

# 18 Transition Finance

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## Introduction

The Paris Agreement set an ambitious target of keeping the global temperature at “well below 2 degrees, preferably 1.5 degrees Celsius,” above pre-industrial levels. To achieve the 1.5-degree Celsius goal, global emissions must decline by about 45% from 2010 levels by 2030 and reach net zero by 2050 (IPCC, Summary for Policymakers. Global warming of 1.5 degree, 2018). Emission reduction at this scale would require a massive transformation of the economy. In line with the Paris Agreement, countries have committed to Nationally Determined Contributions (NDCs) and several countries have committed to a net-zero target. To achieve these targets, climate finance needs have increased significantly. It is estimated that realigning economies to meet net zero would require \$50 trillion in incremental investment (Oliver Wayman, 2020).

To transition to net zero, countries will need to shift to cleaner technologies by scaling up zero or near-zero emission technologies like renewable energy, while simultaneously reducing emissions through decarbonising hard-to-abate sectors, that is, high-emitting sectors for which complete decarbonisation is technically or economically not feasible given the current circumstances, and/or creating carbon sinks. In terms of finance, while investments in clean energy have increased significantly in the past few years, investments in hard-to-abate sectors have not kept pace. Climate Policy Initiative’s report titled “Global Landscape of Climate Finance” estimates that total investment in energy supply is \$334 billion which represents 58% of total mitigation finance. Out of this, \$324 billion (about 98% of the total investment in energy supply) was invested in renewable energy. Compared to this, only \$7 billion annually on an average is channelled to other industries for mitigation efforts. This investment is minuscule considering decarbonising industry to levels compatible with the Paris Agreement would need investment of about \$280 billion to \$448 billion annually (Barbara Buchner, 2021).

It is essential to address the large financing gap for the hard-to-abate sectors if economies are to reach net zero. Conceptually, transition finance aims to address this financing gap. While the concept has gained immense popularity till date, there is no consensus on the definition of transition finance. However, by most definitions, transition finance focuses on decarbonising hard-to-abate sectors (such as steel) with some definitions including enabling technologies that support emission reduction in other sectors, such as battery storage as well. The variations in transition finance definitions and frameworks are discussed later in the chapter.

Decarbonising hard-to-abate sectors would require financing new, unconventional, and innovative technologies. This can be challenging for the financial sector as most

financial institutions (FIs) are technology agnostic, and decisions on financing are based on appetite for risk and expectations of return. Therefore, financing new technologies is fraught with challenges, some of which are listed below.

1. The cost of capital for financing transition technologies is high because new technologies are risky to finance (also see discussion in chapter 9).
2. There is a lack of financial instruments that are suited to finance transition technologies.
3. The enabling environment including facilitative policy and regulatory frameworks for transition activities and transition finance is largely absent.

This chapter attempts to think through the concept of transition finance and discusses the current definition and emerging regulations in the field with a focus on financial institutions. The chapter is divided into three major sections. The first section attempts to build conceptual clarity around transition finance, while presenting multiple frameworks and definitions that are in place across the world. The second section looks at the challenges of financing transition technologies for financial institutions (FI) and the final section proposes solutions to scale transition finance.

### **Transition Finance: Definition and Momentum**

Transition finance has lent itself to multiple definitions put forth by different entities varying in scope (country level, entity level, activity/asset level) and sectors covered within its scope. The motivation for investing in transition activities, however, remains more or less the same. At the macro level, transition finance is about reducing as much emissions as possible; at the entity level, transition finance is to address climate (transition) risk impinging the specific entity. The Basel Committee on Banking Supervision defines transition risk as the societal changes arising from a transition to a low-carbon economy. These risks can arise through changes in public sector policies; innovation and changes in the affordability of existing technologies; or investor and consumer sentiment towards a greener environment (Basel Committee on Banking Supervision, 2021). This section traces the origins of the concept and multiple definitions and interpretations of transition finance, which has emerged as a separate area of finance owing to the complex nature of transition risks.

The term “transition” is loosely used to describe transformation to a low-carbon economy, usually aligned to the targets set by the Paris Agreement. For mitigation, this would mean reducing overall emissions by promoting clean energy, clean transport, energy efficiency; decarbonising industries; and creating carbon sinks. Therefore, “financing transition” would include any investment that serves to reduce emissions.

In contrast, “transition finance” by most definitions, is an approach designed to address a more specific issue of financing decarbonisation in the hard-to-abate sectors. It derives its genesis from “transition activities” mentioned in European Union (EU) Taxonomy for Sustainable Activities’ Article 10(2) (2020). As per the EU Taxonomy, three kinds of activities can be labelled sustainable. These are as follows:

1. Low-carbon activities: Those that have low or near-zero Greenhouse Gas (GHG) emissions such as renewable energy. Investments for these activities are usually covered under green finance.

2. Transition activities: Those that promote adoption of technologies that have GHG emissions “substantially lower than sector or industry average” for sectors which are hard to abate and cannot be aligned to the Paris Agreement, thereby reducing emissions and “do not lead to a lock-in of carbon intensive assets.”
3. Enabling activities: Those that reduce emissions in other sectors.

This means both transition and enabling activities are “incompatible with climate neutrality by 2050” and would have some GHG emissions. However, these activities provide an opportunity for emission reduction in some capacity, and therefore, are categorised as “sustainable.”

It is important to note that the EU Taxonomy draws a few boundaries for categorising transition activities. These activities should ideally have no low-carbon alternatives and should be important for future development. Transition activities should also contribute to mitigation efforts through the deployment of “best-in-class technologies” which emit less than the sector or industry average.

Japan’s Ministry of Economy, Trade and Industry (METI) (2021) suggests that countries cannot transition to low-carbon technologies for all sectors at one go. This can be due to limited access to particular technologies, cost implications, resource base, and development trajectory. It recommends a phased progress to net zero with a transition phase. In the transition phase, all sectors maximise efforts to decarbonise as much as possible through process efficiencies, fuel switching, etc. This is to reduce emissions until breakthrough technologies such as carbon capture become technologically and economically viable to drive economies to a carbon-neutral state.

Several countries like Singapore and Canada are in the process of developing regulations for sustainable finance. Initial reports suggest that both countries may include transition finance in some manner.

### **Demystifying Financing Transition vs Green Finance vs Transition Finance**

Transition activities or technologies can decrease emissions and help align economies to Paris Agreement. However, transition technologies are not “green,” meaning that they are not zero emission technologies. Therefore, these activities are usually not financed through green finance instruments such as green bonds. Table 18.1 provides greater conceptual clarity on the difference between financing transition, green finance, and transition finance.

Apart from government agencies, several international organisations and FIs have put forth their definitions and frameworks. Climate Bond Initiative (CBI) defines transition finance as the investment required to reduce *GHG emissions to levels* “commensurate with meeting the goals of the Paris Agreement” (Anna Creed, 2020). This implies that both “transition activities” and “enabling activities” can be financed under CBI’s framework. OECD limits the scope to hard-to-abate sectors and argues to concentrate financing of “economic activities that are emissions-intensive, do not currently have a viable green substitute (technologically, economically or both), but are important for socio-economic

Table 18.1 Green finance vs transition finance

	<i>Financing transition</i>	<i>Green finance</i>	<i>Transition finance</i>
Definition	Financing any activity that reduces emission	Financing technologies that are zero emissions or near emissions and thus, already aligned to the Paris Agreement	Reducing emissions for sectors that are hard-to-abate sectors or sectors that are important for emission reduction in other sectors (enabling activities) In most cases, these are activities that cannot be aligned with the Paris Agreement and have no other alternatives
Examples	All mitigation activity – renewable energy, energy efficiency, carbon capture, forests, etc.	Solar energy, wind energy	Steel, cement, aviation

Source: Authors own.

development” (OECD, 2022). Moving towards an entity-specific approach, International Capital Market Association (ICMA) defines transition finance as “investments that effectively address climate-related risks and contribute to alignment with the goals of the Paris Agreement” (ICMA, 2020).

Despite the lack of consensus on the definition or a framework, many stakeholders including FIs as well as multilateral organisations are discussing their role in the transition finance space. Some of these organisations have drafted their own transition activities’ frameworks and have designed instruments for promoting transition finance. For example, London Stock Exchange (Transition Bond Segment, 2022) has launched a transition bonds segment to finance “decarbonization beyond traditionally green industry sectors.” Several banks such as Standard Chartered Bank (2021) and DBS Bank Limited (2022) (see box) have released frameworks for transition financing.

### Deutsche Bank TLC Framework for Investor-Friendly Policies

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Investors expect a set of transparent, comprehensive, consistent, and long-lived policies for scale deployment of green technologies in addition to the minimisation of regulatory risk. The TLC-DB Framework by Deutsche Bank for the evaluation of regulatory policies may serve as a good template for selecting appropriate policies.

In 2009, a study by the Deutsche Bank Group developed the TLC-DB framework for selecting an optimal mix of public policies in terms of targets which reduce regulatory risks and increase investments of capital for renewable energy (RE).<sup>1</sup> This has been widely recognised as an effective policy design framework that has helped in the fast adoption of RE across many countries, including China and Germany (CT,

2011). Further, this framework has also proved useful in formulating policies which lead to increased investments in RE.

Table 18.2 provides the key features of this framework.

*Table 18.2 Key features of TLC-DB framework*

<i>Sl. No.</i>	<i>Metric</i>	<i>Description</i>
1.	Transparency	Understanding policies, targets, and execution
2.	Longevity	Create a conducive and stable policy ecosystem
3.	Certainty	Reasonable rate of return for investors

*Source:* DB (2009).

In the Indian context, considering system flexibility needs and interdependencies between RE, green hydrogen, and battery storage so as to provide round-the-clock power and energy supply, a policy framework like TLC-DB is likely to prove highly beneficial for scale adoption of emerging green technologies for its power system. Increased transparency and certainty in policies would stimulate developers' interest which, with stable policies, would help establish an enabling environment for the required deployment of green technologies like green hydrogen and battery storage.

Forthcoming policies such as renewable portfolio standards (RPS) or battery procurement standards (BPS), etc., can be evaluated in terms of investor/developer's response for each of the metrics specified in the TLC-DB framework.

### Note

- 1 Paying for Renewable Energy: TLC at the Right Price Achieving Scale through Efficient Policy Design." Deutsche Bank Group.

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- DB. (2009). "Paying for Renewable Energy: TLC at the Right Price Achieving Scale through Efficient Policy Design." Deutsche Bank Group.

Most frameworks are consistent on several basic principles when it comes to transition finance. For example, like EU Taxonomy, most frameworks discussed above agree that transition finance should not hamper the development and deployment of low-carbon alternatives. However, there is consensus to be built on several aspects. The variations in the definitions of transition activities or transition finance proposed in different frameworks require attention. These details are crucial in deciding what technologies would be scaled up and what activities will be phased down. Consequently, it would have cost implications for companies undergoing transition and for economies as a whole.

*Guiding Principles for a Transition Finance Framework for Financial Institutions*

Three broad considerations should underpin a transition finance framework for FIs. These are as follows:

- 1 **Best-in-class technology:** Transition finance frameworks recommend investing in “best in class technologies.” Climate technologies are rapidly emerging, so what is considered “best in class technology” can change. For FIs, consistency in the choice of technology is important because investment decisions and cost of capital are based on track record of similar projects financed in the past. Therefore, it is challenging to finance “best-in-class technology” if recommended technologies change rapidly. This conceptual inconsistency because of technology development is an ongoing process and finance requires stability and successful track records.
- 2 **Alignment with Paris Agreement:**

There are concerns that not all activities can be aligned with Paris Agreement, i.e., achieve net zero by 2050. For some sectors, there are very few scalable technologies for abatement and for others, the technologies are available, but currently they are not economically viable. This means that the effort and capital required to decarbonise different sectors would vary significantly. It is because of this that some frameworks recommend using sector-specific science-based targets (such as the ones proposed by Science-Based Target Initiative, SBTi) as the benchmark for transition technologies in place of Paris Agreement alignment. However, none of these frameworks are commensurable with regional- or country-level targets.

- 3 **Flexibility and concerns about transition washing:**

Several frameworks argue for flexibility in deciding what transition looks like for each country and what technology options would be viable for transition considering national emission reduction targets, economic circumstances, and resource base to name a few.

While it is important to incorporate flexibility in frameworks so that countries and entities can decide their transition pathway, too much flexibility can be a slippery slope. At least in theory, stricter transition frameworks would enable reaching Paris Agreement targets in a more certain manner and avoid spillover beyond 2050. However, stricter frameworks may ignore country-level or industry constraints on making the required transition. On the other hand, less stringent choices that allow too much flexibility might pave the way for the possibility of transition washing (Shrimali, 2022).

### **Importance of a Transition Pathway and a Roadmap**

IPCC suggests multiple pathways to 1.5-degree and 2-degree alignments. Different pathways mean different emission reduction trajectories which would directly impact timelines for scaling cleaner technologies and phasing down the high-emitting ones. These trajectories can therefore be a deciding factor if activities on borderline such as supercritical thermal power, gasification of coal, or use of natural gas would be included under the “transition activities” label.

Therefore, countries need to move beyond the net-zero targets and think about decarbonisation pathways to bring clarity to the sector. These pathways can also be a starting point for a transition finance framework, as it identifies which set of technologies and activities have to be financed and the order in which the financial flows are to be made.

## Financial Institutions and Transition Finance

FIs have kept pace with market discussions on the need to decarbonise high-emitting sectors. Companies and FIs have issued dedicated financial instruments such as transition bonds to finance transition technologies. However, the issuance of transition finance instruments has been slow globally. The first half of 2022 witnessed the issuance of 23 transition bonds worth \$2.1 billion. Compared to this, green bonds issuance was 100 times larger and was worth \$218 billion for the same period (Climate Bonds Initiative, 2022).

There is consensus that decarbonising hard-to-abate sectors is important for reducing overall emissions, for which investments would need to move beyond green finance. However, the definitions and frameworks for transition finance continue to be ambiguous in a poor enabling environment. Additionally, the high cost of capital and lack of financial instruments hinder finance for transition technologies.

This section concentrates on some of these challenges and risks faced by FIs in financing transition technologies. These are divided into three categories – enabling environment, cost of capital, and financial instruments.

### 1 Enabling environment:

Globally, there is no agreed definition for transition finance, and stakeholders are yet to reach conceptual clarity on several issues. Most developing countries including India are yet to develop a decarbonisation pathway, meaning that there is a lack of clarity on what are the preferred transition technologies.

The lack of a clear definition and transition finance framework and the absence of regulatory or policy incentives for transition finance mean that financiers hesitate to fund transition technologies.

### 2 Cost of capital:

Large-scale deployment and adoption of new and innovative technologies are important to meet international targets. Some of these technologies are also in early deployment stages, meaning there is significant technology and performance risk involved with financing these. Others are not yet competitive with their GHG-emitting counterparts.

In most cases, the track record for commercial deployment of these technologies is thin. Therefore, assessing the risk and the creditworthiness of technologies is difficult. This either limits the capital flows to such projects or that capital is priced at a very high rate.

### 3 Financial instruments:

For commercial finance instruments, it is challenging to satisfy the risk and return appetite for any technology that is new, capital-intensive, and eliciting long-term finance.

Green finance instruments that are designed keeping in mind the urgency for climate action, concentrate on a few already established sectors such as solar energy and energy efficiency and a few other near-zero emitting technologies. Transition technologies are usually excluded from these instruments because most transition technologies emit some amount of GHG.

Therefore, for transition technologies, financial instruments need to be suitably designed with optimal share of financing from commercial financiers of varying risk appetites, and impact capital providers, keeping in mind the development stage of technology and the nature of investment required, simultaneously drawing up a committing, credible framework for impact reporting.

## Enabling Transition Finance

Finance is technology agnostic and does not differentiate between decarbonising technologies, as long as these technologies satisfy the risk and return appetite of the financier. The challenge is that transition technologies are inherently risky, and the cost of financing is high. Additionally, there is a lack of consensus on the definition of transition finance. Thus, currently capital is either too expensive, short-dated, or not flowing sufficiently for transition activities (Oliver Wayman, 2020).

To ensure an increase in capital flows towards transition activities, diverse out-of-the-box solutions, requiring cooperation of – and coordination among – multiple stakeholders need to be implemented. It would include creating an enabling environment that supports decision-making for FIs and encouraging capital allocation through aligning risk–return profiles and designing dedicated instruments.

### *Enabling Environment*

Appropriate regulatory and policy measures can help create an enabling environment and instil confidence in financiers. This framework can include details about country’s transition pathway, a clear definition on “transition technology” and “transition finance” and a few incentive mechanisms to attract capital to transition technologies. These could include:

- **Designing transition pathways and defining transition activity:** Transition pathways would guide on volume, scale, and timeline of emission reduction at the country level. Therefore, it provides guidance on the timeline for scaling clean technologies and phasing down of carbon-intensive technologies. Based on these pathways, the countries can define “transition activities” best suited to their local context.
- **Benchmarking emission reduction targets:** Once the definition of transition activities is clear, the next step is to set sector-wise benchmark targets for emission reduction. These targets could be set by aligning all sectors to a common target of 1.5 degrees, which could mean a common target of reducing emissions by 45% by 2050 or this could mean deciding permissible emission levels for each sector keeping in mind the remaining carbon budget. These benchmarking targets could be set using scientific targets proposed by international organisations like SBTi or Transition Pathway Initiative (TPI).
- **Performance reporting and monitoring:** A comprehensive set of guidelines for entities to access transition finance is important. This could include drafting transition plans at the entity level and following robust reporting standards.

**Aligning incentives:** A transition finance framework with a clear definition of transition activities, sector-wise targets, and robust reporting standards enable decision-making for FIs. However, this might not be enough to encourage the flow of capital to these activities, and therefore, it is essential to align incentives for the financial sector through regulation and policy. This could be in the form of fiscal concessions or subsidies. Incentives can be provided through regulations, for example by incorporating a “risk subsidy” derived on the basis of the cost of carbon (Dhruba Purkayastha, 2021).

### *Supporting Capital Allocation*

Capital flows to transition activities can be encouraged by improving risk–return profiles and designing dedicated instruments.



Table 18.3 Ways to increase capital flow to transition activities

<i>Function</i>	<i>Action category</i>	<i>Potential steps</i>	<i>Potential decision-making body</i>
<b>Enabling environment</b> <i>(Policy &amp; regulatory landscape that supports decision-making for FIs)</i>	Guidelines	1. Country-level transition pathways 2. Transition finance framework or Taxonomy	Policymakers (Ministry of Environment, Forest and Climate Change, MoEFCC) Policymakers (Ministry of Finance, MoF)
	Standards	Benchmarking emission reduction targets. This could be through: <ul style="list-style-type: none"> <li>• Alignment with Paris Agreement (1.5 degree or 2 degree)</li> <li>• Carbon budget</li> <li>• Science-based standards (ex: SBTi)</li> </ul>	Standard-setting bodies and FIs
	Performance reporting and monitoring	Guidelines for entities to disclose: <ul style="list-style-type: none"> <li>• Transition plans</li> <li>• GHG reduction targets</li> </ul>	Securities and Exchange Board of India (SEBI)
	Aligning incentives	Providing a “risk subsidy”	Policymaker/regulator depending on the kind of intervention
<b>Supporting capital allocation</b> <i>(Mechanisms that allow channelling of capital)</i>	Aligning risk–return profiles	Accounting for carbon in risk assessment framework through <b>carbon ratings</b> De-risking measures (Insurance, Guarantees, etc.)	Regulator (Reserve Bank of India, RBI), Credit rating agencies, FIs
	Dedicated instruments to raise finances	Special structures: <b>blended finance</b> Transition bonds/ sustainability-linked bonds	FIs, public funds, Multilateral Development Banks (MDBs) MDBs, FIs, public funds, philanthropic entities FIs

Source: Authors' own.

### • Improving risk–return profiles

- **Risk assessment framework:** Banks assess the risk of an investment based on entity's past performance, internal models, and economic outlook. Risk assessments determine the rate of interest, thereby affecting the cost of capital. Incorporating climate risk in internal risk assessment models of FIs can correct inefficiencies in the financial system that currently favour carbon-intensive technologies compared to newer technologies that have lower emissions.
- Climate risk can be measured through a “carbon rating framework” which captures “carbon per unit of financing.” Incorporating a carbon rating within conventional risk assessment can reduce the cost of capital for transition technologies.
- **Blended finance:** Blended finance is the use of development capital (public or philanthropic) to catalyse private capital which would otherwise not be available

(Shrimali, 2022). In most blended finance structures, public or philanthropic capital takes a first-loss position or settles for lower returns. This improves the technology's risk–return profiles and thus the project's bankability.

- Considering the scale of investments required for transition, catalysing private finance might require significant investment support from the public sector and DFIs.
- **De-risking measures:** Other de-risking methods such as financial guarantees, credit insurance, and credit enhancements can help also reduce risks significantly.
- **Dedicated financial instruments: Transition bonds/sustainability-linked bonds:** The choice of financial instruments depends on the scale of transition (entity level or activity level), technology type, and stage of development to name a few. Currently, the most talked about instruments are transition bonds and sustainability-linked bonds. The reader may also refer to the chapter 17 of this section for a more detailed discussion on transition bonds.

A transition bond is a use of proceeds debt instrument, which means that finance is ring-fenced specifically for a particular transition activity or project. Transition bonds can be used at an entity level as well as an activity level for a particular technology. The transition bond market is currently small.

Another popular instrument for financing transition technologies is sustainability-linked bonds (SLBs). SLB is an outcome-based instrument, in which financing costs are linked to the achievement of some pre-defined sustainability key performance indicators (KPIs) (Shrimali, 2022). These KPIs are usually at the company level. SLBs are immensely popular because they provide a direct link between financing and sustainability goals for investors and allow for awards and penalties depending on the achievement of KPIs.

However, both instruments vary in terms of the level of financing and processes involved. It is noticed that SLBs are usually used for transition at the company (entity) level, while transition bonds can be used for both entity and activity levels. Table 18.4 provides a brief comparison of the instruments.

*Table 18.4* Sustainability-linked bonds vs transition bonds

<i>Instrument</i>	<i>Sustainability-linked bonds</i>	<i>Transition bonds</i>
Type of finance	KPI-linked finance	Use of proceeds finance
Entity vs activity	Usually finances at the entity-level transition	Can finance both entity-level and activity-level transition
Due diligence	Company-level transition plans	Benchmarking of technologies for decarbonising Alignment with Paris Agreement Assessing emission reduction claims through best-in-class technology
Reporting	Baselining, regular reporting, audits (this can mean high transaction costs)	Might not have such stringent reporting
Standards	ICMA standards available	No standards
Issuance	About \$123 billion was raised through SLBs in 2021. Out of this, more than \$35 billion was directly for industries (Maino, 2022).	Since its inception in 2019, only 24 bonds worth \$11.5 billion have been issued (Climate Bonds Initiative, 2022).

*Source:* Authors' own.

## Conclusion and Way Forward

This chapter presents an introduction to the concept of transition finance. It traces back the emergence of the concept to EU Taxonomy's "transition activities" and presents multiple interpretations of "transition activities" and "transition finance" by different regulators and international organisations.

It discusses challenges of financing transition technologies such as lack of enabling environment, high cost of capital, and lack of innovative financial instruments. The chapter suggests that to ensure higher capital flows to transition finance, a host of solutions, requiring the cooperation of multiple stakeholders need to be implemented. This would include developing policy and regulatory frameworks defining transition activities; guidelines on transition pathways for different sectors at the country level need to be clear; risk and return profiles need to satisfy financier's appetite so de-risking mechanisms such as blended finance structures need to be in place and incentives through carbon pricing need to be established.

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