004). On top of that, a taxonomy ought to provide a foundation for sustainability labeling in the market for private investors and increase transparency and comparability for end users (Schütze et al., 2020). It could also serve as a standard definition for public spending and/or private investment enabling tracking and reporting of public and/or private expenditures (ibid.). Under this criterion, we analyze whether, and to what extent, companies must report on the alignment and whether the reporting must be verified or audited. Accordingly, we label taxonomies that do not make any specifications on disclosure or reporting as making *"no contribution"* while "*little contribution*" indicates taxonomies where the data disclosure on taxonomy-alignment is voluntary, but where the frameworks make a link to existing frameworks and reporting standards, such as the Global Reporting Initiative (GRI), the Sustainable Accounting Standards Board (SASB), and the Task Force on Climate-related Financial Disclosures (TCFD). A *"moderate contribution"* is made by frameworks where granular data on taxonomy-alignment must be disclosed on a mandatory basis; this rises to "*significant contribution"* if the taxonomy requires where disclosure and reporting on taxonomy-alignment alongside auditing by an independent third party.

6. Weighting of criteria

In a last step, as certain criteria play a more crucial role for the transition approach, we add a weighting to the selected criteria: Amongst the five criteria, we consider *sectoral coverage* and the *screening approach* as having the strongest impact on transition finance, as these have the strongest direct environmental impact on the effectiveness and impact of the framework on reaching climate neutrality. Hence, we weigh the sectoral coverage and screening approach each at 0.25. Given that different sectors contribute different amounts to GHG emissions, it is important that policies address all sectors to achieve a significant reduction in GHG emissions. A policy that only addresses a few sectors may not be effective in achieving the desired reduction. On the other hand, the screening approach determines which projects or companies are eligible for funding or support. A policy with credible (science-based) and dynamic screening criteria ensures that the funds and support are directed toward projects and companies that are truly transitioning to a low-carbon economy. Next to the sectoral coverage, we also think that including all relevant stakeholders from the financial sector and real economy is of utmost importance. Hence, we weigh the *usability criteria* with 0.2. As disclosure is an important prerequisite for the usability of the taxonomy, the *disclosure criteria* is also weighted with 0.2. Finally, we weigh *policy embeddedness* lower because it concerns the overall decarbonization strategy of a country, which does not guarantee alignment with the 1.5° target. However, it shows if the taxonomy is well embedded in related policies and the overall strategy.

Hence, the collected scores for a certain category do not count absolutely for the final transition score, but relatively given their relevance in the context of supporting the transition to net-zero emissions.

4 Results and findings

The analysis of the official documents for the 26 frameworks in scope shows a scattered picture. The TS ranges from 2.0 points to 3.6 points, with 2.8 points being the most common result. On average, the countries achieve a result of 2.78 points. The countries with the highest score (3 and above, hence overall a "moderate contribution") are ASEAN, Columbia, the EU, Georgia, Singapore, South Korea, and Sri Lanka. The countries with the lowest score are Israel, Malaysia, Russia, South Africa and Uzbekistan (ranging from 2 – 2.4 points, hence "little contribution").

The results of the assessment of the five criteria show that most countries perform quite well in terms of *policy embeddedness* and *sectoral coverage*, indicating that these policies have a strong link to existing environmental or climate-related regulation and are effectively targeting relevant sectors and emissions, with an average contribution of 3.7 and 3.2 points, respectively. With regards to the *screening approach*, countries perform less strongly, with an average of 2.7 points. The taxonomies often lack a dynamic or regular update of the thresholds or criteria with a science-based origin. With respect to the *usability* criterion, the performance of all countries is relatively low, at an average of 2.2 points. This indicates that there is often a lack of legally binding requirements for specific market participants as well as financial products and target groups of the taxonomy remain limited. Finally, the *reporting and disclosure* criterion also scored 2.0 points on average, indicating that there is limited transparency and accountability in the disclosure of information related to these policies. Only four explicitly refer to reporting standards in their taxonomy framework.[10]

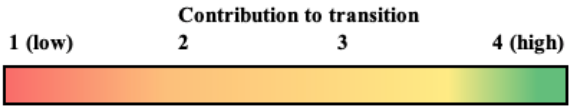
Table 4 summarizes the evaluation of each taxonomy (country and jurisdiction) based on our criteria. The detailed assessment of each taxonomy can be found in the annex.

It is crucial to recognize that the current evaluation is based on the status quo of the documents as of December 31st, 2023. For countries in development phase, the evaluation might change once the taxonomy is finalized and published.

[10] It should be noted that our analysis does not take into account whether any regulations outside the taxonomy regulation and guidance documents impose reporting obligations with respect to the taxonomy.

Table 4: Heatmap: How much do the taxonomies contribute to transition

Countries & jurisdictions	Policy embeddedness	Sectoral coverage	Screening approach	Usability	Reporting & disclosure	Overall score	Weighted score
ASEAN	4	4	4	2	2	3.2	3.2
Bangladesh	4	3	2	2	3	2.8	2.7
Brazil*	4	4	2	2	2	2.8	2.7
China	3	4	2	2	3	2.8	2.8
Colombia	4	4	4	2	1	3.0	3.0
EU	4	4	3	4	3	3.6	3.6
Georgia	4	3	3	2	3	3.0	2.9
Hong Kong*	4	2	4	2	2	2.8	2.7
Indonesia*	4	3	2	2	2	2.6	2.5
Israel*	3	3	3	2	1	2.4	2.4
Japan	3	3	4	2	2	2.8	2.9
Kazakhstan	4	3	2	2	2	2.6	2.5
LAC	4	3	1	2	2	2.4	2.2
Malaysia	4	3	1	2	2	2.4	2.2
Mexico*	4	3	3	2	2	2.8	2.7
Mongolia	4	4	2	2	1	2.6	2.5
Philippines	4	4	2	2	2	2.8	2.7
Russia	3	3	2	2	2	2.4	2.4
Rwanda*	3	3	3	2	2	2.6	2.6
Singapore*	4	4	4	2	2	3.2	3.2
South Africa	3	2	2	2	2	2.2	2.1
South Korea	4	4	3	2	2	3.0	3.0
Sri Lanka	4	3	4	2	2	3.0	3.0
Thailand*	4	2	4	2	2	2.8	2.7
Uzbekistan	2	2	2	3	1	2.0	2.0
Vietnam	3	3	3	3	2	2.8	2.8
Average	3.7	3.2	2.7	2.2	2.0	2.7	2.7



Source: Own graph based on criteria-based assessment of countries. **** Frameworks are still in development phase****. The assessment can therefore not be regarded as final.*

With regards to *policy embeddedness*, the analysis shows a generally positive performance among most countries and jurisdictions, as shown in column 1 of Table 3. The full four points are earned by 18 out of the 26 countries for this criterioxn (AS, BD, BR, CO, EU, GE, HK, ID, KZ, LA, MY, MX, MN, PH, SG, SK, LK, TH), while the seven countries receive three points (CN, IL, JP, RU, RW, ZA, VN) and UZ two points. In many frameworks, there is a well-defined connection or reference established to the Paris Agreement, the SDGs, and the country's national climate and energy policies. Furthermore, it is worth noting that several taxonomies reference not only climate goals, but also extend their scope to encompass a broader range of environmental objectives such as circularity and biodiversity. Thirteen taxonomies (AS, DB, CN, CO, EU, MN, RU, SG, ZA, KR, LK, UK, RW) do include nature-related aspects or plan to do so. Others include specific regional aspects, such as the alignment of Islamic finance with sustainability (e.g., MY). Some also refer explicitly to the NDCs (CO, GE, ID, LA, LK, MY, SG). This suggests that many countries are adopting a holistic approach to sustainability, however the interconnections between different environmental and social issues.is not fully reflected so far. Only a few countries integrate social aspects (AS, GE, MN, MX) or aim to do so (BR).

Regarding *sectoral coverage*, we find that most countries cover more than 50 percent of their GHG-emissions directly in that country with their taxonomy (“significant” or “moderate contribution”), with six countries covering less than 50 percent (“little contribution”) (HK, LK, MX, TH, UZ, ZA). However, it's important to interpret these scores with caution. HK and TH, for example, have announced plans to incorporate additional sectors in forthcoming refinements, as only prototypes have been published thus far. ZA represents a special case in this regard, as around 40 percent of its emissions are caused by

energy production via coal; this is not directly addressed in its taxonomy framework. This might be because it would be inconsistent with international standards to label (clean) coal as "green" as it is substitutable. Furthermore, it could lead to economic frictions if coal were to be explicitly labelled as a non-sustainable activity.[11] However, we expect that promoting investments into renewable energy production will drive coal power plants out of the market over time. Therefore, we consider coal emissions to be indirectly covered. Of the taxonomies covering more than 50 percent of their covered emissions, eight taxonomies cover more than 90 percent of their emissions (AS, BR, CN, CO, KR, MN, PH, SG). The Philippines present a special case here, as it is a sector-agnostic approach that does not subject specific activities to classification.

Figure 1 shows the share of directly covered emissions of the analysed countries in the year 2022, meaning those sectors explicitly mentioned within the respective taxonomy framework. Here, we also indicate whether some sectors might be indirectly affected by the framework, such as coal emissions in South Africa. For example, this is the case if a framework explicitly lists investments into renewable energies, like wind or solar, as eligible "green" investments but does not mention anything about energy production with respect to coal, natural gas, or oil. In principle, we assume that the expansion of renewable energies in the countries will lead to a reduction in the consumption of fossil fuels, at least in the long term.

Figure 1: Overview of direct and indirect sectoral coverage in GHG-emissions in % in 2022

*Source: Own graph based on taxonomy frameworks and emission data from 2022 from the WEC, available at: https://worldemissions.io/. ***Frameworks are still in development phase**. The assessment can therefore not be regarded as final. **The Philippines is a special case as their approach is sector-agnostic and merely principle-based. Thereby, the framework indirectly covers all sectors without explicitly mentioning specific activities.*

While the thematic scope of taxonomies may differ, the taxonomies generally follow three approaches in terms of their *screening approach.* It is important to notice, that these three approaches can overlap and be used independently or in combination (G20 SFWG, 2022). One is *technical screening criteria* (TSC), which is used for example by the EU, CO, KR, ZA, ID, and VN and partly in UZ; it deems an activity eligible if, and only if, its expected contribution to an environmental objective, as defined by the framework, meets the corresponding TSC, a predetermined set of thresholds and proxies, such as emissions intensity. In other words, the TSC determines whether an economic activity is making a substantial contribution to environmental objectives and does no significant harm to other environmental objectives. As there is no restriction imposed on the types of technologies underlying an activity in the

[11] For further information on the South African case, see for example Strambo et al. (2019).

sectors, the TSC design is technology neutral. The *whitelist* (WL) design is used for example by BD, the CN, GE, RU, MN and partly UZ. This means that (i) an activity is only eligible for inclusion if it is specifically included therein; and (ii) it complies with the relevant set of local or national environmental performance standards. Thus, the WL design is technology specific. Lastly, some taxonomies include a principle-based approach. This approach defines a set of core principles for market participants; as brought forward for example by the ASEAN taxonomy proposal as well as MY, PH and SG.

Overall, most taxonomies combine their approach with other screening criteria, such as minimum safeguards, substantial contributions, and/or the "Do No Significant Harm" (DNSH) principle and exclusion criteria. With regards to supporting the transition, column 3 of Table 4 displays a significant disparity among countries in terms of their screening approach. The frameworks of AS, CO, JP, HK, SG, LK, and TH can be identified as frontrunners in this category, as these transparently include dynamic thresholds, measurability, and compatibility based on scientific knowledge. However, these taxonomies inherently prioritize transition activities. Japan's "Basic Guidance on Transition Finance," for example, already has the word transition in its name. Although not all sectors are depicted in the framework, Japan has developed individual sector roadmaps for the core sectors to be transformed, which show detailed transformation plans using technology with, for example, predefined emission intensities that are updated regularly. As for MY, the framework does not define any measurable threshold or screening criteria whereas LA identifies guiding principles and elaborates the key structural elements.

Most taxonomies specify which market participants should apply the taxonomy (*usability*), but only target a very limited group of stakeholders, or remain very vague saying that the framework applies to various actors for a variety of financial products as indicated by the preponderance of orange in column 4 of Table 4. Only the EU earns four points given the huge scope of the target groups it applies to. With the new CSRD in place, the circle of companies subject to reporting requirements and thus affected by the EU taxonomy is successively expanding considerably to over 50.000 organizations. Further, it targets financial market participants that offer and distribute financial products in the EU (including those from outside the EU). VN and UZ receive three points, as they set mandatory obligations for a defined target list. The remaining countries and jurisdictions only earn two points. Furthermore, in some cases the taxonomy only applies to specific financial instruments, such as green bonds (BD, CN, KZ, RU, VN). While bonds remain a significant component of project financing, other financial products, such as loans, funds, insurance products, and blended finance, also play an important role. In fact, loans continue to be the dominant form of project financing in many cases, indicating the diversity and complexity of the financial landscape (Holm-Hadulla et al., 2022).

While many taxonomies specify which potential users and financial products can benefit from them, they often do not give rise to any binding *disclosure and reporting* obligations (criterion 5). This lack of integrating the frameworks into existing law might also explain why the levels of fulfilment are frequently highlighted in red or orange. The frameworks of BD, CN, GE and the EU are the only four that are translated into binding regulation. All market participants that are targeted by the frameworks need to disclose information and report on their taxonomy-aligned activities. In most frameworks, companies are not obliged to disclose any information and/or report their alignment with the taxonomy. Since the frameworks are often still voluntary, they do not carry reporting obligations, even though some frameworks refer to existing standards and frameworks, such as TCFD.

Interestingly, the weighting of the criteria with a stronger focus on the sector coverage and the screening approach, do not seem to shift the TS significantly. Overall, the weighted TS ranges from 2 points to 3.6 points, with 2.7 points being the most common result. On average, the countries achieve a result of

2.7 points. Twelve countries and jurisdictions do not improve or worsen their ranking. A marginal lower ranking is achieved by 12 countries and jurisdictions, only Japan slightly improves its ranking due to its very good performance on the screening approach. The top 3 countries/regions remain the same, AS, the EU, and SG. The worst performing countries also remain the same with RU, MY and UZ.

5 Discussion and conclusions

Sustainable finance taxonomies are essential for defining what constitutes sustainable activities and investments, which is crucial for financing the transition. By providing clear criteria and standards for transition finance, taxonomies help establish a robust market for investments in activities that support the transition to a carbon-neutral and sustainable economy. Ultimately, this can accelerate the transition and help achieve a more sustainable future. Overall, there seems to be a consensus that the environmental (and social) standards in the taxonomies should be science-based. Further, it is necessary to create a global baseline for sustainable finance to avoid quality disparities or even a "race to the bottom" of ambitions. This means that taxonomies can only be fully effective if some fundamentally uniform standards are in place when applied in different jurisdictions to avoid leakage and reduce the administrative burden of reporting.

As of 31 December 2023, sustainable finance taxonomies have been published (as draft) or already adopted by 27 countries. Based on our TS, we find that most taxonomies are not only well embedded in national and international environmental and sustainability policy goals but also cover the most important sectors in terms of emissions. However, the screening approach is often not stringent enough to ensure full decarbonization, as these often lack a dynamic or transition approach. Further, it is frequently not clear whether the thresholds are science-based. Application is often limited to green financial products, such as green bonds. Additionally, information on taxonomy alignment is not properly disclosed, as the taxonomies are not directly linked to the reporting requirements of firms and financial institutions. Consequently, none of the frameworks analyzed can be considered as fully enabling the transition to carbon neutrality. The countries or jurisdictions with the highest scores (above 3, hence overall a "moderate contribution") are ASEAN, the EU and Singapore. The countries with the lowest scores (below 2.5) are Malaysia, Russia, Uzbekistan and South Africa.

This research contributes to bringing together the academic literature related to sustainable finance taxonomies and transition finance by providing an *ex-ante* criteria-based evaluation framework focused on supporting the transition. In terms of its practical contributions, this study offers insights on how the concept of "transition" to a low-carbon economy is covered in the existing taxonomy frameworks. These are all contributions relevant for academia, practitioners, and policymakers.

Based on the comparative analysis, we identify three main areas that seem to be the most challenging in the future development of taxonomies.

First, a clear pathway toward climate neutrality should be embedded in the screening approach for all relevant sectors and stakeholders in each respective country. This will ensure that companies can use the respective taxonomy as a reference for their net-zero transition plan. Moreover, the alignment with international climate targets for all sectors needs to be ensured over time. This also requires a continuous revision and adjustment of the framework based on novel scientific findings or technology development, hence a more dynamic approach. Taking into account that different jurisdictions will have different long-term climate policy objectives and, thus, need to follow different pathways, "taxonomies should also be adaptable to evolving knowledge and technologies as well as the adjustment of transition pathways in view of results achieved over time" (OECD, 2020, p. 2).

Second, despite different efforts toward aligning international sustainable finance taxonomy, differences exist in terms of methodologies, technical criteria, scope, and screening approach. Different jurisdictions face different environmental problems and priorities, leading to divergent definitions of what constitutes “green” and “sustainable". The stage of economic development and cultural predispositions also contribute to this divergence. However, as many issuers and investors have activities and investments across several jurisdictions, harmonization between the taxonomies of different jurisdictions will be important to avoid market fragmentation, to foster market confidence, and to ensure alignment with international climate targets. The aim to increase the interoperability is especially important as most frameworks worldwide do use the Chinese and EU Taxonomy as a basis. While some countries tend to orientate themselves more toward China, such as Mongolia, or, as in the case of Bangladesh, have elements of both taxonomies, the South African, Colombian, or Mexican frameworks, for example, are strongly based on the EU's preliminary work.

Third, a taxonomy should be applied to all relevant financial instruments as well as to all stakeholders in the financial sector and the real economy. If only applied to certain financial products, such as green bonds or green loans, the impact on environmental and social objectives will be limited. Hence, a taxonomy needs to be embedded in reporting standards of all companies and financial products.

In terms of the methodology applied, the criteria-based assessment approach has certain limitations that should be addressed in future research. First, the depth and breadth of the assessment may vary depending on the available information and resources, which could impact the accuracy of the results. The criteria themselves may be subject to bias or may not fully reflect the priorities and values of all stakeholders involved in the assessment process. Therefore, it is important to ensure that the criteria-based assessment is used in conjunction with other evaluation methods and that the results are interpreted with a degree of caution and sensitivity to the specific context in which the assessment is being conducted. We also emphasize the importance of *ex-post* analysis in evaluating the effectiveness of criteria-based assessment frameworks. However, this can only be done once the different taxonomies are applied in practice.

With 23 countries currently working on a sustainable finance taxonomy (in initiation phase), future work on taxonomies might also encompass more jurisdictions as well as new criteria, such as social aspects, biodiversity, water, and pollution. Some countries already include social aspects (Georgia, Mongolia) such as gender equality (Mexico) or biodiversity (South Africa, South Korea, Colombia) or intend to progressively include social dimensions (Brazil) or to develop a Social Taxonomy after the release of a green taxonomy (South Africa). A Social Taxonomy draft was published by the EU Sustainable Finance Platform upon the EU Commission’s request but has paused since then. In addition, in June 2020, the UNPD and China International Center for Economic and Technical Exchange (CICETE) released a SDG Taxonomy segmented between six sectors that mimics the ICMA SBP’s eligible activities, i.e., basic infrastructure, affordable housing, health, education technology and culture, food security, and financial services.

We encourage future research to explore how different frameworks can be aligned and harmonized to provide a more cohesive and comprehensive evaluation of sustainability policies and programs, thus supporting the transition. First ideas suggest using common design features such as common metrics for environmental performance criteria and some overarching principles (science-based, integrating dynamic scenario analysis, technology-neutrality) (WWF & Climate & Company, 2022). This requires collaboration and coordination between all stakeholders to ensure that assessment frameworks are effective, efficient, and relevant to the needs of different communities and regions. With regards to other

international frameworks, it is crucial that countries and jurisdictions are aligned with high-level principles that enhance comparability, interoperability, and consistency of different approaches, as suggested by the UN-DESA, & IPSF (2021). While these high-level principles should be compatible with the respective country's jurisdictions, they might also create a level playing field for international capital market participants.

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Annex

The annex provides an overview of our country-specific evaluation of taxonomy frameworks and documents. All links to sources have been assessed last on 13th of May 2024.

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
ASEAN	• Asean Taxonomy for Sustainable Finance (Version 2), available at: https://asean.org/book/asean-taxonomy-for-sustainable-finance-version-2./	• Published or adopted (June 2023)	• Cleary defined environmental goals: The framework has clearly defined environmental objectives: (1) Climate change mitigation, (2) Climate Change Adaptation, (3), Protection of Healthy Ecosystems and Biodiversity (4) Resource Resilience and the Transition to a Circularity Economy (p. 13) • Link to international policies: The taxonomy makes a clear reference to the Paris Agreement (p. 2). • Link to national or regional decarbonization policy/strategy: The taxonomy clearly references national environmental laws as well as the National Determined Contributions (NDCs) (p. 19-20). • Link to broader sustainability goals: The framework further addresses broader sustainability goals, such as key social aspects like "Respect Human Rights, Prevention of Force and Child Labour and Impact on People Living Close to Investments"(p. 3) as well as broader environmental goals like circularity and biodiversity as defined as one of the core objectives of the taxonomy (p. 13).	• The emissions covered by the framework sum up to around 96 percent which represents a significant contribution as it is well over 90 percent as defined in our criteria framework. Focus sectors in version 1 and version 2 of the taxonomy remain the same, however the framework highlights that "future version of the Asean taxonomy will expand their coverage to a wider list of Activities" (p. 14).	• The framework differentiates between green, amber and red activities according to their contribution to the environmental objectives of climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control as well protection and restoration of biodiversity and ecosystems. Currently, the taxonomy is based on two main assessment methods: a principle-based Foundation Framework which provides a qualitative assessment of activities (sector-agnostic) as well a so-called "Plus Standard" with metrics and thresholds (Technical screening criteria (TSC) to further qualify eligible green investments. In the first version of the Asean Taxonomy, the Plus Standard was still under development and has now been complemented in version two. The FF only differentiates between green, amber and red activities, while the PS uses a multi-tiered approach and further differentiates between different levels of amber activities (Tier 2 and 3), following a transitional approach: "TSC will be adjusted over time, in line with technological developments within AMS, [...] as it is expected that the TSC will progressively become more stringent and will ultimately be phased out" (sunsetting) (p. 36). The framework also clearly describes the institutional arrangements concerning the regular update of TSC, such as the instalment of so-called "TSC Review bodies (TRB)" (p. 38) will a TSC period usually running for 5 years (p. 39). It is further highlighted that the TSC aim at achieving defined GHG emissions levels, which reference credible 1.5°C-aligned science-based pathways, as aligned with the Paris Agreement (p. 111).	• The taxonomy is a voluntary guidance framework to several application areas in the field of sustainable finance. However, the framework clearly sets out target users of the taxonomy, which can be "member states, regulators, banking institutions, users of capital, and rating agencies" (p. 14) as well as "companies" (p. 22). It also clearly sets out potential uses on the level of financial products and processes such as "Bond issuance", "Identifying sustainable Investees", "Developing sustainable lending product or identifying eligible borrows", "Definition of ESF benchmarks/indices and identification of constituents", "Corporate sustainability reporting, "Financial market participant sustainability reporting" as well as "Transitions finance" (p. 69).	• So far, there are no disclosure requirements as the framework is voluntary guidance, however the framework references "corporate sustainability reporting" as well as "financial market participant sustainability" reporting as clear use case of the framework (p. 69).
Final score: 3.2			4	4	4	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	**Sectoral Coverage**	**Eligibility approach**	**Usability**	**Disclosure and reporting**
Bangladesh	Policy on Green Bond Financing for Banks and Financial Institutions, available at: https://www.bb.org.bd/mediaroom/circulars/gbcrd/sep202022sfd05e.pdf.	Published or adopted (since September 2022)	• Clearly defined environmental goals: e.g., "reducing Green House Gas (GHG) emissions by 5% within 2030) (p.1) • Link to international targets/policies: Link to Sustainable Development Goals (p.1) • Link to national or regional decarbonization policy/strategy: Framework refers to "Perspective Plan 2021-2041 and Bangladesh Delta Plan 2100", sets out plan for sustainable economic growth and climate change mitigation and adaptation; furthermore, refers to Bangladesh's Intended Nationally Determined Contribution (INDC) • Link to broader sustainability goals: Explicit elements of the taxonomy are besides climate protection, biodiversity (p. 49) as well as social sustainability goals (p.10).	• The emissions directly covered by the framework sum up to around 82 percent which represents a moderate contribution as it lies between 50 and 90 percent as defined in our criteria framework. (See Sheet "Bangladesh").	• The framework differentiates between activities that are "automatically" eligible and therefore are not subject to specific criteria like "solar thermal hear" (p. 25) as well as activities that are subject to specific thresholds like bio energy for electricity, heating and cooling which e. g. needs to deliver "80 percent emission reduction relative to fossil fuel comparator" (p. 25). The thresholds are however not dynamic or subject to change over time, nor does the framework include transitional activities. Furthermore, the scienced-based origin of the thresholds could me more transparent. For a few activities, there is reference made to existing standards (like for manufacture of biomass, p. 25), yet is missing for most of the quantitative criteria.	• The framework is used for the financial instrument of "green bonds" and is therefore also called a "Green Bond Taxonomy" (p. 10). It thereby sets specific obligations to bond issuers which can be according to the framework "scheduled banks, non-banking financial institutions, City Corporations and Municipalities" (p. 8). Since, it is however limited to green bonds only, it only addresses a little amount of market participants and products.	• Banks and financial institutions must provide reports to Bangladesh Bank on a quarterly basis that include a list of the projects that have received funding from green bonds or are currently being funded, a summary of those initiatives, the funds allocated, and the anticipated results. Additional reports will be submitted by banks/FIs as needed or requested by Bangladesh Bank (p. 22).
Final score: 2.8			4	3	2	2	3

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Brazil	• Sustainable Taxonomy of Brazil, Action Plan, available at: https://www.gov.br/fazenda/pt-br/orgaos/spe/sustainable-taxonomy-of-brazil.	• Developing phase (initial draft(s) published, since December 2023)	• Clearly defined environmental goals: The framework has 12 clearly defined environmental objectives like Climate change mitigation, Climate Change Adaptation, transition to circular economy amongst others (p.24/25). • Link to international policies: The taxonomy makes a clear reference to the 2030 Agenda on Sustainable Development and the Paris Agreement (p. 34), Conventions of Basel, Rotterdam and Stockholm and International conventions on human rights and other social objectives to combat inequalities (p. 36), Kunming-Montreal Convention on Biological Diversity and its Global Biodiversity Framework (p.35). • Link to national or regional decarbonization policy/strategy: The taxonomy clearly references the National Determined Contributions (NDCs) (p. 34/35) and other national commitments • Link to broader sustainability goals: The framework mentions the importance of broader sustainability goals, such as key social aspects like "human rights and "gender equality as well as Indigenous peoples and traditional communities (p. 37).	• The emissions covered by the framework sum up to around 100 percent which represents a significant contribution as it lies over 90 percent defined in our criteria framework.	• The framework does not define any measurable threshold or screening criteria. However, it is worth noticing that the framework will contain science-based thresholds in the final document. "The technical criteria will have to be adapted periodically in line with the sector's decarbonization pathway, based on science." (p. 56).	• So far, no concrete obligations have resulted from the action plan for products or actors of the financial sector, but it is emphasized that taxonomies "offer a common terminology for companies, financial institutions, investors, regulators, governments and other stakeholders, coordinating investment decisions and the design of public policies" (p. 15). Furthermore, a mandatory use is foreseen for starting January 2026 (p. 68). It remains however unclear, to what extent the framework will apply.	• The action plan does not make any specifications on disclosure or reporting at the date of evaluation, has however a whole section on the development of a monitoring, reporting, and verification (MRV) and aims at developing for identifying and suggesting which instruments and regulations could be linked to the taxonomy, taking into account existing regulations established by the financial system's regulatory authorities; and (ii) for designing a system that allows for the monitoring of sustainable finance flows and, consequently, of the ecological transformation process (p. 61).
Final score: 2.8			4	4	2	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
China	• China Green Bond Endorsed Projects Catalogue, available at: http://www.pbc.gov.cn/goutongjiaoliu/113456/113469/4342400/2021091617180089879.pdf; https://www.climatebonds.net/files/files/China-Green-Bond-Catalogue-2020-Consultation.pdf. & Green Bond Endorsed Projects Catalogue (2020 Edition) (Draft for Consultation), unofficial CBI translation, available at: https://www.climatebonds.net/files/files/the-Green-Bond-Endorsed-Project-Catalogue-2021-Edition-110521.pdf. • Other sources: Common ground taxonomy, available at: https://finance.ec.europa.eu/system/files/2021-12/211104-ipsf-common-ground-taxonomy-instruction-report-2021_en.pdf.	• Published or adopted (April 2021)	• Clearly defined environmental goals: Taxonomy has clear definition of environmental goals, such as "environmental improvement, action to climate change, as well promote sustainable economic and social development" (p. 2, CBI doc) • Link to international policies: The framework itself does not make a clear reference to the SDGs. However, it should be noted that China is currently developing a separate SDG Finance Taxonomy. • Link to national or regional decarbonization policy/strategy: The framework clearly addresses several national policies like to Integrated Reform Plan for Promoting Ecological Progress (p. 2, CBI doc) or the "Guiding Opinions on Building a Green Financial System" (p. 2, CBI doc). • Link to broader sustainability goals: Beyond climate change the framework also addresses goals such as the protection of biodiversity (p. 27, CBI doc) or the protection of natural resources (p. 33, natural resources). The goal of sustainable development is just mentioned in a brief and general manner (p. 2, CBI Doc). However, it should be noted that China is currently developing a separate SDG Finance Taxonomy that addresses a variety of broader sustainability goals. It remains however unclear, how these two separate frameworks will be integrated.	• The emissions covered by the framework sum up to around 100 percent which represents a significant contribution as it is well over 90 percent as defined in our criteria framework.	• The guiding catalogues does not directly determine specific criteria or thresholds for eligibility, but refers to other environmental-related laws, standards, and guidelines. It however remains unclear how these standards, guidelines laws are in line with latest scientific development. Furthermore, development of criteria remains unclear (p. 23).	• The guiding catalogue only applies to green bonds, it is however mandatory for all "green bond issuers including all financial institutions, corporations and state-owned enterprises, third-party appraisal agencies, and regulatory agencies" (p. 16, see other sources).	• The framework itself does not define granular disclosure or reporting requirements. However, issues of green bonds are automatically subject to reporting requirements under different supervisory bodies, which are usually encouraged to provide a third-party verification. (p. 17, see other sources).
Final score: 2.8			3	4	2	2	3

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Colombia	• Taxonomia verde de Colombia, available at: https://www.taxonomiaverde.gov.co/webcenter/ShowProperty?nodeId=/ConexionContent/WCC_CLUSTER-191401.	• Published or adopted (March 2022)	• Clearly defined environmental goals: "the country's various strategies and policies to achieve climate change and biodiversity objectives will require unprecedented levels of investment in sustainable and low-carbon technologies" (e.g., p. 13) • Link to international targets/policies: Clearly linked international targets and policies (Paris Agreement and 1.5°C (e.g., p. 13), SDGs (e.g., p. 13)) • Link to national or regional decarbonization policy/strategy: Clear link to national climate policies and laws such as "here is the Climate Change Act (1931 of 2018), the Climate Action Act (2169 of 2021), the Clean Transport Act (1972 of 2019) and the Environmental Crimes Act (2111 of 2021), instruments that generate specific compliance incentives such as the carbon tax established in Law 1819 of 2016 or the energy incentives contemplated in Law 1715 of 2014 and Law 2099 of 2021."p. 13) as well as NDC (p. 13) • Link to broader sustainability goals: Explicit elements of the taxonomy are besides climate protection, also biodiversity and natural resource protection (p.12) as well as social dimensions (p. 16).	• The emissions covered by the framework sum up to around 98 percent which represents a significant contribution as it is well over 90 percent as defined in our criteria framework.	• For quantitative ceilings or thresholds, for example in the cement production sector, the EU taxonomy is referenced, which itself is based on scientific objectives (p. 112). In the agricultural sector, on the other hand, mainly qualitative criteria are used. Here, for example, the guidelines of the Food and Agriculture Organization of the United Nations are cited (p. 184). And although the taxonomy itself does not yet specify dynamic ceilings, it is inherently a dynamic document as it "needs to be reviewed periodically to update it and align it with priorities in national and local policy frameworks, as well as plans for financial disaster risk management, climate change mitigation, and land use planning" (p. 14).	• The framework is not a regulation but defined as "guiding classification system" (p. 19). However, it clearly defines potential user such as "companies, investors, financial institutions, public and private entities, financial consumers" (p. 18) as well financial instruments like "bonds, credit/leasing portfolios, securities, investment funds" etc. (p. 18).	• Disclosure on taxonomy-alignment is voluntary and "no external verification or assurance of alignment with Taxonomy is needed" (p. 19), but the framework highlights that verification could be a helpful element to increase transparency and that other reporting standards in Columbia already reference the Taxonomy (p. 19).
Final score: 3.0			4	4	4	2	1

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	**Sectoral Coverage**	**Eligibility approach**	**Usability**	**Disclosure and reporting**
EU	• EU Taxonomy Regulation, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32020R0852.	• Published or adopted (June 2020)	• Clearly defined environmental goals: "The six environmental objectives that this Regulation should cover are: climate change mitigation; climate change adaptation; the sustainable use and protection of water and marine resources; the transition to a circular economy; pollution prevention and control; and the protection and restoration of biodiversity and ecosystems" (p. 5). • Link to international policies: The taxonomy is designed to be consistent with international agreements, including the United Nations Framework Convention on Climate Change (UNFCCC), the Paris Agreement, and the Sustainable Development Goals (SDGs) (p. 1). • Link to national or regional decarbonization policy/strategy: The taxonomy has adopted a broader sustainability agenda through its European Green Deal, which aims to make the EU's economy climate-neutral by 2050 (p. 1). • Link to broader sustainability goals: the Taxonomy includes criteria for broader sustainability factors beyond just climate change, such as biodiversity. Additionally, it includes the UN SDGs and other social sustainability criteria, which consider the impact of economic activities on social issues, e.g. OECD Guidelines for Multinational Enterprises and UN Guiding Principles on Business and Human Rights, including the declaration on Fundamental Principles and Rights at Work of the International Labour Organisation (ILO) (p. 1, 9).	• The framework covers up to around 99,6 percent of emissions, which represents a significant contribution for this criterion as it is well above 90 percent.	• To be considered environmentally sustainable under the EU taxonomy, an economic activity must make a substantial contribution to at least one of its objectives and not significantly harm any of the others. Additionally, the activity must comply with minimum social safeguards, including compliance with international labour standards, respect for human rights, and the promotion of good governance. Additionally, it provides technical screening criteria that consider the life cycle of the activity and assess the extent to which the activity contributes to the environmental objectives and avoids significant harm (DNSH) (p. 5 -12).	• This Regulation applies to: (a) measures adopted by Member States or by the Union that set out requirements for financial market participants or issuers in respect of financial products or corporate bonds that are made available as environmentally sustainable. (b) financial market participants that make available financial products; (c) undertakings which are subject to the obligation to publish a non-financial statement or a consolidated non-financial statement pursuant to Article 19a or Article 29a of Directive 2013/34/EU of the European Parliament and of the Council respectively (p. 14).	• Disclosures of corporates about the taxonomy alignment of their activities (i.e., % of activities fulfilling the EU taxonomy criteria) on Climate Change Adaptation and Mitigation, as part of Article 8 of the EU Taxonomy (Regulation (EU) 2020/852), (p. 17) - 2024: First disclosures of financial entities about the alignment of their portfolios (2023 exercise) with the EU Taxonomy all 6 objectives The taxonomy is embedded in a mandatory disclosure regime with the Corporate Sustainability Reporting Directive (CSRD) and the Sustainable Finance Disclosure Regulation (SFDR).
Final score: 3.6			4	4	3	4	3

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Georgia	• Sustainable Finance Taxonomy for Georgia, available at: https://nbg.gov.ge/en/page/sustainable-finance-taxonomy. Other sources: • Appendix 1,2,3 to the regulation, available at: https://nbg.gov.ge/en/page/sustainable-finance-taxonomy. • Regulation on Loan Classification, available at: https://nbg.gov.ge/en/financial-stability/esg-reporting-and-disclosure.	• Published or adopted (since August 2022)	• Clearly defined environmental goal: "Recognizing the importance of addressing social as well as environmental issues ensures sustainable development of the country. Therefore, the sustainable finance definition used in this taxonomy covers green finance (that includes climate finance) along with social finance" (p. 12). Link to the National Climate Change Strategy and Action Plan (as defined in the NDC) 2030 (p. 6). "Activities that are considered sustainable under this taxonomy aim to contribute to the sustainability objectives of the country be it environmental and/or social. Environmental objectives include climate change adaptation and mitigation, biodiversity conservation, natural resource conservation, pollution prevention and control, sustainable use and protection of water and marine resources, transition to a circular economy, waste prevention and recycling and others. While poverty reduction, food security, education, healthcare, and financial inclusion fall under social objectives. Moreover, the Taxonomy is also consistent with the targets and goals set in the updated NDC." (p. 15) • Link to international targets/policies: Link to further targets and policies such as NDCs, Paris Agreement (p. 5 & 6). The primary purpose of the Taxonomy is to support the development of a sustainable finance market and consequently contribute to the country's sustainable development (p.6). • Link to national or regional decarbonization policy/strategy: Reference to the 2030 Climate Change Strategy and Action Plan (p. 6) and the country's 'Low Emission Development Strategy' (LEDS) and Nationally Appropriate Mitigation Action (NAMA) (p. 6) • Link to broader sustainability goals: "Develop a classification framework and standardized definitions for green/social/sustainable financial products to achieve the priority SDGs" (p.14) Moreover, the updated NDC of Georgia sets 2030 Climate Change Strategy and Action Plan for the determination of mitigation measures, including sectoral targets, which contributes to the achievement of unconditional and conditional commitments and mitigation targets. (p. 6)	• The emissions covered by the framework sum up to around 76% which represents a moderate contribution as it lies between 50 and 90 percent defined in our criteria framework.	• The framework defines thresholds and addresses the measurability or clear eligibility criteria for most activities, but the science-based origin of thresholds/principles could be more transparent. For interoperability reasons, each activity is mapped with NACE codes and then linked to a specific thresholds/criterion as defined in other reference frameworks (mostly refers to EU legislation, p. 19ff, please also refer to Appendix I).	• The SF Taxonomy is designed to be applicable by various actors for a variety of financial products. However, it is tailored to the needs of major local users that are commercial banks and microfinance institutions (p.16, see also Loan Regulation).	• As a part of the taxonomy framework, it has also adopted the Regulation on Loan Classification and Reporting for commercial banks in July 2022. The regulation defines green, social, and sustainable loans and sets the reporting requirements for taxonomy-aligned loans for commercial banks. The requirements related to green loans are mandatory (starting January 2023) (p.18, see also Regulation on Loan requirement).
Final Score: 3.0			4	3	3	2	3

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Hong Kong	• Prototype of a Green Classification Framework for Hong Kong, available at: https://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2023/20230530e1a1.pdf. Other sources: • Annex to Prototype (including thresholds and metrics), available at: https://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2023/20230530e1a2.pdf.	• Developing phase (initial draft(s) published)	• Clearly defined environmental goals: Discussion paper acknowledges the benefit of a taxonomy to help "direct capital flows to achieve environmental, social and governance benefits and net-zero emission targets". (p. 4) • Link to international targets/policies: "A taxonomy provides governments with a tool to define target activities and develop support policies to achieve a jurisdiction's emissions reductions targets in line with the goals of the Paris Agreement" (p. 4); "Alignment with the Paris Agreement" is defined as core principle of the Taxonomy (p- 8) • Link to national or regional decarbonization policy/strategy: Taxonomy as part of the contribution to "Hong Kong's Climate Action Plan 2050" (p. 3) • Link to broader sustainability goals: Discussion paper refers to other taxonomies as key references for developing this prototype, including the Minimum Social Safeguards (MSS) and Do No Significant Harm (DNHS) by the EU Taxonomy (p. 7).	• The emissions currently covered in the framework sum up to around 25 percent of the emissions. This however only tentative and should not be considered as final assessment as the discussion paper announces to include additional activities in a next version.	• Each included activity must be compliant with specific technical screening criteria and related thresholds (on the basis of CGT, Mainland China taxonomy, EU Taxonomy, and CBT), criteria are based on three principles: Upper boundary based, best in class, and percentage change (p. 12). For interoperability reasons, each activity is mapped with ISIC or NACE codes and then linked to a specific thresholds/criterion as defined in other reference frameworks (mostly refers to Thresholds by the Common Ground Taxonomy) (p. 12, and Annex). On top of it, for each activity, there is a sectoral activity card that clarifies the development and update of criteria and thresholds due to developments in climate science or regulatory developments (see Annex of the Discussion paper).	• The taxonomy is voluntary but defines potential applications in terms of potential users and beneficiaries: "Investors, issuers, regulators, society" (p. 4) and in terms of financial products: to label green bonds and label green loans (p. 16).	• As the taxonomy aims at its core "to enable and harmonise data disclosure" (p. 4); disclosure and reporting is encouraged & recommended: "The metrics identified in this layer could be included in investor reports or annual reports as a standing item for disclosure. They can also be considered as a guide for bond issuers and financial institutions to better understand what type of data to gather and disclose to prove eligibility against the taxonomy" (p. 9).
Final score: 2.8			4	2	4	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Indonesia	• Indonesia Green Taxonomy Edition 1.0, available at: https://www.ojk.go.id/keuangan berkelanjutan/en/publication/detailsflibrary/2352/taksonomi-hijau-indonesia-edisi-1-0-2022.	• Developing phase (initial draft(s) published) (October 2022)	• Clearly defined environmental goals: The framework clearly states that it aims at supporting "environmental protection and management efforts, as well as mitigation and adaptation to climate change" (p. 13). • Link to international targets/policies: It should support the Paris Agreement (p. 9) and fulfilment of the Indonesian NDC (p. 9); it builds on international good practices, such as the EU taxonomy (p. 24) and the ASEAN (p. 25). • Link to national or regional decarbonization policy/strategy: Framework refers to several national policies, such as the "State-Owned Enterprises Decarbonization", the PLN 2021-2030 Electricity Supply Business Plan (RUPTL), carbon trading, as well as a roadmap for the Development of Battery-Based Electric Motorized Vehicles Industry (KBL-BB) (p. 37), • Link to broader sustainability goals: The taxonomy is explicitly labelled as "low carbon, resource efficient and socially inclusive" (p. 43), e.g., one of the principles of the taxonomy is "social and environmental risk management" which also implies assessing social risk of activities (p. 20).	• According to the document, there are 919 subsectors (at level 5) included in the green taxonomy. The following sectors are mentioned: Energy, forestry, agriculture, Waste, Service Industry, Processing Industry, IT, Construction, Education, Transportation, Water management, Real Estate etc. (p.31). Based on the latter sector selection, around 83 percent of emissions are covered.	• For each included activity, the framework defines (science-based) eligibility criteria and thresholds. However, it is not yet clear (p.22) how the criteria will evolve and in which time frame. Criteria are divided into three categories: green (do no significant harm, apply minimum safeguard, provide positive Impact to the environment, and align with the environmental objective of the taxonomy, yellow (do no significant harm), and red (harmful activities) (p. 35).	• The taxonomy is a guideline; hence it is voluntary (p. 21). It is targeted at the following users: financial actors, investors, government for fiscal policies, financial and monetary authorities, international institutions.	• Disclosure, reporting and verification is encouraged (p. 17) & recommended, but voluntary.
Final score: 2.6			4	3	2	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Israel	• [1] The draft Israeli "green" taxonomy for classifying economic activities according to their contribution to climate goals and their impact on environmental interests, available at: https://www.gov.il/he/departments/publications/Call_for_bids/taxonomy. & [2] A method for adapting the European Taxonomy for classifying economic activities according to their contribution to climate goals and their impact on Israel's environmental interests, available at: https://www.gov.il/he/departments/publications/Call_for_bids/taxonomy.	• Developing phase (initial draft(s) published) (October 2022)	• Clearly defined environmental goals: The framework has clearly defined environmental goals in alignment with the goals of the EU taxonomy (p. 2), focussing in his draft especially on adaption and mitigation (p. 2). • Link to international policies: The Taxonomy makes a clear reference to the 2030 Agenda on Sustainable Development and the Paris Agreement (p. 2). • Link to national or regional decarbonization policy/strategy: The framework does not make a reference to a specific framework. • Link to broader sustainability goals: Being based on the European Taxonomy also makes a link to broader sustainability goals such as biodiversity (e. g., p. 9 & p. 20). Additionally, it includes social sustainability criteria, which consider the impact of economic activities on social issues, e.g. OECD Guidelines for Multinational Enterprises and UN Guiding Principles on Business and Human Rights (p. 3, each activity must comply with minimum social standards).	• The emissions covered by the framework sum up to around 86 percent which represents a moderate contribution as it lies between 50 and 90 percent defined in our criteria framework.	• Economic activities must make a substantial contribution to the goal of mitigation or adaptation (p. 2) and may also not harm other environmental goals significantly (DNSH principle, p. 2), these goals include adaption to climate change, sustainable use of water and protection of water resources, moving to a circular economy, infection prevention and control as well as protection of biological diversity and ecosystems and their restoration (p. 3). The activity must further comply with minimum social standards. It is further differentiated between enabling and transition activities (p. 17). The framework then defines specific technical criteria whether an activity is an enabling or transitional activity (p. 3) and makes references to activity-specific laws/regulation. It remains however unclear how these metrics will further develop.	• From the draft, it is yet not clear to which financial products/players the potential regulation will apply, it is however highlighted that the framework can help financial entities to manage environmental risks by assessing exposure to different activities. It aids in policy tools like disclosure obligations and stability assessments based on "brown" or "green" exposures. Further it shall help to support labelling green financial products, ensuring consumer protection and preventing greenwashing. In the future, it could guide incentives and capital freezing rules (Doc 2, p. 3).	• The document does not yet specify any disclosure or reporting obligations.
Final score: 2.4			**3**	**3**	**3**	**2**	**1**

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Japan	• Basic Guidelines on Climate Transition Finance, available at: https://www.meti.go.jp/press/2021/05/20210507001/20210507001-3.pdf. Other sources: • Sectoral roadmaps for transition finance, available at: https://www.meti.go.jp/english/policy/energy_environment/transition_finance/index.html.	• Guidance document (no binding nature)	• Clearly defined environmental goals: "steadily reducing GHG" by promoting a transition to decarbonization by promoting investments into "low carbonization initiatives in hard-to-abate" sectors" in alignment with ICMA Handbook (p. 1) • Link to international targets/policies: Paris Agreement and 2°C as well as 1.5°C goals; link to IPCC Report on Global Warming (SR15) by IPCC and net zero goal of 2050 (p. 1) • Link to national or regional decarbonization policy/strategy: Part of greater decarbonization strategy: Japanese "Green Growth Strategy Through Achieving Carbon Neutrality" that aims at decarbonizing Japan by 2050 (p. 1) • Link to broader sustainability goals: n/a	• The emissions covered by the framework sum up to around 52% which represents a moderate contribution as it lies between 50 and 90 percent as defined in our criteria framework.	• The framework defines granular sector-specific roadmaps for each sector that are consistent with scientific goals, such as the International Energy Agency 2020 Energy Technology Perspectives, which committed to the Paris Agreement. In addition, emission intensities are updated regularly and thus remain dynamic (see sectoral roadmaps).	• The framework is voluntary and hence does not apply to specific actors or financial products. It is however stated that it aims at providing "examples of responses and interpretations so that they can serve as a reference for the fundraiser, the financier and other market participants when they consider concrete actions to transition finance" (p. 2).	• The framework does not define any legally binding data disclosure requirements, although it recommends disclosing data the guidelines of the ICMA Handbook (see chapter 3).
Final score: 2.8			3	3	4	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Kazakhstan	• Taxonomy of "Green" projects to be financed by "Green" Bonds and "Green" Credits (Green Taxonomy), available at: [1] https://adilet.zan.kz/kaz/docs/P2100000996 and [2] https://legalacts.egov.kz/application/downloadconceptfile?id=7367422.	• Published or adopted (December 2021)	• Clearly defined environmental goals: The taxonomy clearly defines environmental goals such as "reducing greenhouse gas emissions, reducing pollution, conserving resources, and protecting the environment" (p. 2, Doc. Nr. 2). • Link to international policies: The taxonomy is linked to Kazakhstan NDCs under the Paris Agreement, which "calls for reducing greenhouse gas emissions across the economy by 15% from the 1990 baseline or 25% with international support by the end of 2030" (p. 5., Doc. Nr. 2) • Link to national or regional decarbonization policy/strategy: The taxonomy is clearly link to the national sustainable and decarbonization policies of Kazakhstan such as the "Environmental Code", the "Kazakhstan 2050 Strategy" or the Strategic Development Plan of Kazakhstan" (p. 5, Doc Nr. 2) • Link to broader sustainability goals: The taxonomy further includes criteria for broader sustainability factors beyond just climate change, as also resource protection as well as social goals are part of the taxonomy. (p. 3 & 4, Doc Nr. 2).	• The emissions directly covered by the framework sum up to around 57% which represents a moderate contribution as it lies between 50 and 90 percent as defined in our criteria framework.	• The taxonomy differentiates between activities that are automatically eligible like for financing like "solar", "geothermal" or "wind" (p. 3-4, Doc Nr. 1) as well as activities that are subject to specific thresholds like low-carbon vehicles which need to be below a specific CO2-intensity (p. 31, Doc. Nr. 1). Yet, it remains unclear whether criteria are static or subject to a regular review. Furthermore, it is not clear how thresholds are aligned scienced-based findings.	• The framework is voluntary and is designed as classification system for green bonds and green loans (p.1, Doc Nr. 1).	• As the framework is voluntary, also data disclosure is not enforced. It is however mentioned that the taxonomy shall encourage "voluntary disclosure by companies of the proportion of turnover from economic activities corresponding to the taxonomy" (p. 2, Doc Nr. 1).
Final score: 2.6			4	3	2	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Latin America and the Caribbean (LAC)	• Common framework of sustainable finance taxonomies for Latin America and the Caribbean, available at: https://www.undp.org/sites/g/files/zskgke326/files/2023-07/common-framework-of-sustainable-finance-taxonomies-lac.pdf.	• Published or adopted (July 2023)	• Clearly defined environmental goals: The framework has clearly defined environmental objectives: (1) Climate change mitigation, (2) Climate Change Adaptation (p.9). The guidance for other objectives is expected to be developed in future (p.10). • Link to international policies: The taxonomy makes a clear reference to the Paris Agreement (p. xxii) • Link to national or regional decarbonization policy/strategy: The taxonomy clearly references the National Determined Contributions (NDCs) (p. 3, 18) • Link to broader sustainability goals: The framework mentions the importance of broader sustainability goals, such as key social aspects like "human rights and "gender equality) (p. 18-21) and environmental objectives such as "circularity", "water, waste and soil management" amongst others (p.20/21). "The incorporation of other environmental and social objectives will play an important role in ensuring a holistic approach for evaluation of projects, assets, and activities." (p.18).	• The emissions covered by the framework sum up to around 64% which represents a moderate contribution as it lies between 50 and 90 percent defined in our criteria framework	• The framework does not establish metrics or thresholds for taxonomies (p. xxiii). "This report identifies guiding principles and elaborates the key structural elements (objectives, classification systems for identifying sectors and activities and eligibility criteria through metrics and thresholds) to ensure comparability and interoperability of taxonomies." (p.8). It also highlights the science-based origin of thresholds and criteria (p. 13).	• The taxonomy is a guidance document that can serve as a voluntary reference to orient different actors in the region. It sets out target users such as government and policy makers, development agencies or any other stakeholder that are in the process of or intend to develop taxonomies in the region. The LAC Taxonomy Common Framework aims to provide guidance for interoperability of taxonomies within LAC and globally (p.xxii). It sets out potential uses by market participants for asset, portfolio, and entity-level alignment approaches (e.g., transition plans), among others (p.7).	• So far, there are no disclosure requirements as the framework is voluntary, however the document mentions that taxonomies can act as a guiding document for disclosure and labelling of financial products (p.7).
Final score: 2.4			4	3	1	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	**Sectoral Coverage**	**Screening approach**	**Usability**	**Disclosure and reporting**
Malaysia	• Climate Change and Principles-based Taxonomy, available at: https://www.bnm.gov.my/documents/20124/938039/Climate+Change+and+Principle-based+Taxonomy.pdf.	• Published or adopted (April 2021)	• Clearly defined environmental goals: (a) Climate change mitigation; (b) Climate change adaptation; (c) Protection and restoration of biodiversity and ecosystems; and (d) Transition to circular economy (pp. 12). In addition to this minimum environmental safeguard, FIs are encouraged to assess whether economic activities comply with Malaysian human rights and labour laws, as well as the OECD Guidelines for Multinational Enterprise and UN Guiding Principles on Business and Human Rights. • Link to international targets/policies: Paris Agreement and 2°C as well as 1.5°C goals; link to IPCC Report on Global Warming (SR15) by IPCC and net zero goal of 2050 (p. 4) • Link to national or regional decarbonization policy/strategy: Complements the VBIAF Guidance Document issued by Bank Negara Malaysia in November 2019 (lays foundation for ESG considerations in the provision of financial services) (p.7), also references NDC and relevant national policies and targets to support them (p.9). • FIs should also verify and ensure that the economic activities being considered and/or financed are not illegal and do not contravene environmental laws: (a) The National Forestry Act 1984; (b) Wildlife Conservation Act 2010; (c) National Parks Act 1980; (d) The Fisheries Act 1985; and (e) The Environmental Quality Act 1974. FIs are also strongly encouraged, as part of their lending and/or investment decisions, to ascertain if businesses are engaged in activities that are in contravention with national human rights and labour laws in line VBIAF23 ((a) Employment Act 1955; (b) Children and Young Persons (Employment Act 1966); and (c) Minimum Wages Order 2018), (pp 20.). • Link to broader sustainability goals: The taxonomy also incorporates consideration of broader environmental outcomes through the principle of DNSH, with specific regard to how business operations affect pollution, biodiversity and resource efficiency (p.5).	• The emissions covered by the framework sum up to around 54 percent which represents a moderate contribution as it lies between 50 and 90 percent as defined in our criteria framework.	• The principle-based approach is based on five guiding principles to evaluate economic activities (GP) (p. 12 - 22): GP 1: Climate change mitigation GP 2: Climate change adaptation GP 3: No significant harm to the environment GP 4: Remedial measures to transition GP 5: Prohibited activities. It provides further five classifications according to 3 classification themes to categorise economic activities • Climate Supporting (C1) • Transitioning (C2 and C3) • Watchlist (C4 and C5 • The framework does not define any measurable thresholds.	• The framework is voluntary and potentially applicable to: 1. Licensed banks 2. Licensed investment banks 3. Licensed international Islamic banks 4. Licensed Islamic banks 5. Licensed insurers 6. Licensed reinsurers 7. Licensed takaful operators 8. Licensed retakeful operators 9. Prescribed development financial institutions The document is designed for wider use by financial sector participants like investors, analysts, and capital market players, as well as rating agencies. It can also aid the public sector in policymaking, prioritization, and fund allocation (p. 6).	• The framework does not define any legally binding data disclosure requirements (given its voluntary nature), but the frameworks addresses that it aims at facilitating sustainability reporting standards (p.22), certification and/or independent verification (p. 21).
Final score: 2.4			4	3	1	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Screening approach	Usability	Disclosure and reporting
Mexico	• Taxonomía Sostenible De México, available at: https://www.gob.mx/cms/uploads/attachment/file/809773/Taxonom_a_Sostenible_de_M_xico_.pdf.	• Developing phase (initial draft(s) published) (April 2023)	• Clearly defined environmental goals: The taxonomy pursues three core objectives: combatting climate change, gender equality as well as access to basic services relating to sustainable cities (p. 13). • Link to international targets/policies: The framework also makes a clear link to the Paris Agreement as well as the SDGs (p. 17) and considers the framework as crucial contribution to these policies/frameworks (p. 26). • Link to national or regional decarbonization policy/strategy: The framework also references national development strategies, an agenda 2030 and plans to combat climate change (p.18) • Link to broader sustainability goals: As stated before, the framework not only considers the combat of climate change as one of its core principles but also social aspects like "gender equality" (p. 13); furthermore, on the level of environmental goals, it also considers broader environmental goals like "circular economy" as well as "biodiversity" (p. 26).	• The emissions covered by the framework sum up to around 73 percent which represents a significant contribution as it lies between 50 and 90 percent defined in our criteria framework.	• For the eligibility of activities, the taxonomy refers to technical screening criteria (TSC, "Criterios de Evaluación Técnica") which need be "science-based" and incorporate "best practices" (p. 29) and references the structure of the EU taxonomy (including also the DNSH principle) as well as metrics of the Colombian Taxonomy. Albeit the taxonomy is to be reviewed "permanently", the framework does not incorporate the idea of a gradual tightening of thresholds in line with a clear transitional approach, but rather focuses on already green activities.	• The taxonomy at this stage is voluntary and does not have a "regulatory character" (p. 42), but clearly defines potential users. The taxonomy defines companies of the real economy, credit institutions as well as Institutional investors as core user group (p. 40/41).	• Disclosure, reporting and verification is encouraged & recommended (p.42), but voluntary as the framework is not binding by law (p. 42). Furthermore, upcoming ESG-regulation will refer to the taxonomy, with regards to information disclosure and definition of financial instruments (p. 44).
Final score: 2.8			4	3	3	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Screening approach	Usability	Disclosure and reporting
Mongolia	• Mongolian Green Taxonomy, available at: https://www.sbfnetwork.org/wp-content/assets/policy-library/1270_Mongolia_Green_Taxonomy_2019_MSFA.pdf.	• Published or adopted (December 2019)	• Clearly defined environmental goals: e.g., "to achieve a 22.7% reduction in total national greenhouse gas (GHG) emissions compared to the projected emissions under a business-as-usual scenario."(p. 5) • Link to international targets/policies: Link to Paris Agreement (p. 5) • Link to national or regional decarbonization policy/strategy: Framework refers to "National Green Development Policy (2014)", the "National Program on Reduction of Air and Environmental Pollution (2017)". "Mongolian Sustainable Finance Initiative", the National Sustainable Finance Roadmap up to 2030" as well the "Nationally Determined Contribution (NDC)" (p. 5) • Link to broader sustainability goals: Explicit elements of the taxonomy are besides climate protection, also biodiversity and natural resource protection (p.10), as well social minimum standards (p. 8).	• The emissions covered by the framework sum up to around 91 percent which represents a significant contribution as it is well over 90 percent as defined in our criteria framework.	• The framework differentiates between activities that are "automatically" eligible such as renewable energy activities (p. 11) and activities that are subject to certain criteria and thresholds. Yet, when it comes to activities that are subject to certain thresholds, the granularity of the thresholds differs, and it is often not clear where threshold comes from. For example, one activity pillar of the framework is "low pollution" energy. As such, as sources alternative to coal, "gas power & heat generation" are eligible. The only criterion that needs to be met is that there is a "minimum 80% pollution (PM 2.5) reduction compared to the baseline" (p.13). It is however not clear where this number comes from and if the activities are further subject to any additional carbon intensity thresholds. The only pillar where thresholds seem to be more granular, is the building sector where a few national standards and policies are references (p. 16). Furthermore, it is not clear how the criteria will evolve, although it is explicitly state that "the taxonomy will require continues review and update based on policy shifts, scientific developments, technological changes, and new industry needs" (p. 8).	• The taxonomy is only voluntary, but clearly defines potential applications in terms of users and financial products of the taxonomy. Financial institutions can use the framework as guide to development finance strategies, opportunities etc, bond issuers can use it as reference to develop eligibility criteria for the projects, industries can identify opportunities to e. g. integrate green elements in the company strategy (p. 7).	• There is no information provided on data disclosure, verification, or reporting.
Final score: 2.6			4	4	2	2	1

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Screening approach	Usability	Disclosure and reporting
Philippines	• The Philippine Sustainable Finance Guiding Principles, available at: https://www.bsp.gov.ph/Media_And_Research/Media%20Releases/2021_10/Sustainable%20Finance%20Guiding%20Principles.pdf	• Published or adopted (November 2020)	• Clearly defined environmental goals: The taxonomy aims at contributing to "supporting sustainable development, with a focus on addressing the impacts of climate change, and to encourage the flow of capital to these activities" (p. 4) • Link to international policies: The taxonomy is aligned with the Paris Agreement (p. 18), SDGs (p. 5) as well as the Nature based Solutions (NbS) of the International Union for Conversation of Nature (IUCN) (p. 15). • Link to national or regional decarbonization policy/strategy: The taxonomy clearly references national decarbonization policies such as its NDCs (reduction of 75 percent in emissions (p. 16), the Climate Chance Act of 2009 (p. 16) and several other Philippine laws (Footnote, p. 26) • Link to broader sustainability goals: The taxonomy includes criteria for broader sustainability factors beyond just climate change, such as circular economy (p. 22), and climate disaster risk management. Additionally, it includes the UN SDGs and other social sustainability criteria (p. 5).	• As the taxonomy is principle-based and does not define any sectors, all sectors are (indirectly) covered. Hence, the scope amounts to 100% of emissions.	• The principle-based approach of the Philippine Taxonomy is based on five guiding principles (GP) (p. 31 - 32). The first GP refers to climate change mitigation, the second to climate change adaption, the third to the DNSH-principle, the fourth to the "remedial efforts to promote transition" and the fifth to prohibited activities. Furthermore, they need to be in line with the Philippine Environmental Code, National Building Code, Expanded National Integrated Protected Areas System, Clean Air Act, Ecological Solid Waste Management Act, Revised Forestry Code, Strategic Environment Plan for Palawan Act, Toxic Substances, Hazardous and Nuclear Waste Control Act, and the Philippine Clean Water Act. While the principles itself promote the ideas such as energy efficiency through optimized energy consumption or energy efficient vehicles and transport, thresholds are specified. This raises the question to what extent activities can be financed that are only improving by small margins and how these are aligned with national climate goals. Not clear which national regulation applies and how these are subject to a regular review.	• The principle-based Taxonomy is a voluntary framework to several application areas in the field of sustainable finance. However, the framework clearly sets out target user of the taxonomy, which can be policy makers, financial regulators, banks and financial institutions as well as investors (p. 5).	• Data disclosure and reporting is voluntary, but the framework clearly proposes the introduction of new reporting elements/standards or how disclosure should be carried out (p. 5). Furthermore, it makes reference to already existing standards for potential synergies like the TCFD (p. 12).
Final score: 2.8			4	4	2	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Russia	• Russian National Taxonomy for Green Projects, available at: [1] https://xn--90ab5f.xn--p1ai/files/?file=1ede59eb104185e24280ee57cf3156c6.pdf & [2] http://publication.pravo.gov.ru/Document/View/0001202109240043?index=2.	• Published or adopted (July 2020)	• Clearly defined environmental goals: e.g., "reduction of pollutant emissions and effluents and prevention of their environmental impacts as well as "reduction of greenhouse gas emissions" (p. 2, Doc Nr. 1) • Link to international targets/policies: Link to Paris Agreement and specific SDGs (p.1, Doc Nr. 1) • Link to national or regional decarbonization policy/strategy: The framework albeit refers to the Russian Federation environmental law, but only in reference to the "DNSH"-Principle (p. 2, Doc Nr.1). The taxonomy is not clearly embedded in bigger decarbonization strategy, nor is there a clear reference made to it NDC. • Link to broader sustainability goals: While biodiversity is part of the taxonomy's goals (p. 7, Doc Nr. 1), no other link to broader sustainability goals beyond environmental and climate can be distinguished.	• The emissions covered by the framework sum up to around 66 percent which represents a moderate contribution as it lies between 50 and 90 percent as defined in our criteria framework.	• The framework defines thresholds for each activity. However, often the origin of the values remains unclear. As such, the Taxonomy states that for hydrogen fuel "NOx emissions shall not exceed 250 mg/m3" (p. 5, Doc. Nr. 1), yet no reference is made to any further scientific standards or document. Furthermore, no indication of a development or regular review of the criteria is made.	• The Russian Taxonomy can be understood as Green Bond Standard and thus refers to debt instruments only. It is hence mandatory for issuers of green financial debt instruments like bonds, loans, guarantees, securities etc. (p. 59, Doc Nr. 1), supporting document referenced).	• The Russian Taxonomy requires Russian companies to comply with disclosure obligations and to inform their investors on the efforts of the management of climatic risk (pp. 7, Doc Nr. 2). It however remains unclear, to what extent.
Final score: 2.4			3	3	2	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	**Sectoral Coverage**	**Eligibility approach**	**Usability**	**Disclosure and reporting**
Rwanda	•Rwanda's Green Taxonomy, available at: [1] https://www.minecofin.gov.rw/index.php?eID=dumpFile&t=f&f=86267&token=961abcb67d113b22ca776443abd9328903896456. [2] https://www.minecofin.gov.rw/index.php?eID=dumpFile&t=f&f=86157&token=d71147b50abd9777735ff3debaf7a2caf98e717e.	• Published or adopted (December 2023)	• Clearly defined environmental goals: The framework has defined environmental objectives: Climate change mitigation and Climate Change Adaptation (p.19) • Link to international policies: The taxonomy makes a clear reference to international commitments and treaties and its NDC (p.19) • Link to national or regional decarbonization policy/strategy: The taxonomy clearly references Rwandas "Vision 2050" and the "National Strategy for Transformation" including related sectoral policies and strategies (p.19) • Link to broader sustainability goals: The framework mentions broader sustainability goals, like protection of biodiversity and environment, the promotion of circular economy (p.21) but does not define specific criteria for those; it defines do no significant harm criteria and minimum social safeguards.	• The emissions covered by the framework sum up to around 77 percent which represents a moderate contribution as it lies between 50 and 90 percent as defined in our criteria framework. The first phase includes four key economic sectors: agriculture, construction, transport, and energy. In the future, additional sectors (such as water, waste, manufacturing, ICT) will be included and the adaptation component strengthened.	• The framework defines relevant sectors, activities and respective eligibility and technical screening criteria. The Rwandan Taxonomy is based on 8 principles: 1) science-based, meaning it is based on the latest climate science and informed by the work of the IPCC 2) interoperable, 3) locally applicable, 4) clear and transparent, 5) simple and usable, 6) comprehensive, 7) multipurpose and 8) Transition-friendly: The taxonomy can provide a pathway to decarbonisation for hard-to-abate sectors of the economy. (p.18), Activities need to be either near-zero activities or need to have a pathway to net-zero by 2050.	• The framework defines a broad set of potential users, which can be policy makers, regulators, banks and financial institutions, investors, issuers of green bonds and society (p.4 in [2]). However, so far, its application is not made mandatory.	• The taxonomy document describes possible applications of the taxonomy, of which disclosure regulation is a key component. Related Guidance should follow soon.
Final score: 2.6			3	3	3	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Singapore	• Identifying a Green Taxonomy and Relevant Standards for Singapore and ASEAN, Based on Second and Third Consultation paper, available at: https://www.mas.gov.sg/development/sustainable-finance/green-finance-industry-taskforce.	• Developing phase (initial draft(s) published) (February 2023)	• Clearly defined environmental goals: "key purpose of developing a green taxonomy for Singapore-based Financial Institutions (FIs) is to encourage the flow of capital to support the low carbon transition needed to avoid catastrophic climate change, as well as the environmental objectives of Singapore and the ASEAN nations" (e.g., p. 9; Second Consultation Paper) • Link to international targets/policies: Clearly linked international targets and policies (Paris Agreement and 1.5°C (e.g., p. 12, 15), SDGs (e.g., p. 58); Second Consultation Paper) • Link to national or regional decarbonization policy/strategy: Clear link to national climate policies and laws such as "Singapore's Long-Term Emissions Development Strategy (LEDS)" (p. 11; Second Consultation Paper); Singapore Green Plan 2030 (p. 12; Second Consultation Paper) as well as NDC (p. 15, but only mentioned once, link remains superficial; Second Consultation Paper). • Link to broader sustainability goals: Explicit elements of the taxonomy are besides climate protection, also biodiversity (p. 8; Second Consultation Paper), circular economy (p. 8), and social goals such as "minimum social safeguards (MSS)" (p. 107).	• The emissions covered by the framework sum up to around 99 percent which represents a significant contribution as it is well over 90 percent as defined in our criteria framework.	• The framework defines granular sector-specific thresholds for each activity. The thresholds are dynamic and based on a traffic light system that further differentiates between green activities, amber activities, and red activities. Green activities "contribute substantially to climate change mitigation by operating at net zero, or are on a pathway" (p. 49), amber activities represent "activities that are not presently on a net zero path, but a. are moving towards a green transition pathway within a defined time frame; or b. Facilitating significant emissions reductions in the short term with a prescribed sunset date." (p. 50; Second Consultation Paper) and red activities refer to activities that are "not currently compatible with a net zero trajectory" (p. 51; Second Consultation Paper).	• The framework is voluntary - the Third Consultation Paper highlights: "The application of the taxonomy to financial markets, green bonds, corporate disclosure regulations as well as its voluntary or mandatory status have not yet been decided or put forward for public consultation yet and are, therefore, at this stage beyond the scope of this consultation." (p. 9; Third Consultation Paper). It however clearly defines potential users of the framework such as "asset owners, investments managers, financial institutions as well as issuers, policymakers, regulators, and other stakeholders to identify and allocate capital to green activities and projects" (p. 99; Second Consultation Paper).	• Data on taxonomy-alignment is voluntary, but the framework sets out detailed disclosure specifications (p. 112 et seq; Second Consultation Paper), e.g., also link to existing reporting standards such as the TCFD. "So far whilst these disclosures are not currently a regulatory requirement, issuers wishing to attract "green" capital would be motivated to make such disclosures. One additional outcome of the Taxonomy as discussed earlier is that regulators consider incorporating mandatory regulatory disclosures that are aligned with and would facilitate consideration of Taxonomy alignment." (p. 117; Second Consultation Paper).
Final score: 3.2			4	4	4	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
South Africa	• South Africa's Green Taxonomy, available at: https://sustainablefinanceinitiative.org.za/wp-content/downloads/SA-Green-Finance-Taxonomy-1st-Edition-Final-01-04-2022.pdf.	• Published or adopted (April 2022)	• Clearly defined environmental goals: it pursues a "net-zero economy to 2050 as a core environmental objective" - principle, metrics and thresholds defined for each activity (p. 21) • Link to international targets/policies: "... consistent with the long-term temperature goal of the Paris Agreement" (p.15); it builds on international good practises, such as the EU taxonomy (p.7) • Link to national or regional decarbonization policy/strategy: Framework refers to no specific national law or policy • Link to broader sustainability goals: One element of the taxonomy are "do not significant harm criteria" in other sustainability areas (similar to EU taxonomy) and "minimum social standards".	• The emissions currently covered in the framework sum up to around 44 percent of the emissions.	• For each included activity, the framework defines eligibility criteria and thresholds. Most criteria and thresholds are based on the EU Taxonomy. In some cases the criteria are adapted to the South African Context (developed in a multi-stakeholder process). (p. 18) However, it is not clear how the criteria will evolve and in which timeframe.	• The taxonomy is voluntary but defines potential applications in terms of users and financial products of the taxonomy and provides guidance and recommendations for disclosure (p. 41): "Taxonomic-alignment evaluation should be undertaken ahead of the transaction (ex-ante reporting) and regularly during the term of the loan.	• Disclosure, reporting, and verification is encouraged & recommended, but voluntary and should be conducted according to market standards. There are recommendations for the use of proceeds, the process evaluation and impact reporting, but "This document does not undertake to provide harmonised specification for environmental and social performance and impact indicators that should be disclosed alongside disclosure of taxonomic-alignment and related finance." (p. 42). It makes reference to ICMA framework for impact reporting, the SASB materiality map and others.
Final score: 2.2			3	2	2	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	**Sectoral Coverage**	**Eligibility approach**	**Usability**	**Disclosure and reporting**
South Korea	K-Taxonomy - Korean Green Classification System Guidelines, available at: https://gmi.go.kr/js/pdfjs/web/viewer.html?file=/upload/format/K-Taxonomy%20Guidelines.pdf.	Published or adopted (December 2022)	• Clearly defined environmental goals: The K-Taxonomy clearly defines its goal as "national effort to address climate change" (p. 7) and to provide "clear principles and criteria for green economic activities so that more green funds can be invested in green projects and green technologies" (p. 6). • Link to international targets/policies: The classification system clearly references the Paris Agreement as well as the SDGs (p. 6). • Link to national or regional decarbonization policy/strategy: The taxonomy also references the national "Carbon Neutrality and Green Growth Basic Act for Responding to the Climate Crisis" that legislates that Korea needs to be climate neutral by 2050 (p. 6) as well as the "Environmental Industry Support Act" (p. 7). • Link to broader sustainability goals: The classification system not only addresses climate-related topics, but also broader sustainability topics like biodiversity as well as circular economy, and social topics like human rights, labour, safety and anti-corruption in the form of minimum safeguards (p. 10).	• The emissions covered by the framework sum up to around 100 percent which represents a significant contribution as it lies over 90 percent defined in our criteria framework.	• The framework defines four criteria that determine the eligibility for complying with the Green Classification System, namely activity, eligibility, exclusion, and protection (p. 14). The activity criteria serve to meet the classification of the economic activity, the eligibility criteria determines whether the activity meets the technical criteria for achieving one or more of the six environmental goals. The exclusion criteria determines whether the economic activity meets the criteria for determining serious environmental damage and the protection criteria determines whether an economic activity does not violate other relevant laws and regulation including human rights, labour, safety, corruption etc. When it comes to the eligibility criteria, the granularity differs for different economic activities. For example, for the industry sector, the activity "manufacturing innovations" is not subject to any specific thresholds, but rather needs to meet broader goals like "reducing greenhouse gas emissions" or the "transition to a circular economy" (p. 34). Other economic activities,e.g. in the energy sector, such as production of liquefied natural gas and mixed-gas based energy, are subject to more specific thresholds like a maximum CO2-intensity of "340 g co2eq" (p. 102). The concrete scientific evidence for such thresholds remains however unclear. It is important to note that the K-Taxonomy further differentiates between the "Green sector" as well as the "Transition sector"; the criteria then only apply for a transitional period until 2030 (p. 102).	• The K-Taxonomy can be understood as "voluntary guidelines to define green economy activities" (p. 10) and is expected "to be applicable to various green financial activities such as green project financing, green bonds, and green funds, as well as to corporate and financial institutions disclosures." (p. 13).	• The K-Taxonomy can be understood as "voluntary guidelines to define green economy activities" (p. 10) and is expected "to be applicable to various green financial activities such as green project financing, green bonds, and green funds, as well as to corporate and financial institutions disclosures." (p. 13).
Final score: 3.0			4	4	3	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Sri Lanka	• Sri Lanka Green Finance Taxonomy, available at: https://www.cbsl.gov.lk/sl-green-finance-taxonomy. Other source: • Sri Lanka Green Finance Background Report, available at: https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/sri_lanka_green_finance_taxonomy_background_report_2022.pdf.	• Published or adopted (May 2022)	• Clearly defined environmental goals: 1. Climate change mitigation, 2. Climate change adaptation, 3. Pollution prevention and control, 4. Ecological conservation and resource efficiency with guiding principles: 1. Substantial contribution, 2. Do no significant harm (DNSH), 3. Respect Sri Lanka's green development priorities, 4. Science-based screening, 5. Compatible with international standards and practices, 6. Dynamic adjustment (p.3) • Link to international targets/policies: IPSF Common Ground Taxonomy - Climate Change Mitigation (2021), EU Taxonomy - Climate Delegated Act (2021), China Green Bond Endorsed Project Catalogue (2021) • Link to national or regional decarbonization policy/strategy: Sri Lanka updated NDCs (2021), National Adaptation Plan for Climate Change in Sri Lanka 2016-2025, IFC Climate Smart Agriculture Financing Opportunities in Sri Lanka (2021) (p.3) • Link to broader sustainability goals: Explicit elements of the taxonomy are besides climate change mitigation and adaptation also pollution prevention and control as well as ecological conservation and resource efficiency (p.3). • Sri Lanka Green Finance Taxonomy is a key action item outlined in the Roadmap for Sustainable Finance of Sri Lanka introduced by the Central Bank in 2019.	• The emissions covered by the framework sum up to around 65 percent which represents a moderate contribution as it lies between 50 and 90 percent as defined in our criteria framework.	• The framework defines granular sector-specific thresholds or criteria for each activity. The framework thereby references different sources. E.g. in the forest industry, it references the Climate Bonds Criteria (p. 3). For organic basic chemicals it lists concrete thresholds and further references the EU taxonomy (p. 4). Some activities classify for "direct eligibility", such as production of wind or solar generators (p. 6). The framework also provides a general overview of all the referenced frameworks (p. 1).	• The taxonomy is not mandatory in its current state, but just a classification system. However, it is stated that "it can be made mandatory or voluntary for different user groups for a period to allow each group to adapt to the changes over time. The taxonomy shall be applicable to all domestic and foreign market participants offering financial products (such as bank lending, debt instruments, portfolio management, and investment funds), large corporations, as well as national and local government bodies. It can also be used as a reference by the industrial planning authorities and serve as the basis for local governments to support green industries. " (p. 18, Background report).	• The framework does not define any legally binding data disclosure requirements, states however that "sustainability disclosure and reporting related to green investments by financial or non-financial corporations should adhere to the taxonomy" (p. 19, Background report).
Final score: 3.0			4	3	4	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	**Sectoral Coverage**	**Eligibility approach**	**Usability**	**Disclosure and reporting**
Thailand	Thailand Taxonomy Phase I, available at: https://www.bot.or.th/content/dam/bot/financial-innovation/sustainable-finance/green/Thailand_Taxonomy_Phase1_Jun2023_EN.pdf.	Developing phase (initial draft(s) published) (September 2023)	• Clearly defined environmental goals: "committed to mitigating its GHG emissions" (p. 2) by providing a "tool to direct capital flows in the desired direction that delivers measurable environmental, social and governance (ESG) benefits and net zero emission target." (p. 1) • Link to international targets/policies: Paris Agreement (p.1) and SDGs (p.2) • Link to national or regional decarbonization policy/strategy: "According to Thailand's Second Updated NDC, the country aims to increase emission reductions to 30-40% by 2030, in order to achieve carbon neutrality by 2050 and net zero GHG emissions by 2065. The long-term strategy to achieve carbon neutrality by 2050 will also largely depend on emission reductions in the energy sector, including using carbon capture, utilisation and storage (CCUS) technologies. Sectoral decarbonisation strategies must also be developed to facilitate this task." (p. 14); also explicit link to "Climate Change Master Plan (2015-2050) xii (CCMP)" (p. 9) • Link to broader sustainability goals: Explicit elements of the taxonomy are besides climate protection, also biodiversity, circular economy and social minimum safeguards with regards to economic activities (e. g. p. 11 & 64).	• The emissions currently (initial phase) covered by the pilot version of the framework sum up to around 47 percent which represents a small contribution as it lies below 50 percent as defined in our criteria framework. "The Thailand Taxonomy development is divided into phases. The initial phase focuses on 2 sectors: Energy and Transportation. The development of metrics and thresholds of other economic sectors (such as manufacturing, agriculture, and waste management) will be included in the next phase. The latter phase is expected to commence in the second half of 2023. In addition, the Thailand Taxonomy is recommended to be reviewed every 3 – 5 years in response to the new technologies, evolving scientific views, and national policies." (p. 88).	• The framework defines granular sector-specific thresholds for each activity. The thresholds are dynamic and based on a traffic light system that further differentiates between green activities, amber activities, and red activities. Green activities are "substantially contributing to the goal of climate change mitigation" (p. 25), amber activities "are facilitating significant emissions reduction in the short term with a prescribed sunset date" (p. 25) and red activities refer to activities that are "that are currently not compatible with net-zero trajectory and are not going to become compatible anytime soon." (p.25). The framework also refers to Sectoral Decarbonization Approach (SDA) as basis for "modelling credible transition pathways" (p. 26); it also specifies the scenarios that are used for this approach: NDC scenario, Below 2 Degrees and 1.5 Degrees Scenario that is consistent with Paris Agreement Targets) (p. 26). The "green activity" thresholds are based on the 1.5 degree scenario (net zero 2050) (p. 27).	• As it stands, the Taxonomy does not name specific users, nor specific financial products as a use case. It emphasizes that it is intended to "create stronger awareness of green and sustainable economic activities among different stakeholders, which can further stimulate demand and supply for green and sustainable financial products" (p. 85) as well as facilitate the development of sustainable financial products, including green bonds, green loans, green asset-backed securities, and green indices. A granular taxonomy also allows investors and state authorities to measure the degree of decarbonisation of the different sectors of the economy, the efficiency of their investments, and to identify weak spots." (p. 1).	• Data on taxonomy-alignment is voluntary, but the frameworks refers to existing reporting standards, like the TCFD (p. 1), and ultimately shall "enable and harmonize data disclosure" and ideally it shall be" possible to benchmark the share of green investments in portfolios of banks, insurance companies, and non-financial entities, with a consistent set of nomenclature" (p. 1).
Final score: 2.8			4	2	4	2	2

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Uzbekistan	Green Taxonomy of Uzbekistan, Available at https://static.norma.uz/doc/doc_9/561.pdf	Published or adopted	• Reference to national action plan: "National "green" taxonomy for classification of "green" activities in paragraph 65 of the action plan for the transition to a "green" economy and ensuring "green" growth in the Republic of Uzbekistan until 2030". (p.1) • Link to international policies: No clear reference to international policies such as SDGs or Paris Agreement is made • Regional decarbonization policies: n/a • Link to broader diversity goals: n/a	• The emissions covered by the framework sum up to around 41%. However, the framework does not cover any emission-intensive sectors directly.	• The framework only contains metrics or thresholds for bioenergy, hydrogen production, production of heat and electricity, objects of bioenergy products but does not give any indication on a science-based approach (p.3-14).	• The framework sets mandatory obligations for a moderate number of market participants and products. "Investment costs of all business entities that use state financial support (subsidies, grants, credit lines, guarantees, etc.), including private and state-owned economic associations, are classified based on the National "green" economy taxonomy" (p.1)	• The taxonomy does not make any specifications on disclosure or reporting at the date of evaluation.
Final score: 2.0			2	2	2	3	1

Country/ Region/ Jurisdiction	Main Framework of reference	Status	Assessment				
			Policy embeddedness	Sectoral Coverage	Eligibility approach	Usability	Disclosure and reporting
Vietnam	• [1] On the promulgation of regulations on environmental criteria and certification for projects granted green credit, issue green bonds & [2] Report regarding the approval of the Prime Minister's Decision on the promulgation of regulations on environmental criteria and certification for projects granted green credit, issue green bonds, available at: https://vietnamcirculareconomy.vn/draft-decision-of-the-prime-minister-on-the-promulgation-of-regulations-on-environmental-criteria-and-certification-for-green-credit-and-green-bond-issuance-projects/?lang=en.	• Published or adopted (January 2022)	• Clearly defined environmental goals: Taxonomy clearly aims at promoting climate and environmental protection (p. 2, Doc Nr. 2) • Link to international policies: No clear reference to international policies such as SDGs or Paris Agreement is made • Regional decarbonization policies: The document clearly references other national decarbonization policies of Vietnam, like the National Strategy in Green Growth in the 2021-2030 period or the National environmental protection Strategy 2021-2030 (p. 1-2, Doc. Nr. 2). • Link to broader diversity goals: The taxonomy clearly references other environmental objectives that are beyond climate, such as biodiversity (p. 2, Doc. Nr. 2).	• The emissions covered by the framework sum up to around 72 percent which represents a significant contribution as it is between 50 and 90 percent as defined in our criteria framework.	• The framework defines thresholds for each activity and often references already existing national regulation or standards. For example, activities that relate to the conversation of nature and biodiversity, restoration of natural ecosystems must have a certification that it satisfies the conditions set out in e. g. Vietnam's National FSC Forest Management Standards (p. 64). Yet, the development of thresholds is not always clear.	• The regulation is mandatory and applies to relevant actors for green bonds and credits. Hence, it is applicable to organizations and individuals wishing to be granted green credits, green bond issuers, credit institutions as well as foreign banks in Vietnam granting green credits (p. 2, Doc. Nr. 1).	• The regulation is mandatory and applies to relevant actors for green bonds and credits. Hence, it is applicable to organizations and individuals wishing to be granted green credits, green bond issuers, credit institutions as well as foreign banks in Vietnam granting green credits (p. 2, Doc. Nr. 1).
Final score: 2.8			3	3	3	3	2