

Mechanisms to Prevent Carbon Lock-in in Transition Finance

POLICY HIGHLIGHTS

The emergence of transition finance

Despite clear evidence that investment to scale up low- and zero-emission technologies is urgently needed to achieve the Paris Agreement temperature goal, decarbonisation pathways of countries around the world continue to assume the use of fossil assets. Existing levels of fossil fuel finance and investment run contrary to the IEA's 2021 Net Zero by 2050 Roadmap. Moreover, demand for fossil fuels has only grown since the publication of the roadmap. At the same time, there is a recognition that switching to natural gas and using modern emissions abatement technologies can reduce emissions in the short term. This is especially the case in emerging markets and developing economies (EMDEs)

and in industries where low-emission alternatives are not yet fully feasible and scalable.

A key question in transition finance is what types of investments should be eligible to receive financing. Investments in assets and infrastructure that use unabated fossil fuels, be it new developments or retrofits, bear a high risk of 'carbon lock-in' (Box 1). Carbon lock-in occurs when fossil fuel infrastructure or assets (existing or new) continue to be used, despite the possibility of substituting them with low-emission alternatives, delaying or preventing the transition to near-zero or zero-emission alternatives. To prevent



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carbon lock-in to the extent possible, and ensure the environmental integrity of transition finance, relevant investments must be carried out with appropriate safeguards in place.

Transition finance approaches emphasise the need to avoid carbon lock-in, but largely do not set clear guidance on how to do so. In the absence of consensus on how to avoid lock-in, corporates seeking transition financing may fear accusations of greenwashing – i.e., claims that they might use green, transition or net-zero labels for their offer of products and services while directing capital to high-emitting activities that delay rather than advance the net-zero transition. While several of the existing transition finance approaches highlight the need to avoid locking activities in high-emission pathways, limited guidance exists on ways in which financiers and corporates can practically prevent this risk.



Box 1. WHAT IS TRANSITION FINANCE AND WHY DOES IT RISK CREATING CARBON LOCK-IN?

While there is no universally agreed definition of transition finance, several core concepts are shared across a range of market actors and jurisdictions.

Sustainable and green finance tools and frameworks tend to define what is already sustainable, green or net-zero. Instead, transition finance supports the dynamic and forward-looking decarbonisation or greening process of an entity or activity and its journey towards becoming sustainable, green or net-zero at a pre-defined future point in time. To date, transition finance has been provided mainly through fixed-income instruments, notably, green and transition bonds and loans (use-of-proceeds instruments) and sustainability-linked bonds and loans with Key Performance Indicators (KPIs) relating to corporate emissions performance (general purpose instruments).

Importantly, transition finance is particularly relevant to high-emitting sectors, industries and activities:

- Where zero- or near-zero emission substitutes are not yet fully *feasible*, but
- that can reasonably be expected to reach net zero in the future, based on a long-term, credible climate transition plan.

Due to the focus of transition finance on emission-intensive sectors and activities that currently lack feasible low-emission alternatives, carbon lock-in is a core concept common to most transition finance definitions and approaches. Carbon lock-in can arise when transition finance flows to technologies that present a marginal improvement but are overall still emission-intensive and long-lived. It can also occur as a result of investments into efficiency or other types of improvements in existing high-emitting assets, thereby delaying the transformation or replacement of those assets.





Box 2. THE 2022 OECD GUIDANCE ON TRANSITION FINANCE: ENSURING CREDIBILITY OF CORPORATE CLIMATE TRANSITION PLANS

A fast-growing number of governments and market actors worldwide are committing to reach net-zero emissions at a specified point in time in the future. However, very few entities have credible and public climate transition plans in place to date. Credible corporate transition plans can reduce or avoid risks related to greenwashing, lock-in and delayed action by significantly increasing transparency, and ensuring that high-level net-zero pledges translate into clear and actionable targets that can be verifiably implemented. In the absence of credible corporate transition plans, it is challenging for financial market participants to assess the extent to which a potential transition investment is legitimate from an environmental standpoint.

To promote transparency and support the growth of the transition finance market, the 2022 *OECD Guidance on Transition Finance* sets out ten elements of credible corporate climate transition plans and presents recommendations and good practices for each of them:

- 1 **Setting temperature goals, net-zero, and interim targets;**
- 2 **Using sectoral pathways, technology roadmaps, and taxonomies;**
- 3 **Measuring performance and progress through metrics and key performance indicators (KPIs);**
- 4 **Providing clarity on the use of carbon credits and offsets;**
- 5 **Setting out a strategy, actions, and implementation, including preventing carbon-intensive lock-in;**
- 6 **Addressing adverse impacts through the Do-No-Significant-Harm (DNSH) Principle and due diligence for Responsible Business Conduct (RBC);**
- 7 **Supporting a just transition;**
- 8 **Integrating with financial plans and ensuring internal coherence;**
- 9 **Ensuring sound governance and accountability;**
- 10 **Transparency and verification, labelling, and certification.**

To be effective in mobilising investments for the net-zero transition and to ensure environmental integrity, transition finance needs to be grounded in credible corporate climate transition plans, in line with the temperature goal of the Paris Agreement (Box 2). The OECD Guidance on Transition Finance sets out 10 key elements of credible corporate transition plans to help minimise greenwashing in transition finance and provide confidence to investors that corporates raising transition finance are on a credible path to net zero.

These Policy Highlights present the findings of a new OECD report on *Mechanisms to Prevent Carbon Lock-in in Transition Finance*, which provides an analysis and overview of relevant mechanisms that can be put in place by policymakers to develop comprehensive transition finance frameworks and reduce carbon lock-in. This report is a follow-up to the *OECD Guidance on Transition Finance* and provides a deep dive into the question of how to credibly prevent lock-in. It puts forward key findings and good practices across various parts of the transition finance ecosystem, including:

- **Transition finance definitions** and the need for clarity on how “feasibility” is assessed as part of such definitions.
- Good practices for credible **transition finance frameworks**, notably:
 - The importance of guidance for entity-level **transition plans** to anchor transition finance transactions in credible corporate climate strategies;
 - The usefulness of **national sectoral emission pathways** in guiding companies and investors in their transition planning, as well as informing criteria development for transition taxonomies and similar tools;
 - The importance of **asset-level requirements**, for example as part of taxonomies of technology roadmaps, that can reduce lock-in by ensuring that relevant infrastructure is over time brought in line with the temperature goal of the Paris Agreement; and
- Additional information at the level of the **financial instrument**, notably for sustainability-linked bonds (SLBs) and green bonds, to strengthen existing frameworks and standards.



Transition finance definitions can be strengthened and made more transparent by providing clarity on how to assess feasibility as part of eligibility criteria, and by taking a long-term approach in the assessment.

Carbon lock-in considerations in transition finance definitions: the role of feasibility assessments

Transition finance focuses on providing funds to decarbonise economic activities and industries that currently do not have a fully *feasible* zero- or near-zero emission alternative. Therefore, for policymakers to define which activities and industries should be eligible for transition finance in their jurisdiction, it is necessary to assess the *feasibility* of zero- and low-emission substitutes (see Box 3).

Box 3. WHAT IS “FEASIBILITY”?

In the context of climate policy, “feasibility” refers to the potential for a mitigation action to be implemented. According to the Intergovernmental Panel on Climate Change (IPCC), feasibility can be influenced by several context-specific factors, such as technological, economic, institutional, social, or political considerations. They can constrain or enable the implementation of various mitigation options.

The relevance of these factors can change over time. Strengthening enabling conditions, such as through public and private finance, policy, institutional capacity, or technological innovation is necessary to increase the feasibility of different climate change mitigation options. Such actions can especially improve their economic feasibility.

The ways of assessing feasibility, such as whether a long-term approach is taken in the assessment and how much weight is given to institutional and political factors, can fundamentally affect technology selection, for example:

- Institutional and political factors can effectively outweigh technological or environmental factors in determining feasibility, and therefore eligibility. This can allow for technologies that are incompatible with the temperature goal of the Paris Agreement to be selected as being eligible for transition finance, even in cases where lower-emission alternatives are technologically feasible.
- Similarly, economic feasibility assessments may only assess short-term costs, rather than considering future transition risk and projecting costs over the lifetime of the asset. In such cases, a technologically feasible low-emission option may be assessed to be economically infeasible and potentially lower cost over the longer term.
- However, feasibility, especially economic feasibility, is a dynamic concept, meaning it can be enhanced, for example, through continued investment and technology support. Conversely, a lack of economic feasibility can become a self-fulfilling prophecy, as

investment is directed away from less economically feasible low-carbon technologies due to their price, subsequently making them less competitive. This tendency may be exacerbated by institutional constraints and political decisions, such as decisions to continue the use of fossil fuel subsidies.

Key findings and good practices

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Concretely, the most effective transition finance approaches that credibly prevent carbon lock-in will take a long-term perspective and provide a more

detailed definition of what feasibility entails, notably by specifying the need to:

- Take into account project costs in 2030 and beyond, using an appropriate net-zero scenario;
- Take into account future costs of reinvestment in order to achieve net zero;
- Appropriately assess and monetise transition risk, including by projecting it over a longer time horizon (2030 and beyond), as it may not immediately materialise; and
- Explicitly acknowledge and address potential challenges related to institutional and social feasibility, which may affect economic feasibility, for example by providing adequate support, social protection, training, and reskilling to impacted workers, households, and communities.

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As the window of opportunity to stay within the Paris temperature goal is closing fast, lock-in risk and questions on how best to mitigate it take centre stage as stakeholders develop relevant financing frameworks and tools.

Carbon lock-in considerations in financing and investment frameworks

The concept of carbon lock-in is also a recurring theme in discussions around policy and financing for climate change mitigation. It is particularly important to consider carbon lock-in when designing public or private investments in energy production and use. Existing frameworks and tools guiding such investments reflect to varying degrees the growing importance of carbon lock-in risk. However, as the window of opportunity to stay within the Paris temperature goal is closing fast, lock-in risk and questions on how best to mitigate it take centre stage as stakeholders develop relevant financing frameworks and tools.

To date, some mechanisms to prevent carbon lock-in have been developed and applied in some public and Multilateral Development Bank (MDB) finance and investment frameworks, as well as in transition finance frameworks for private finance and investment. Integrating the following existing good practices in transition finance policies has the potential to significantly strengthen the environmental credibility of transition finance.

Key findings and good practices

Standards and frameworks for credible corporate climate transition plans, with net-zero targets based on the Paris temperature goal, are key tools to preventing carbon lock-in in transition finance.

The recent focus on entity-level approaches in transition finance highlights one of the key challenges corporates

face as part of the net-zero transition: the need for long-term planning under uncertainty over the technology choices necessary reach net zero. In the absence of frameworks for credible corporate climate transition plans, uncertainties will continue in transition finance with respect to greenwashing and carbon lock-in. This uncertainty can be addressed if jurisdictions and market actors step up efforts to put in place standards and frameworks for developing and disclosing credible corporate climate transition plans, identifying sources of carbon lock-in risks, and ways to address it.

National sectoral emissions pathways can guide technology roadmaps, robust transition taxonomy criteria, and similar tools, as well as allowing companies to develop credible net-zero plans and targets.

Emission pathways that are based on a country's net-zero target and developed for each sector, can provide a robust basis for companies to set their own net-zero targets and develop transition plans. They are also important to policymakers to develop taxonomy criteria, technology roadmaps, and similar tools. At the same time, assessing the consistency of country-level pathways with the Paris Agreement can prove challenging due to complexities in determining global temperature outcomes for country-level pathways as well as due to the presence of global or regional supply chains in many sectors. In such cases, global or regional pathways might be more relevant.

Excluding the most emission-intensive energy sources from eligibility for transition finance enhances the credibility of transition finance frameworks.

Providing clear guidance on which investments are not eligible for transition finance, due to their not being in line with the Paris temperature target, can enhance the credibility of transition finance frameworks and will avoid uncertainty for companies and investors.

The cumulative effect of carbon lock-in resulting from governments', corporates', and financiers' individual decisions to pursue fossil fuel-related activities is likely to be significant. Investments marketed as "transition investments" only account for the portion of fossil fuel investment that entities are seeking to justify as in line with net-zero targets. But the majority of fossil fuel investments are being undertaken without justification.

Therefore, the following key scientific conclusions should be reflected in the design of Paris-aligned exclusion and eligibility criteria:

- IEA modelling indicates that to achieve net zero by 2050, coal, oil, natural gas demand must decline significantly by 2050. In this scenario, the limited remaining fossil fuels are only used for the following purposes:
 - For the production of non-energy goods where carbon is embodied in the product (e.g., fertilisers);
 - In energy production with abatement (e.g., CCUS), notably for use by industry;
 - In sectors where zero-emissions options are very limited (e.g., aviation).

Actions to future-proof transition investments can include setting requirements with technical specifications that enable infrastructure for the use of low-emission and renewable fuels.

Credible transition finance frameworks will benefit from including requirements for supported assets to be future-proof and comply with technical specifications to enable the transport and use of low-emission fuels in the future.

Sunset clauses for use of fossil fuels can reduce carbon lock-in risk for assets where a fuel switch is planned to ensure alignment of the asset with the Paris temperature goal (e.g., a switch from natural gas to low-emission hydrogen).

To ensure that natural gas assets incorporating requirements to be future proof actually carry out the switch to low-emission fuels, it is paramount to set a sunset clause that will limit the eligibility for support and allow the eventual phase out of the fossil fuels. Credible sunset clauses will be aligned with an IPCC reference scenario that is consistent with limiting warming to 1.5°C, or to below 2°C if 1.5°C is not possible. Where available, sunset clauses should be based on 1.5°C-aligned national sectoral emission pathways.

For assets where a fuel switch is needed to achieve alignment with the Paris temperature goal, flanking measures that ensure the switch happens in a timely manner can contribute to preventing carbon lock-in.

Flanking measures, which give credibility to future-proofing requirements and sunset clauses in transition finance frameworks, include:

- Accompanying research, development, and innovation investments, as well as investments to support the supply of the future low-emission fuel that is expected to be used after the sunset date;
- Contracts of supply for the low-emission replacement fuel to be agreed within a specified timeframe, ideally within three years of the initial investment;
- Plans and binding timeframes setting out a strategy of how the low-emission fuel will be used by the company benefitting from transition finance (see Box 4).

It is important to establish a date for early retirement of assets that cannot be retrofitted or refurbished in line with net zero, and to accompany this process by a strategy to finance the retirement.

To be credible, transition finance frameworks can specify additional requirements for the managed phaseout of high-emitting assets. This could include specific phase-out plans as part of transition plan frameworks, outlining how the phase-out is aligned with any net-zero or climate-related strategy, how just transition considerations are integrated, key milestones such as phase-out timing, key metrics and targets, disclosure of progress, governance mechanisms, related capital expenditure (CapEx) plans and key assumptions and uncertainties as part of the plan. Currently, there are no standardised criteria for ensuring the credibility and eligibility of a coal phaseout plan, but, at a minimum, it should demonstrate positive environmental impact and advance an entity's and country's alignment with the temperature goal of the Paris Agreement.

Box 4. FLANKING MEASURES TO SUPPORT FUTURE-PROOFING

What are flanking measures?

The concept of “flanking measures” (or “flanking policies”) refers to complementary measures that can ensure or enhance the effectiveness of a given policy or investment. Flanking measures can contribute to building the right enabling environment for investments to be future-proof, or combine several investments in a manner that makes them future-proof, and effective in preventing carbon lock-in.

Flanking measures that improve the enabling environment usually take the shape of government reforms, such as through national industrial decarbonisation strategies, electricity market reform, phase out of fossil fuel subsidies, amongst others. In the absence of government intervention, market actors can still make use of this concept to future-proof their investments, notably by carrying out accompanying investments in support of the initial investment. The below examples cover possible public and private interventions in energy, transport, and industry.

Energy

A gas transmission network can be theoretically future-proof if it is built to be able to transport hydrogen as well as fossil gas, and if it complies with the technical specifications on turbines, materials, and other key criteria. However, without a sufficient and steady supply of hydrogen, the network may end up transporting fossil gas, despite not being intended for that purpose. An example of a flanking measure would be policies and investments to ensure hydrogen supply. This could be done through accompanying reforms, like the adoption of a national hydrogen strategy, or investments into the hydrogen production value chain.

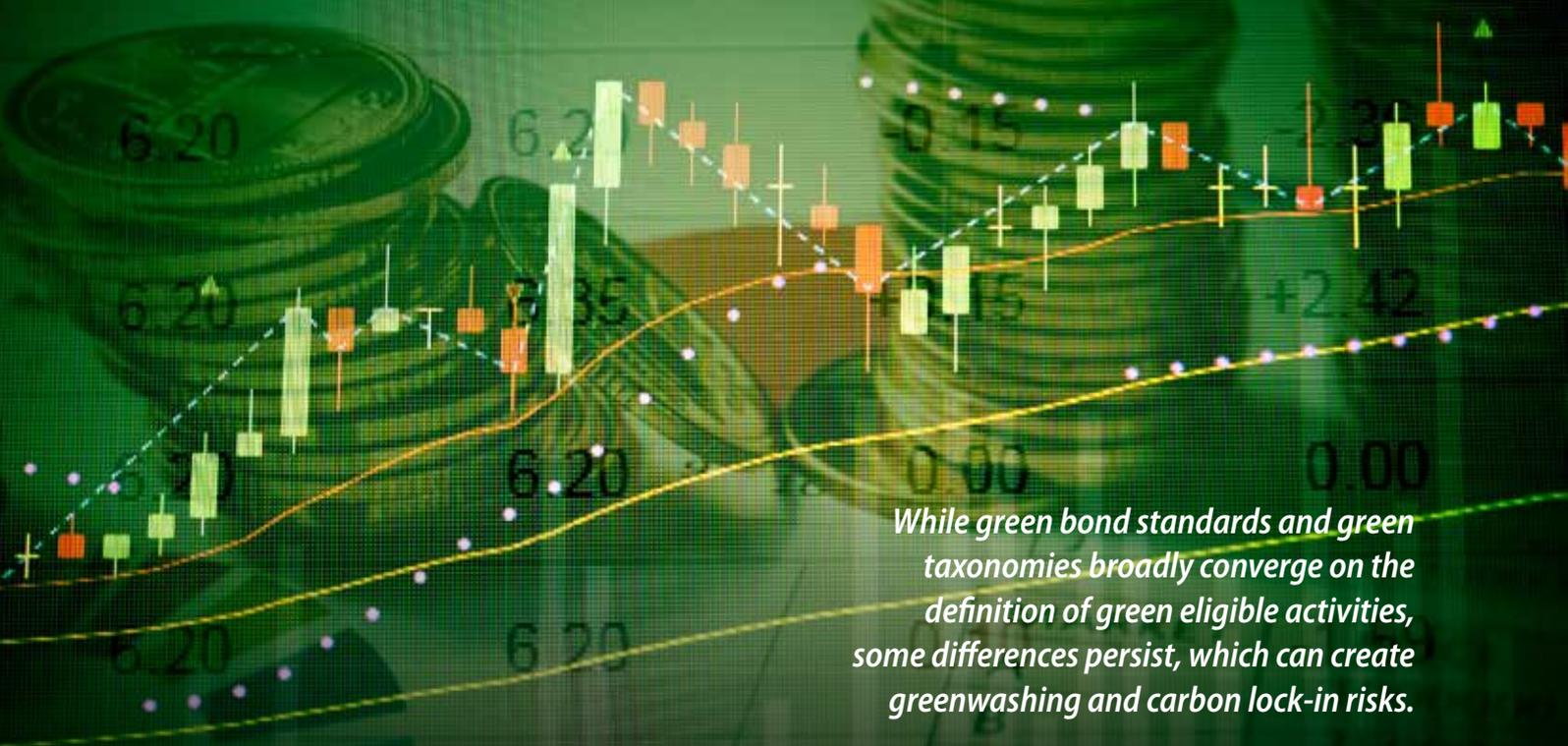
Transport

Similarly, to avoid increased emissions from higher traffic associated with the construction of new roads, flanking measures can be put in place to support the shift to cleaner modes of transport. This could be done by way of accompanying investments in rail and public transport, equipping roads with low-carbon infrastructure (such as charging stations for electric vehicles), putting in place appropriate road access or congestion charges, and wider reforms to facilitate broader access to public transport.

Industry

To reduce emissions in steelmaking, coking-coal-based blast furnaces (BFs) can be replaced with direct-reduced-iron (DRI) that uses natural gas as a feedstock or reducing agent. DRI plants can be converted to run on low-emission hydrogen. Like the lock-in risks in the energy sector, one of the key challenges to ensure that DRI plants are future-proof is to ensure a sufficient supply of low-emission hydrogen. To prevent risk of carbon lock-in in this case, flanking measures could include accompanying investments by the company into the hydrogen production value chain, such as investments to ensure enough electrolyzers come on-stream to support a fuel switch of the company, as well as accompanying government reforms to build up the hydrogen value chain.





While green bond standards and green taxonomies broadly converge on the definition of green eligible activities, some differences persist, which can create greenwashing and carbon lock-in risks.

Carbon lock-in considerations in transition financial instruments

A wide range of financial instruments are relevant to transition finance, including (i) *green bonds and loans* to raise financing for activities that are already zero- or low-emission, (ii) *transition bonds and loans* for activities on a credible pathway to become zero- or low-emission in the future and (iii) *sustainability-linked bonds (SLBs) and loans* to finance general purpose activities of an entity planning to transition to a zero-emission and sustainable future.

While green bond standards and green taxonomies broadly converge on the definition of green eligible activities, some differences persist, which can create greenwashing and carbon lock-in risks. For example, given the variation in and flexibility offered by existing green bond frameworks, lock-in risks can arise if green bond proceedings are used to make incremental efficiency improvements in refineries processing fossil fuels, thereby extending plant operating lifetimes. In the transition bond space, which is still limited in size, lock-in risks are highly present, given the lack of definitions and eligibility criteria for what constitutes a transition bond.

Green and transition bonds are generally used to raise finance for specific green or transition projects so individual issuances do not necessarily signal that issuers have a credible and whole-of-entity transition plan in place to transform their business models and operations and drastically reduce their emissions. This is a source of greenwashing risk in particular where bonds finance projects that achieve only incremental

absolute emission reductions. This may improve emission performance somewhat but may leave absolute emissions out of line with low-emission pathways. In addition, individual issuances that are not directly linked to an overarching transition plan or strategy and not aligned with existing taxonomies cannot be considered a proxy for an entity's transition efforts. To avoid lock-in, it is necessary to situate projects within a wider transition plan and show how they are, over the long-term, in line with a Paris-aligned pathway.

SLBs differ from green and transition bonds as they are general purpose financial instruments, whose financial conditions are tied to pre-determined Key Performance Indicators (KPIs) and Sustainability Performance Targets (SPTs). The uptake of sustainability-linked bonds and loans by a wide variety of issuers across sectors indicates that the instrument has potential to be used for a whole-of-economy, cross-sectoral transition. At the same time, evidence suggests that there are emerging loopholes and potential penalty-minimising behaviour in SLB structures. Moreover, KPIs and metrics used in SLB issuances in high-emitting sectors are not always consistent with an ambition to transition a company towards credible low-emission pathways. For example, they can include relative emission reduction targets for entities operating high-emitting assets, without being transparent about absolute emissions performance. This may improve emissions performance but in absolute terms overall emissions are still high and not in line with low-emission pathways.

Key findings and good practices

Clearly distinguishing between green and transition eligible activities will make frameworks for transition financial instruments more credible. Credibility can be enhanced by linking frameworks with corporate transition plans, and using ambitious KPIs and SPTs that are linked with key milestones designed to prevent carbon lock-in.

SLBs: The credibility of SLB frameworks can be enhanced by anchoring them in and providing details about the corporate climate transition plan, and using meaningful Paris-aligned emission reduction-related KPIs and SPTs. In line with the OECD Guidance on Transition Finance, it is important that such KPIs and SPTs include all emission scopes, both absolute and intensity targets and not overly rely on offsets. In cases where offsets are used as a last resort option, sufficient details on their reliability and use should be provided.

Green and transition bonds: To reduce the risk of lock-in, it is important that green and transition bond frameworks and standards clearly distinguish between green and transition eligible activities, in line with applicable taxonomies or other relevant eligibility requirements disclosed by the issuer.

Where they finance transition activities or projects involving fossil fuels, such as natural gas-based energy production for a limited period (when blending with or before switching to 100% renewable or low-emission gases), credibility can be ensured through additional verification requirements and reporting on forward-looking indicators like sunset requirements and flanking measures. The same logic applies to investments in efficiency improvements of fossil fuel assets, or ammonia co-firing in coal-fired power plants, where explicit and detailed information on key milestones to achieve net zero should be reflected in KPI and SPT requirements.

The development of standards and frameworks for SLBs is necessary to strengthen the credibility of this instrument and address emerging loopholes which increase the risk of lock-in of related investments.

Standards and oversight are needed to ensure that verification and second party opinion (SPO) providers follow the highest quality standards available and ensure the credibility, integrity, and ambition of SLB frameworks and related KPIs and SPTs. In a credible SLB

framework, standalone Environmental, Social and Governance (ESG) metrics and scores will not be used as KPIs and SPTs. It is important that penalties are set in a way that provides adequate incentives for the issuer to achieve its sustainability targets.

Eligibility criteria of standards and frameworks for transition financial instruments should be regularly updated and reassessed as factors affecting feasibility evolve.

Wherever green or transition eligible projects include activities that are emission-intensive because of feasibility hurdles, feasibility should be regularly reassessed in case technological, economic, regulatory, or political and social conditions change over time.

Wherever innovative and not fully tested and scalable net-zero technologies are used, details should be provided on the associated CapEx required, the feasibility of the technology used and any foreseen limitations, constraints, and uncertainties to their application.



This Policy Highlights is based on the OECD publication *Mechanisms to Prevent Carbon Lock-in in Transition Finance*.

To support finance and investment for a global whole-of-economy net-zero transition, the concept of transition finance has been rapidly gaining traction among policymakers and market actors. Transition finance aims to support high-emitting industries in their transition to net zero. However, the risk of carbon lock-in is high when it comes to the financing of these industries and existing mechanisms to prevent and reduce the risk of carbon lock-in in transition finance are insufficient. The OECD report on *Mechanisms to Prevent Carbon Lock-in in Transition Finance* aims to fill this gap by providing a comprehensive overview of options that policymakers have at their disposal when designing credible transition finance frameworks.

To access the full report, visit: oe.cd/carbonlock-in

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