G20 SFWG input paper:

The role of policymakers in mobilising private finance to ensure a credible and just transition in steel and cement

Climate Bonds INITIATIVE

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G20 BRASIL 2024
BUILDING A JUST WORLD AND A SUSTAINABLE PLANET

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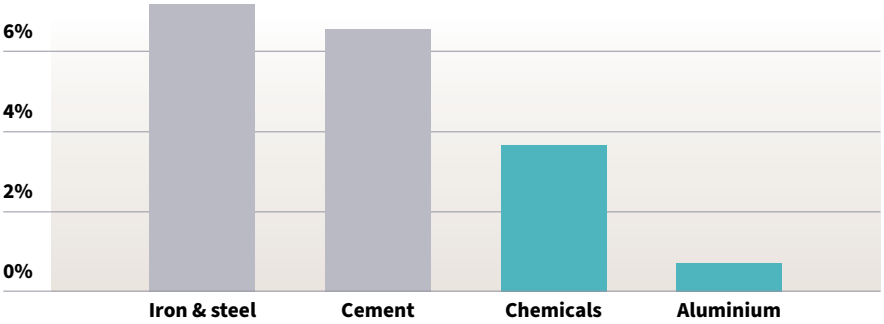
Summary

This is the decade of change for steel and cement, which as the two largest industrial emitters globally are crucial to the net-zero transition

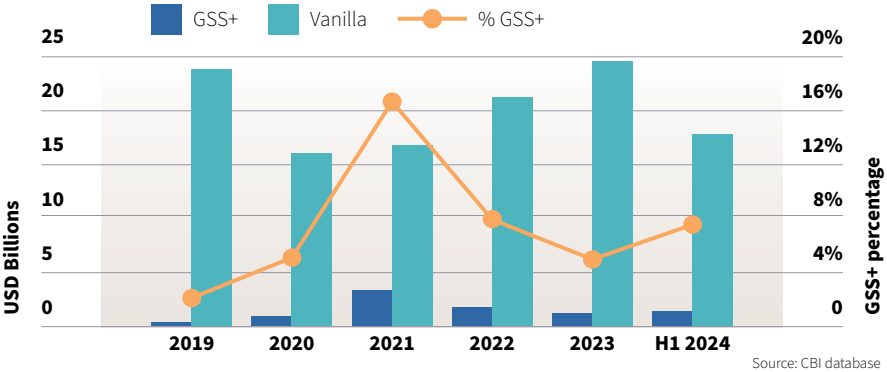
- **Steel and cement are pivotal to meeting the Paris Agreement objectives but while fuel substitution can help address emissions from steelmaking, it cannot fully address those from cement.** Steel and cement are the principal sources of industrial emissions, accounting for over 7% and 6% of global CO_2, respectively, in 2022 (see Figure 1). However, their production processes are inherently different. Most emissions from steelmaking come from blast furnaces and their high reliance on the use of coal, whereas most emissions from cement production result from chemical reactions, rather than fuel combustion.
- **This decade is crucial to the transition of the steel and cement sectors, in which emerging markets (EM) will play a crucial global role.** Over 70% (1091 Mt/yr) of coal-based steel blast furnace capacity will need reinvestment by 2030, and the majority of this will take place in EM.[1] This offers a significant opportunity to switch to lower-intensity production methods this decade. Demand for steel and cement is also expected to rise over 30% and 45%, respectively, by 2050 and will be led by emerging markets.
- **As the major consumers of steel and cement, governments have significant leverage.** Public authority purchasing power totals around USD11tn each year and can drive the pipeline of investment opportunities.[2] Public procurement accounts for up to 25% of steel and 40% of cement global demand.[3]

Figure 1. Industry sector share of global CO_2 emissions, 2022



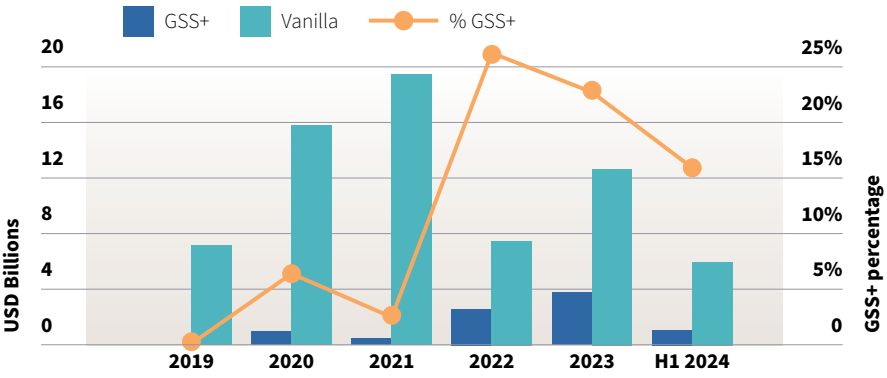
Source: https://iea.blob.core.windows.net/assets/86ede39e-4436-42d7-ba2a-edf61467e070/WorldEnergyOutlook2023.pdf

Figure 2. Share of steel GSS+ debt, 2019–H1 2024



Source: CBI database

Figure 3. Share of cement GSS+ debt, 2019–H1 2024



Source: CBI database

Credible transition plans are the means to access private capital required for the transition of both sectors

- **GSS+ bonds are being issued to an increasing extent in the steel and cement sectors** but represent only 7.2% and 11.8% of all volume, respectively (see Figures 2 and 3). Part of the reason their potential has not been fully exploited, particularly for sustainability-linked bonds (SLBs), is the lack of standards, notably sector-specific criteria.
- **Transition plans are increasingly becoming an integral part of the screening methodologies employed by financial institutions,** which due to recent legislation, such as the Corporate Sustainability Due Diligence Directive (CSDDD), are required to prepare and document their own transition plans. Accordingly, financing opportunities will be determined by the availability and credibility of corporate transition plans. Further improving the alignment of transition plans and bond frameworks, especially for SLBs, is critical to unlocking financing opportunities in hard-to-abate sectors.

Credible transition plans support credible SLBs, thereby facilitating the financing of the transition in the steel and cement sectors. All steel sector SLBs and 80% of those for the cement sector are issued by companies that include three key elements of transition plans (action plan, finance plan, and governance mechanism), aligned with Climate Bonds' methodology.

Key points for G20 Sustainable Finance Working Group discussions:

1. Leverage public authority demand for low-carbon steel and cement via supportive policies, including examples such as green public procurement, which can create a favourable market for low-carbon and innovative products. This would provide more certainty to companies and investors, driving large-scale, price-reducing demand for green products and more ambitious transition plans.

2. Engage with all relevant stakeholders, such as the workforce and local communities, relating to remediation measures to reduce transition risks and impacts.

Of the 20 corporate transition plans assessed in this paper, 90% have published a transition plan, or elements of it through their annual reports, but more needs to be done to increase quality and credibility

Analysis of the transition plans of the 20 companies selected for this paper revealed several common strengths and weaknesses. Ten transition plans from steel and ten from cement companies were examined and the main findings include:

- **Lack of consistency and disclosure on financing and a need for more transparent and reliable data monitoring and disclosure.** Only half of the sample included targets and action plans aligned or aligning with Climate Bonds' methodology, and assurance in emissions data verification was limited.
- **The significance of policymakers in the progress of setting ambitious targets and action plans.** All companies bar two, whose performance targets and action plans were found to be aligned or aligning with Climate Bonds' methodology, are based in jurisdictions that have implemented or are considering implementing transition plan legislation.

Embedding just transition in transition plans ensures comprehensiveness, prevents disruptions, and optimises transition pathways

The analysis also focused on just transition elements and indicators, which recognise that the transition ought to prevent inequality and social disadvantage.

- **Steel and cement companies are at the early stage of addressing just transition risks and impacts in their transition plans.** While some progress is observed, there is minimal coverage beyond narrative statements. Of the 40% of companies that acknowledge the importance of ensuring a just low-carbon transition, and have explicitly committed to it, none has formulated concrete objectives.
- **Existing just transition frameworks or definitions** are referred to by 45% of the analysed companies, especially the principles and indicators set out in the Paris Agreement and the ILO's Just Transition Guidelines. Only one company established a governance framework to oversee and enact the transition plan, with a specific system to manage and review the transition plan's ESG elements, including the just aspect.

Key points for G20 Sustainable Finance Working Group discussions:

1. Foster international coordination on the definition of credible and Paris-aligned transition plan components. The largest steel and cement companies operating globally acknowledge the need to transition and have developed transition plans. The next step in the process is to encourage accelerated implementation and action, including by providing clear guidance on what 'good looks like'.

2. Develop sector-specific policy guidance and criteria regarding crucial transition plan elements and their credibility, providing detailed information to companies. Steel and cement companies have made significant progress in setting ambitious targets and action plans, especially when encouraged and guided by policymakers. Indeed, almost all assessed companies setting aligned or aligning targets and action plans are based in a jurisdiction that has implemented or is considering transition plan legislation.

3. Engage with steel and cement companies to assess transition impacts and risks, disclosing how these are considered when developing and delivering on transition plan objectives, and encouraging them to link their plans and bond frameworks to facilitate private capital flows.

Key points for G20 Sustainable Finance Working Group discussions:

1. Prioritise international collaboration on defining core elements of a just transition for steel and cement, aligning with existing internationally recognised definitions. Companies within these sectors are subject to different legislative frameworks and would benefit from increased coordination among major countries.

2. Provide guidance on just transition challenges and opportunities in these sectors, promoting best practices and recognising that companies are at an early stage of addressing just transition issues.

3. Engage with steel and cement companies to assess their industry-specific needs and peculiarities, given that sectoral- and entity-level studies and best practices are still limited.

Box 1. Transition of the steel and cement sectors is crucial for emerging market economies

Demand for both steel and cement is expected to have risen by 30% and 45%, respectively, by 2050, led by emerging markets (EM).[4] There are, however, large regional variations within this increase, such that the steepest increases are expected to occur in India, Latin America, and Africa. This is mostly due to population growth, urbanisation, and infrastructure development.[5] In addition to this, steel and cement production facilities are already highly concentrated in these regions, with over half of the world's steel and cement currently produced in China, followed by India with over 7%.[6] These industries inevitably represent a very large share of these economies.

This decade is crucial to the steel and cement sectors transition, EM can play a crucial global role, engaging in a just transition that contributes to their prosperity. In the steel and cement sectors, asset lifetimes often exceed 40 years so the investment choices made today will create long-lasting path dependencies, well beyond 2050 or even 2060, with the potential to create future stranded assets.[7] Globally, over 70% (1091 Mt/yr) of coal-based blast furnace capacity will need reinvestment by 2030, and the majority of this will take place in EM.[8] This crucial point in the capital expenditure cycle, and the scale of the reinvestment need, offer a significant opportunity to switch to lower-intensity production methods this decade. However, international coordination and support will be needed to promote a just transition that ensures social buy-in and economic prosperity in EM.

Steel and cement are capital-intensive industries so ensuring credible financing will be critical to their transition, adding to the transition challenges for EM. The difficulties of raising funding for the EM net-zero transition are well documented.[9] This includes the cost of capital: a reduction of 1% could save EM USD150bn per year.[10] **Credible transition plans** provide an important tool for steel and cement companies to align their business strategies with the objectives of the Paris Agreement. Furthermore, they allow access to finance through credible SLB issuance. This promotes transparency and the credibility of EM investment projects, which contribute to reduced risk perception by investors.

Debt market-based financing by companies located in EM is increasing, even if the share of SLBs originating from EM reached only 33% of the volume and 48% of total SLBs in 2023, which was the highest level since 2019.[11]

1. Introduction

Climate change is a global emergency that goes beyond national borders and requires international cooperation. The 2015 Paris Agreement, adopted by 195 members of the United Nations Framework Convention on Climate Change (UNFCCC), aims to limit the increase in global average temperature to 1.5°C above pre-industrial levels. Reducing greenhouse gases (GHG) can mitigate climate change and deliver immediate benefits such as cleaner air, reduced costs, good quality jobs, and greater food and energy security. As of November 2023, 145 countries had declared or considered net-zero emissions targets, accounting for approximately 90% of global emissions.[12]

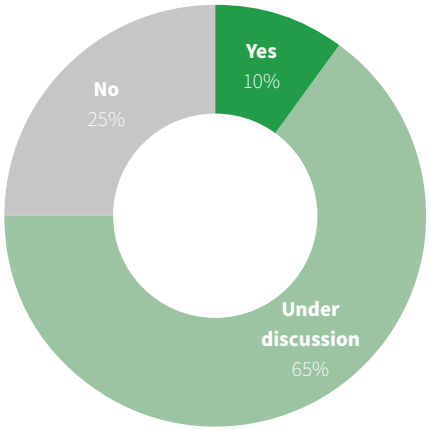
At an entity level, transition plans are key to a credible and Paris-aligned decarbonisation process; to enable capital market actors to identify and direct finance to credible investments that will drive the global transition to net zero. This is dependent on implementing, monitoring, and updating robust and ambitious transition plans.

Legislation on transition plans is already in place in several jurisdictions with 15 G20 countries either having adopted or considering legislation on transition plans or their disclosure, or both (see Figure 4).

Emissions from steel and cement industries continue to rise, which makes this the decisive decade for their transition, as a confluence of factors could stimulate change at pace. Total emissions from the steel industry are still rising despite pledges and actions, so that the current decarbonisation progress is falling behind the Paris Agreement goals.[13] However, over 70% (1091 Mt/yr) of global coal-based blast furnace (BF) capacity will need reinvestment by 2030, which presents a significant opportunity to switch to lower-intensity production methods this decade.[14] Meeting new steel and cement demand with fossil-based facilities would likely result in long-term carbon lock-in and stranded assets (due to their long life cycle), threatening jobs, and putting the Paris-aligned pathway out of reach.[15] Steel and cement asset lifetimes often exceed 40 years so the investment choices will create long-lasting path dependencies. By investing in technologies consistent with a net-zero scenario, steel and cement companies can avoid stranded assets and the risk of significant economic losses.[16]

Financial support is one of the main barriers to the transformation of these capital-intensive industries. An estimated USD47bn annually is needed to meet growing steel demand by 2050 while maintaining existing facilities, therefore, innovative low-carbon technologies need to be developed and promoted to transform production processes. Moreover, an additional USD8–11bn per year will have to be invested to transition the steel sector to net zero.[17] This does not take account of the decarbonisation requirements of the cement sector, for which approximately USD750–900bn in capex is required by 2050.[18]

Figure 4. G20 legislation on transition plans or their disclosure



Source: CBI research

Sustainable finance markets can absorb a significant portion of the investment needed to accelerate the timescale. Labelled debt (green, social, sustainable, sustainability-linked, and transition (GSS+) bonds) that facilitate investment in Paris-aligned projects have become a major global market, such that by the end of 2023, Climate Bonds had recorded USD5.5tn of cumulative GSS+ volume.[19] Climate transition finance also allows corporates to better manage the risks related to regulatory changes and divestments while allowing them to seize new opportunities and market trends. This is particularly important for corporates active in the hard-to-abate sectors such as heavy industry, agriculture, or energy that generate the greatest emissions and will require substantial investment to upgrade their technology and infrastructure.[20]

This paper aims to provide an overview of the steel and cement sectors, highlight their important role in the net-zero transition, and analyse corporate commitments to decarbonisation by assessing their transition plans. It follows Climate Bonds' policy guidance on the transition of the steel and cement sectors.[21] These policies are complemented by the Climate Bonds sustainable finance Criteria for the two sectors, updated in 2023.[22]

Chapter 2 focuses on the transition finance requirements of the steel and cement sectors and outlines how transition plans can help companies raise sustainable finance.

Chapters 3 and 4 analyse steel and cement corporate transition plans and any just transition aspects, respectively, against Climate Bonds frameworks and indicators.

Overview of the steel and cement sectors

Steel and cement are the two largest industrial emitters globally, yet their respective sources of emissions are inherently different. Transition in steel and cement is vital as global steel and cement are the two largest industrial emitters with over 7% and 6% of global CO_2 emissions, respectively, in 2022.[23] Steel and cement production is also highly concentrated geographically, as over half of the world's steel and cement is currently produced in China.[24] Other large producing countries include India, the EU, Japan, and the USA.

Most emissions from steelmaking come from its high reliance on coal use for the production process, although proven methods exist to reduce emissions. Steelmaking can be classed as primary (making new steel from iron ore) or secondary (using mainly recycled steel), see Figures 5 and 6 in Box 2.[25] Global production is dominated by primary steel and the Blast Furnace–Basic Oxygen Furnace (BF-BOF), which constitutes more than 70% of annual crude steel production and is where most emissions in the sector occur, due to its high reliance on coal. Where steelmaking is made using secondary sources, this is done by directly melting recycled steel scrap in an electric arc furnace (EAF), a well-tested and significantly lower-emissions production process. Indeed, the average blast furnace emissions intensity amounts to 2.3 tons of CO_2 per ton of crude steel produced, whilst EAF intensity is three times lower, 0.7 tons of CO_2.[26]

List of acronyms

BF-BOF: Blast furnace–basic oxygen furnace
CCUS: Carbon capture, utilisation, and storage
EAF: Electric arc furnace
EM: Emerging markets
ESG: Environmental, social, and governance
GHG: Greenhouse gases
GSS: Green, social and sustainability
GSS+: GSS, SLB, and transition
IPCC: Intergovernmental Panel on Climate Change
KPI: Key performance indicator
SLB: Sustainability-linked bond
SLD: Sustainability-linked debt
SPT: Sustainability performance target
UNFCCC: United Nations Framework Convention on Climate Change
UoP: Use of Proceeds

Box 2. Steel and cement production process differences

There are two main ways of producing steel, using either primary or secondary sources. Iron ore and recycled steel scrap are the main inputs in steelmaking. Globally, scrap-based production accounts for around 30% of the total metallic input to steel production, with iron ore making up the rest.[29] Other than being a crucial component in an EAF, scrap is also employed at a rate of 15-20% with ore-based inputs in the BF-BOF production, improving the energy efficiency of this technology.[30]

BF-BOF constitutes more than 70% of annual crude steel production with emissions intensity of 2.3 tons CO_2 per ton of crude steel produced, whilst EAF intensity is 0.7 tons of CO_2 per ton of crude steel.[31] Increasing the use of renewable electricity in EAF production can further reduce the carbon intensity of the steelmaking process. However, such an increase would depend on supplies of scrap steel, renewable electricity, and EAF available capacity.

The cement-making process also consists of several steps. Emissions mainly occur in the kiln and preheater/precalcinator.[32] These emissions are linked to the current production process and can be broadly separated into combustion and non-combustion emissions.[33]

Globally, non-combustion emissions (calcination process) account for around 60% of the direct emissions in the production process. They do not result from fuel combustion but from chemical reactions in the clinker calcination process.[34] These emissions cannot be reduced by substituting fuels.

Figure 5. Blast furnace steelmaking

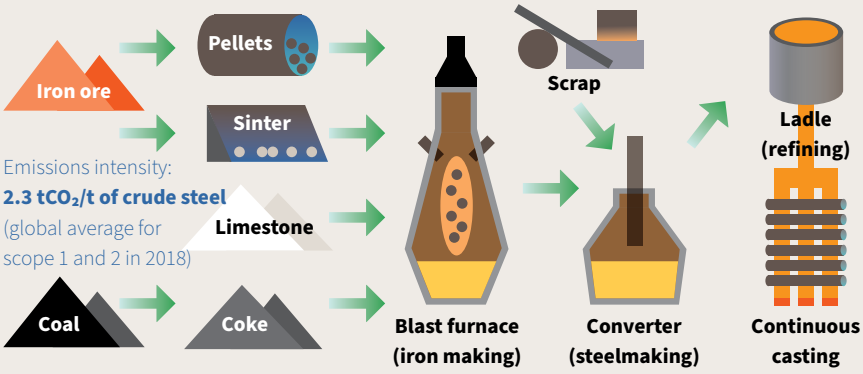
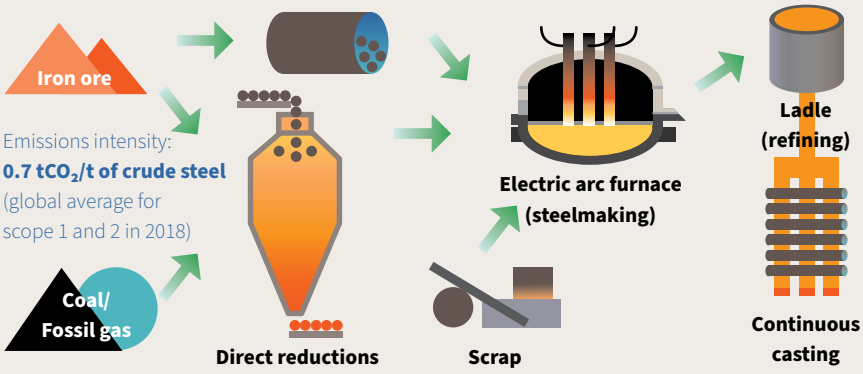


Figure 6. Electric arc furnace steelmaking



Most of the remaining CO_2 emissions are fuel combustion emissions (about 30%). Fossil fuels (predominantly coal), biomass or alternative fossil and mixed wastes are burnt to reach high temperatures to make clinker – the main constituent of cement – in a kiln at around 1450°C.

Figure 7. Cement making process

	Quarry	Crusher	Transport	Raw mill	Kiln and preheater/ precalcinator		Cooler	Cement mill	Logistics	**Total**
Energy, mega-joule/ton	40	5	40	100		3150	160	285	115	**3895**
CO_2 emissions, kilogram/ton	3	1	7	17	479 Calcination process	319 Fossil fuel combustion	28	49	22	**925**

Source: https://www.mckinsey.com/industries/chemicals/our-insights/laying-the-foundation-for-zero-carbon-cement#cement

Most emissions from cement production occur as a result of chemical reactions, not fuel combustion, so fuel substitution cannot fully address the issue. Emissions resulting from the cement production process are inherently different from steelmaking, see Box 2, Over 80% of emissions occur in the kiln and preheater and precalcinator, (see the orange box in Figure 7), and can be divided into combustion and non-combustion emissions.[27] Non-combustion emissions account for around 60% of the direct emissions and do not result from fuel combustion but from chemical reactions in the clinker calcination process, meaning they cannot be reduced by substituting fuels.[28] Most of the remaining 30% are fuel combustion emissions, caused by fossil fuel use.

Sector-specific pathways are critical for evaluation

In the absence of agreement between governments and industry players, the diverse range of existing climate and emissions-reduction targets within the industry may not be consistent with a 1.5°C future. Beyond the climate risks, this also creates financial risks, chiefly in allowing for investments in projects that extend the life of high-emitting assets, which might then become stranded.

Voluntary science-based guidance on decarbonisation pathways for steel and cement presents some variance but is an important indicator of credible emissions reduction trajectories and permits some interoperability. These pathways are key to decarbonisation, as they are important indicators of what a credible emission reduction trajectory looks like over time, as well as the significance of different low-carbon technologies. This supports business planning and provides information to investors and policymakers. Decarbonisation pathways for steel and cement have been developed by organisations such as the Transition Pathway Initiative, Rocky Mountain Institute, Science Based Target initiative, and ResponsibleSteel (RS) as well as by Climate Bonds, which has developed science-based guidance at the individual sector level (for both steel and cement). This can assist stakeholders in identifying companies, assets, and projects following 1.5°C-aligned pathways and support informed investment decisions. Pathways developed by different organisations differ, as they are based on a wide range of scenarios: they consider different types and shares of technologies, time profiles, scopes of emissions, and have distinct approaches to other crucial aspects such as mitigation. However, some interoperability is also possible, for example between the Climate Bonds Steel Criteria and the Responsible Steel Standard, which are otherwise not equivalent.[35]

Box 3. Iron vs steel and cement vs concrete

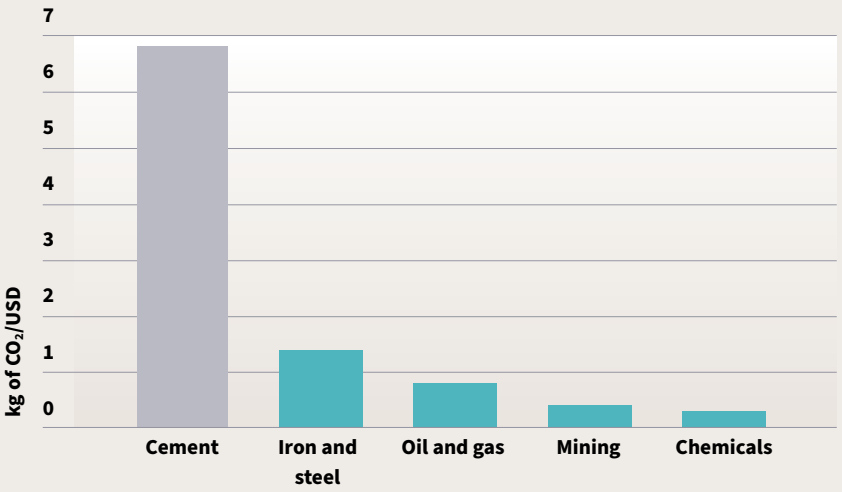
Iron is made by removing oxygen and other impurities from iron ore, while steel is an alloy of iron and carbon, combined with recycled steel and other elements.[38]

Even though the terms cement and concrete are often used interchangeably, they are two different materials. Cement is a fine powder and a key ingredient in concrete production.[39]

Concrete, a mixture of cement, water, and aggregates (both coarse and fine), is the second most-used substance in the world after water.

Globally, cement also releases the most emissions per dollar of revenue, around 6.9 kg of CO_2/USD, much higher than iron and steel (1.4 kg), and chemicals (0.3 kg), see Figure 8.[40]

Figure 8. Emissions per dollar of revenue in selected sectors (kg of CO_2/USD)



Source: https://www.mckinsey.com/industries/chemicals/our-insights/laying-the-foundation-for-zero-carbon-cement

Box 4. Standard and Criteria for evaluation

Ensuring funding flows to net-zero-aligned projects is pivotal to decarbonising steel and cement.[36] The Climate Bonds Standard and Certification Scheme is a screening tool that provides investors and intermediaries with a clear signal on the climate integrity of Certified Climate Bonds, which also contain cross-cutting criteria. These Criteria address additional consequences by establishing qualitative measurements such as particular standards for the use of biomass or hydrogen as a fuel, waste-derived fuels, and CCS technologies, as well as requirements for adaptation and resilience.

In April 2023, the Standards and Certification Scheme was expanded to allow for the Certification of non-financial corporates, assets, and sustainability-linked instruments. The steel and cement sector Criteria also include a pathway that can enable Certification of an entity and any debt instruments issued by them including sustainability-linked bonds (SLBs).[37]

For the purpose of this paper, Climate Bonds' science-based Sector Criteria are used throughout the analysis. These Criteria are designed for binary certification of capital investments, facilities, and whole entities, and focus on setting CO_2 emissions thresholds, aligned with a 1.5°C decarbonisation pathway, that need to be met at the facility or entity level, see Box 4.

2. Transition plans and transition financing

The scale and investment required to transition the steel and cement sectors cannot be achieved without significant private sector finance, in addition to urgent public funding required to support innovative and low-carbon technologies. USD55–58bn annually is needed to transition the steel sector to net zero, while USD700–900bn in capex is required by 2050 to decarbonise the cement sector.[41,42] Although steel and cement companies can utilise various types of financial instruments, such as equity, loans, and guarantees, this chapter focuses on climate transition finance, which earmarks funds for the dynamic process of decarbonising an entity, using the rapidly growing labelled debt market (GSS+ bonds).[43]

Sustainable debt markets are a critical source of financing and and USD9.2bn of GSS+ bonds have been issued in the steel and cement sectors, respectively, as of June 2024. By the end of 2023, a total of USD5.5tn of cumulative GSS+ volume was recorded, of which USD4.4tn (about 80%) was aligned with Climate Bonds' methodology, demonstrating that most issuances show sufficient ambition and transparency. [44] Appetite for labelled debt remains strong, with green bonds seeing higher oversubscription rates than unlabelled or vanilla debt since 2018.

However, the potential of GSS+ issuances remains to be fully exploited as they represent only 7.2% and 11.8% of all issuances in the steel and cement sectors, respectively. This compares, for example, with GSS+ bonds representing 20% of all issuances by electrical utility companies since 2019. Electrical utilities have also raised more GSS+ bonds than steel and cement companies in absolute terms (see Figure 11). A key difference is that sectors for which detailed guidance, standards and criteria, including sector-specific pathways, have been developed tend to attract more labelled investment. Detailed guidance was produced much earlier for key renewable energy sectors, such as solar and wind from 2014–2016, while for steel and cement, tools and guidance have been developed and published over the past few years, starting with the 2020 International Energy Agency roadmap and those of other organisations mentioned in the previous chapter.[45]

Credible transition plans are critical to credible SLBs, thereby facilitating the financing of the transition in the steel and cement sectors (see Figure 10). In the steel sector, 100% of SLBs that meet the SLB database methodology criteria were issued by steel companies which also published a transition plan that included a) an action plan, b) financing plans, and c) governance mechanisms (see Box 6). All steel SLBs that

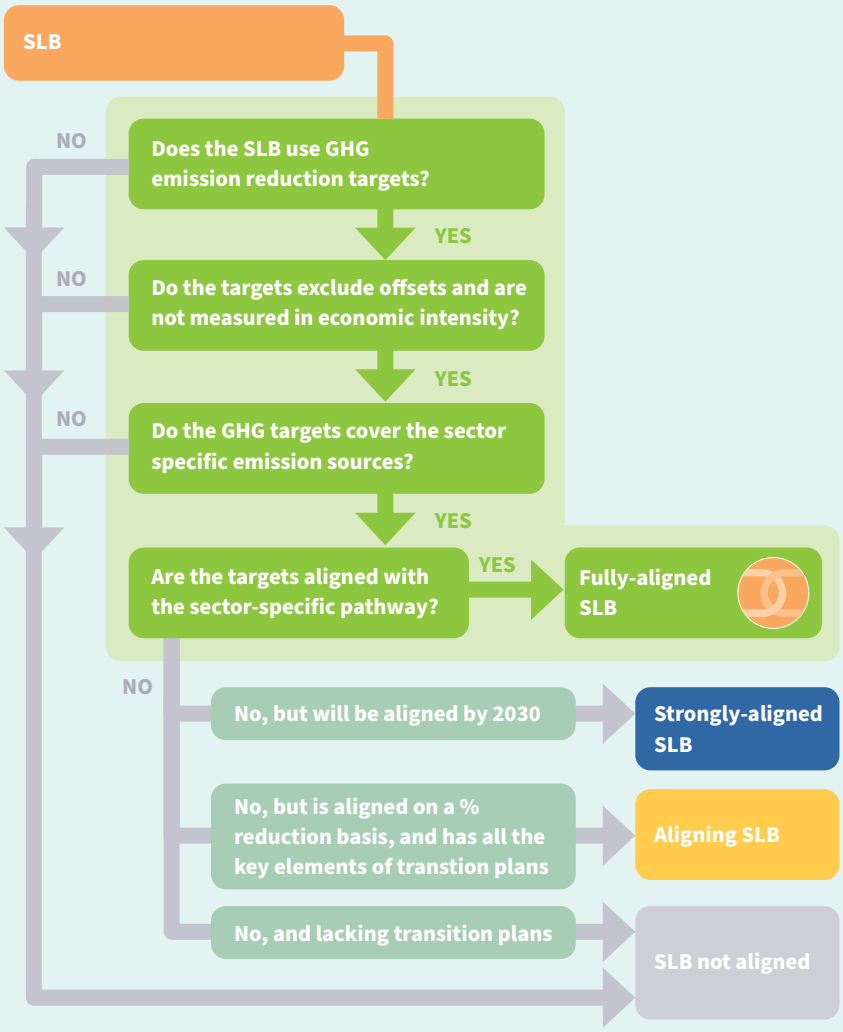
Box 5. Debt instruments to finance the transition and their credibility

Bonds can be used by corporates to finance their climate transition either as Use of Proceeds (UoP) bonds or key performance indicator (KPI)-linked general purpose bonds:

- **UoP bonds,** such as green or sustainability bonds, fund projects with specific and dedicated environmental and/or social benefits. Adherence to standards and predetermined UoP categories is essential to defining and disclosing their impact.
- **KPI-linked bonds,** such as sustainability-linked bonds (SLBs), are used for an issuer's general-purpose financing but are linked to ambitious, realistic, and explicit sustainability targets at the corporate level. They involve penalties or rewards linked to not meeting or meeting pre-defined and time-bound sustainability performance targets (SPTs) for each of its predetermined KPIs, in the form of a coupon step-up or step-down.

Climate Bonds screens self-labelled debt instruments for inclusion in its databases, one of which contains SLBs.[47] The eligibility criteria are based on the relevant parts of the Five Hallmarks for Credibly Transitioning Companies.[48] Specifically, it uses Hallmarks 1 and 5 to develop instrument-level assessment criteria. Hallmarks 2, 3, and 4 are also screened to track the development of entity-level transition plans that underpin the targets. Climate Bonds' SLB Database tracks whether companies issuing SLBs have developed the main elements of a transition plan, including a) action plan, b) financing plan, and c) governance mechanism. The process is summarised in Figure 9.[49]

Figure 9. Climate Bonds sustainability-linked bond database methodology overview

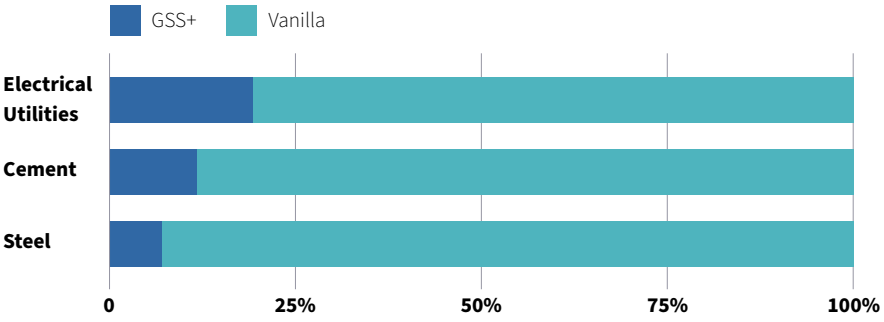


do not meet the methodology criteria were issued by companies that have not published a transition plan. Similarly, in the cement sector, over 80% of SLBs issued by companies that published transition plans with the three key elements listed above are aligned with the methodology. Around 40% of cement SLBs that do not meet the methodology criteria were issued by companies whose transition plans did not align with the methodology.

In addition, current credibility issues with SLBs, which are inherently transition-focused financing instruments, are constraining opportunities to finance the transition in the steel and cement sectors. SLBs have forward-looking KPIs, which represent an opportunity for entities to link their net-zero targets, and performance, with access to sustainable finance. However, many early examples of SLBs and transition bonds did not have material or ambitious targets, leading to greenwashing concerns, such that as of 2023, only 17% of the SLBs by amount issued were aligned with the Climate Bonds methodology. However, the proportion is growing, at 35% by amount issued in 2023.[46] As the market is still nascent, a relatively low share of alignment is expected but should increase as the market develops. Related concerns also exist, for example, about the relevance and reliability of targets set by the issuing entity, which are, therefore, difficult to benchmark against peers or wider goals such as the Paris Agreement targets.

Figure 10. How credible transition planning supports credible sustainability-linked bond issuance

Figure 11. Share of GSS+ debt in electrical utilities, cement, and steel, 2019–H1 2024



Source: CBI database

Box 6. Case study of a credible cement SLB:

Example of a leading manufacturer of building materials. In 2022, the company reported GHG emissions of 130 Mt CO_2e, of which 60% were scope 1 emissions, 4% were scope 2, and 36% were scope 3. As of November 2023, the company had issued seven SLBs, the GHG KPIs of which only cover scope 1 emissions.

The company's SLBs are assessed against the SLB database methodology as aligning (i.e., not fully aligned) because while they miss the Climate Bonds cement pathways of 539 kg CO_2/t cementitious by 2025 and 463 kg CO_2/t by 2030, the targets still meet the rate of reduction required by the pathway, meaning they meet the speed of decarbonisation required. Additionally, a robust transition plan and targets are in place (described below).

The company's scope 1 and 2 emission intensity reduction targets of 22.4% by 2030 and 95% by 2050, compared to 2018, are SBTi 1.5°C validated. The scope 3 targets of 90% emissions reduction by 2050 and discrete medium-term targets for various scope 3 categories are all consistent with well below 2°C scenarios. While the alignment and breadth of targets is to be commended, the company should continue to front-load its emission reduction to the short and medium term.

The company's decarbonisation strategy for scopes 1 and 2 is well defined: the contribution of key levers, such as energy and design efficiency, clinker reduction, and energy decarbonisation is quantified. For scope 3, the company anticipates the use of downstream transport decarbonisation and supply chain engagement to reach its targets.

Overall, credible governance structures underpin the company's comprehensive transition plan, where climate-related performance and strategy is subject to direct board oversight, executive committee accountability, and is tied to senior management compensation.

The financial commitment towards transition and sector-specific levers, particularly the decarbonisation of its asset base through lower-emission cement, is notable.

Amount issued: USD147.5m	
Issue date: 19 May 2022	**Maturity Date**: 5 April 2029
Financial mechanism type Step-up. FM Amount: 0.35	
Key performance indicators: GHG Emission Intensity (Scope 1), Water Usage Intensity	
Sustainability performance target: 520 kg CO_2/t cementitious material by 2025, Reduction of 25% vs 2018 by 2025	
Assessment: Aligning	

3. Analysis of transition plans and key findings

For this analysis, transition plans developed and published by 20 companies in the steel and cement sectors were assessed against Climate Bonds' five hallmarks for transition plans, see Annex 1 for more details.[50] The 10 steel and 10 cement companies were selected based on:

1. geographic diversity: all continents are represented in the sample, except for Australia, and

2. size and coverage of market shares: the sample of steel and cement companies represents more than 40% and 20% of the global market share, respectively.[51]

The outcome of the analysis is a classification of transition plans in the following categories: aligned, aligning, and not aligned.

Performance targets are considered:

- **Aligned**; in line with the pathway or if they will be by 2030.
- **Aligning**; not in line due to a high baseline, but the % reduction aligns with the sectoral pathway.
- **Not aligned**; not aligned whatsoever or lack of appropriate targets.

The action plan is considered:

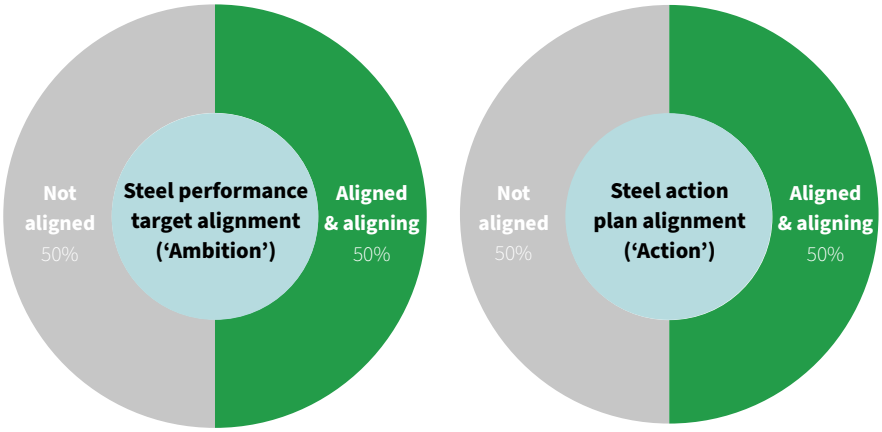
- **Aligned**; all technologies, assets, and levers identified in the plan are aligned with the Sector Criteria.
- **Aligning**; >50% of technologies, assets and levers are aligned with the Sector Criteria.
- **Not aligned**; most technologies, assets and levers are not aligned with the Sector Criteria.

Key findings

Of the 20 companies, 18 were found to have published a transition plan or included components in their annual reporting publications. There are common strengths and weaknesses across the reviewed plans, especially regarding the Ambition and Action elements of the Triple A framework.

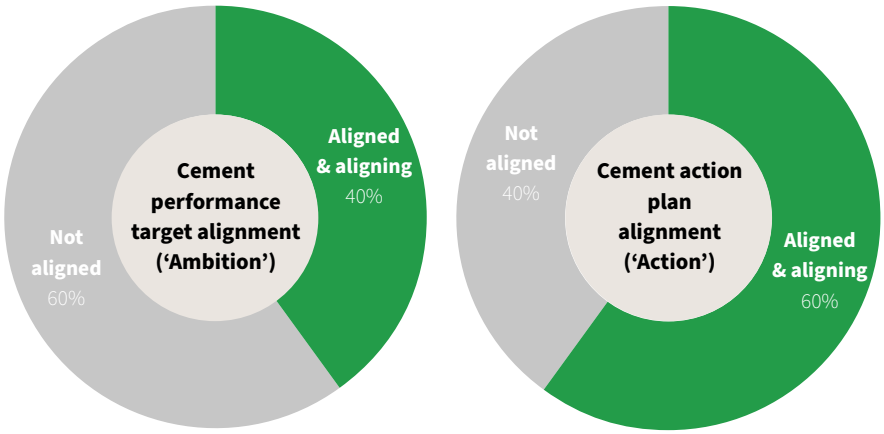
- Half of the ten steel companies were found to have set both targets and action plans aligned or aligning with the five hallmarks methodology, see Figure 12.
- Of the 10 cement companies, 40% had set targets aligned or aligning with the five hallmarks methodology, and 60% had also developed an action plan aligned or aligning with it. Hence, most companies have set credible and robust plans, but not targets, see Figure 13.
- The vast majority, 90%, of steel and cement companies that published a transition plan also disclosed the decarbonisation technologies and assets they plan on utilising as part of their decarbonisation strategies.
- Governance structures and mechanisms have been well documented and disclosed for most companies, with clear board oversight of their decarbonisation strategy. Oversight of transition-related aspects by additional committees or subcommittees is also becoming standard practice.
- However, there is a lack of consistency or disclosure on the financing alignment with transition plan objectives. Some entities, especially those subject to EU Taxonomy capex reporting, have begun to disclose capital allocations for their decarbonisation. Outside of the EU, disclosure ranges from an overall estimate of financing needed to achieve net zero by 2050, to detailed three-year budgets and breakdowns.
- There is limited assurance in emissions data verification, reinforcing the need for greater transparency, consistency, and reliability of data monitoring and disclosures. Companies take data from a variety of sources when calculating emissions footprints, sometimes relying on secondary data obtained from average or estimated levels, or calculated by third parties.[52]
- Finally, with the exception of two companies, all companies whose performance targets and action plans were found to be aligned or aligning with the methodology are based in jurisdictions which have implemented or are considering implementing transition plan legislation, see Figure 4.

Figure 12. Steel company transition plan alignment with Climate Bonds methodology



Source: CBI research

Figure 13. Cement company transition plan alignment with Climate Bonds methodology



Source: CBI research

Box 7. Transition plan case study alignment with Climate Bonds methodology

The company analysed in this case study is one of the largest steel producers, which derives the majority of its revenues from its steelmaking and manufacturing business. This transition plan provides interesting examples of how companies are making progress, setting mid-term targets with comprehensive plans, and disclosing their low-carbon investments.

Hallmark 1: Paris-aligned targets

The company has mid-term targets for its scope 1 and 2 emissions. This supplements its 2050 target of reaching carbon neutrality. Assessing its mid-term targets on an annual percentage reduction basis, they only slightly fall short of Climate Bonds' sectoral pathway -4.8% annual reduction by 2030.

Hallmark 2: Robust plans

The company has a comprehensive transition plan, within which it details the assets and technologies it seeks to maintain, adapt, and develop to reach its target of carbon neutrality. It has identified the key sources of emissions in the steelmaking process, as well as the technologies it can utilise to tackle these. Furthermore, it has identified the challenges and collaboration required to implement its transition plan.

Hallmark 3: Implementation action

Transition plans: *the company aims to utilise both electric arc furnaces, as well as an adaptation of its existing blast furnace technology, to help decarbonise a significant bulk of its emissions. To support both processes, it also plans to utilise 100% hydrogen-based direct reduction, increased scrap utilisation, low-carbon power generation, energy efficiency improvements, and* carbon capture, utilisation, and storage *(CCUS), to help fully decarbonise. All these processes are eligible under Climate Bonds Steel Criteria, pending them meeting the specific threshold requirements. Hence, alignment can only be checked on a case-specific basis.*

Financing plans: *the company has estimated the capex investment need to fully decarbonise, as well as a minimum investment in R&D. It currently tracks and discloses its environmental conservation capital and operating expenditure (including emission reduction, recycling, pollution prevention and R&D, among others). The company spent approximately 4% of its capex on its transition in 2021.*

Utilising the company's existing tracking of climate-related investments and expenditures to allocate the necessary capital for its decarbonisation from now to 2030 will help streamline and deliver capital to the appropriate business segments to holistically reduce its emission footprint and deliver on its targets. The company also issued green bonds, with the UoP considered 'Aligned' and hence included in the Climate Bonds Green Bond Database.

Hallmark 4: Governance

The company has an environmental management committee and green transformation promotion committee which are responsible for collating risks and opportunities, tracking and implementing progress against its transition plan, and coordinating the relevant internal and external teams. This committee then reports directly to the management committee and indirectly to the board of directors.

Hallmark 5: Disclosure

The company discloses relevant scope 1, 2, and 3 emissions data together with breakdowns by emission sources, as well as a variety of energy, waste, water, recycling, raw material, and other metrics. It has also received independent third-party limited assurance on all its emissions data, as well as a risk analysis of its steel electrical sheet plant.

4. Socio-economic impact of transition, analysis of just transition plans, and key findings

A just transition safeguards access to opportunities and prevents inequalities from arising in the transition to net zero. Ensuring a just transition can lead to a smoother transition as it minimises possible social and political disruption and contributes to social buy-in. While a universally-agreed definition of a just transition does not currently exist, some commonly used guidance includes definitions by organisations such as the OECD and ILO. Likewise, no universally-agreed methodology to assess just transition plans currently exists.

Embedding just transition in transition plans ensures their comprehensiveness, preventing possible disruptions and optimising the transition pathway. A just transition should involve anticipating, assessing, and addressing the social risks of the transition, while identifying and enabling social opportunities.[53] Throughout this process, it should also ensure meaningful dialogue and participation in transition planning. Investing in a just transition would help the steel and cement industries to build a strong and resilient workforce; safeguarding and developing necessary skills for low-carbon and innovative processes, and workforce availability.

To analyse just transition plans, indicators were developed for the purpose of this paper, based on the five hallmarks, see Annex 1. The 20 companies assessed were the same as in the previous section. The just transition assessment was conducted separately, as currently no integrated evaluation framework exists, and the criteria used were developed for the purpose of this analysis.

Key findings

The steel and cement industries are in the very early stages of incorporating and addressing just transition risks and impacts into transition plans. Within the sample analysed, while some companies have shown progress, there is minimal coverage beyond narrative statements and recognition of the importance of ensuring that no one is left behind in the transition to net zero. Furthermore, the analysis of 20 steel and cement companies yields the following findings:

- Historically, just transition has mostly been analysed from a global or regional point of view.[54] With the exception of a few sector-specific initiatives, such as the coal phase-out and some initial focus on the transition implications on the transport industry, sectoral analysis of a just transition and whether its elements are embedded in individual company transition plans has been very limited.
- Many countries have committed to phasing out coal use, which carries a potentially significant socio-economic impact that should be implemented under the framework of a just transition. Best practice highlights how multi-stakeholder commissions and committees established at national level ensure political support and buy-in, paving the way to an accelerated net-zero transition. This example can be replicated in the steel and cement sectors.
- Of the 20 companies assessed, 40% acknowledge the importance of ensuring that their transition to net zero is just, to which they have explicitly committed (indicators 1a, 1b). While companies may be referencing the just transition, they are yet to formulate it in concrete terms, with objectives, and a plan to achieve it.
- Of the 20 companies, 45% refer to existing just transition definitions or frameworks, of which those most often referred to are a) the principles and indicators set out in the Paris Agreement, and b) the International Labour Organisation Just Transition Guidelines.[55]
- Interestingly, while 25% of the sample have also assessed some business socio-economic impacts and risks of the transition to net zero on external stakeholders (indicator 2a.2), only 15% have assessed how the transition might impact their internal operations and staff (indicator 2a.1). This could be due to heightened sensitivities in publicly disclosing information about impacts on their own workforce.
- Only one company in the sample had established a governance framework to oversee and enact the transition plan, with a specific system to manage and review the transition plan's ESG elements, including the just aspect (indicator 2c).
- None of the 20 companies addresses the remaining just transition elements included in the table (indicators 3, 4, and 5). This further reflects the fact that companies are generally at an earlier stage of considering how to manage and implement the just transition than the climate transition.

Box 8. Case study on just aspects included in a steel company's transition plan

The company analysed in this case study is a large steel producer, which developed a detailed transition plan including some just transition elements.

Hallmark 1: Paris-aligned targets

Not only has the company made an explicit reference to just transition, but it expressly committed to making sure its low-carbon transition is just. Additionally, its definition of just transition is built on specific legislation and international guidance, including principles and indicators set out in the Paris Agreement and the International Labour Organisation's Just Transition Guidelines.

Hallmark 2: Robust plans

The company carried out an assessment of socio-economic impacts and risks of the transition on its operations, through engagement with local communities. The company established specific committees and working groups to tackle all sustainability aspects of the low-carbon transition and its internal and external impacts. This effort was also driven by the increasingly stringent legislation.

Hallmark 3: Implementation action
Hallmark 4: Governance
Hallmark 5: Disclosure

The company did not address the remaining just transition indicators, referring to hallmarks 3, 4, and 5, respectively.

Annex 1. Methodology framework and indicators for transition plans and just transition assessment

Five hallmarks for transition

Each company's transition plan was assessed against the hallmarks for transition plans, which in turn are captured in the 'Triple A' framework of ambition, action, and accountability. These are designed to ensure the transition is science-led and ambitious, and will reduce overall emissions by excluding the use of offsets.[56]

Table 1. Climate Bonds five hallmarks for transition plans

	Summary five hallmarks
1. Performance targets **Paris-aligned targets**	a. Select sector-specific transition pathway aligned with Paris Agreement goals b. Set company specific KPIs that align as early as possible with that pathway c. Science-based, address scope 1, 2 and 3 emissions, short-, medium-, and long-term targets
2. Robust plans	a. Set the strategy and plan to deliver on those KPIs b. Prepare associated financing plan detailed cost estimates and expected sources of funding c. Put in place necessary governance frameworks to enact change
3. Implementation action	a. Capex and opex alignment b. Other actions detailed in the strategy
4. Internal monitoring	a. Ongoing re-evaluation and recalibration of headline performance targets b. Tracking performance against selected performance targets
5. External reporting	a. External reporting b. Independent verification

Just transition indicators

The indicators apply a just transition lens to each hallmark and associated questions while recognising the core differences between a climate transition and a just transition. While the just transition indicators do not neatly map onto the five hallmarks, they aim to be as aligned as possible.

The just transition indicators focus on the planning process, rather than implementation, recognising that most companies are still on a journey regarding a just transition. As such, there is a lack of data and reporting on just transition plan implementation. The specifics of the indicators (worker impact assessment, engagement with local communities and other stakeholders) are also informed by Climate Bonds' collaboration with the Just Transition Finance Lab at the London School of Economics (LSE) and LSE's own research.[57,58]

Table 2. Indicators to assess a just transition plan based on the five hallmarks

	Just transition indicators
1. Performance targets **Paris-aligned targets**	a. Does the company make reference to just transition (in transition plan or elsewhere)? b. Does the company have an explicit commitment to just transition? c. Does the company use an international and/or national definition for just transition, or objectives?
2. Robust plans	a. Is there an assessment of socio-economic impact and risks (both internally e.g., worker impact assessment, and externally e.g., engagement with local communities and other stakeholders? b. Does the company have a just transition plan to mitigate socio-economic impacts? c. Is there a governance framework in place to oversee and enact the just transition plan?
3. Implementation action	a. Are there detailed milestones for defined periods (e.g., annually), and a clear execution plan? Where relevant, are capex and/or opex aligned? b. Is the plan already in place and have steps already been taken?
4. Internal monitoring	a. Is there a defined and regular (e.g., annual) internal process for evaluation, monitoring, and feedback?
5. External reporting	a. Is there external disclosure of the just transition plan? b. Are just transition plans subject to independent verification?

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Acknowledgements/reviewers: Neha Kumar, Sarah Colenbrander (ODI)

Editorial support: Stephanie Edghill

Design: Godfrey Design, Joel Milstead

Prepared by Climate Bonds Initiative.

India Initiative on Climate Risks and Sustainable Finance (IICRSF) (IICRSF) led by **Climate Bonds Initiative** with its partners **ODI** and **auctusESG** is a collaborative endeavour with the overarching purpose of supporting the efforts of financial regulators and policymakers at navigating the imminent transition; and simultaneously preparing and engaging with banks, DFIs, and businesses on disclosures, transition plans, and finance to build the required narrative and consensus, with the tools required to augment financial flows from domestic and international sources.