Steel decarbonisation policy mapping

Climate Club 2024 Work Programme: Pillar 2, Module 3
Toolkit for industry transition and assembling targeted support policies

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Acronyms

Abbreviation	Full Name
BOF	Basic Oxygen Furnace
CBAM	Carbon Border Adjustment Mechanism
CCUS	Carbon Capture Utilisation and Storage
DRI	Direct Reduced Iron
EAF	Electric Arc Furnace
EMDE	Emerging Market and Developing Economy
ETS	Emissions Trading Scheme
EU	European Union
GHG	Greenhouse Gas
GPP	Green Public Procurement
GWP	Global Warming Potential
H_2DRI	Hydrogen Direct Reduced Ironmaking
HE	Horizon Europe
IEA	International Energy Agency
IFI	International Finance Institution
IOE	Iron Oxide Electrolysis
IRA	Inflation Reduction Act
NDC	Nationally Determined Contribution
OECD	Organisation for Economic Co-operation and Development
TRL	Technology Readiness Level

Executive Summary

The decarbonisation challenge of the steel industry is immense: the sector accounts for 8% of total energy-related carbon dioxide (CO_2) emissions, is a strategically important industry in many economies, and sits at the top of innumerable key supply chains. The objectives of the Paris Agreement cannot be met without a deep decarbonisation of the steel sector globally and rapidly. For this reason, policy efforts need to step up significantly for the steel sector to align with net-zero emission pathways, both by fostering low-emissions production and reducing high-emission production capacity.

The severity and types of barriers faced by the steel industry in decarbonising may vary depending on the country or company circumstances, but there are common themes across the largest steel producers. Firstly, countries need to significantly scale-up the investment and deployment of low-carbon technology, with most of the key technologies currently at demonstration phase or early commercialisation. These technologies are usually capital-intensive, and investment risks are high. Emerging markets and developing economies (EMDE) typically have limited access to finance, and a lack of enabling conditions including an investment-friendly business environment (OECD, 2023). Additionally, fragmentation of policy efforts dampens clarity and confidence in markets.

The challenges faced by the sector mean that industry cannot accomplish the transition on its own: governments have a key role to play in implementing a range of supportive policies both on the supply and demand side (Table 1). Policy action so far in the steel sector has not been systematically mapped, which is the gap this report aims to fill. This mapping report aims to provide a snapshot of the current (as of January 2024) landscape of steel decarbonisation policies in 15 jurisdictions [1] covering around 88% of the total global crude steel production that amounted to 1.9 Gt in 2023.

The number of steel decarbonisation policies implemented by the 15 jurisdictions analysed in this study has significantly increased over the last decade. Policies are primarily non-binding, horizontal in scope, and operating on the supply-side— particularly providing financial support for low-carbon technologies, although wide variations exist across countries.

The review undertaken in this study of 232 policies in 15 jurisdictions point to the following main findings:

- **All of these major steel-producing economies have introduced steel decarbonisation policies, although to varying degrees.** Most of the steel decarbonisation policies currently in force were implemented around 2020 and 2021 (35%), which saw a particular jump in the number of industrial decarbonisation strategies and policy support for green hydrogen— a technology touted for its future use in low-carbon steelmaking.
- **There is a notable focus on implementing supply-side policies (78%), which focus on reducing emissions in the production of steel.** In some cases, this increase in lower-carbon steel production appears to be additive, increasing overall steel capacity, thus hindering decarbonisation efforts resulting from the reduction of carbon intensity of steel. Only a few jurisdictions have implemented demand-side policies to ensure a market for low-carbon steel through green public procurement programmes.

[1] The term 'jurisdiction' will be used in this report due to the inclusion of a supernational entity (EU) within this policing mapping exercise

- **The most common policy objective relates to the support of low-carbon technologies (33%), particularly at low levels of technological readiness such as in carbon capture utilisation and storage (CCUS) and hydrogen-based direct reduced ironmaking (H_2DRI).** Policies that aim primarily to support steel circularity are uncommon, and many take a broad or downstream approach as well as a more demand side focus.
- **Policies are overwhelmingly non-binding (48%), focusing on carrots and not sticks.** Governments are opting to incentivise and publicly finance the transition rather than achieve this through regulation and pricing. In the context of a policy environment that lacks sufficient impetus on creating strong demand-side signals to produce low-carbon steel, progress towards decarbonisation targets may be limited.
- **The most used policy instruments are the provision of public funding (34%) and non-binding targets (22%)** with regulations , standards/guidelines (15%), taxes (4%), and other instruments used to a lesser extent comparatively .
- **Jurisdictions are opting for a horizontal policy approach (63%), which targets multiple sectors, or the industry sector as a whole.** Policies are more likely to be steel-specific when they target challenges unique to this industry sector such as overcapacity of production.
- **The characteristics of the policy mix implemented by countries vary widely, for instance in their** steel-specificity (granularity), binding nature, objectives and the use of policy instruments to achieve these, evidencing the heterogeneity of steel-decarbonisation pathways.

This report looks at the number of policies in place and their characteristics. It does not attempt to evaluate or weigh policy mixes against each other, and it is acknowledged that the number of policies in place in a certain arena does not speak to their effectiveness.

The findings of the report will feed into Module 4 of the 2025-2026 Pork Programme of the Climate Club "Exploring collaborative demand- and supply-side measures". The mapping will provide a basis to update the policy toolkit and will serve as a key input to conduct the policy analysis and case studies. In addition, it will inform the content of the policy consultation and advice programme offered to Climate Club members.

Table 1 - Overview of key steel decarbonisation policies across the 15 jurisdictions

Country	National net zero target	Crude steel production by process % (2022)		Carbon pricing instrument in place	Industrial/steel decarbonisation strategy	Steel-specific circular economy strategy	Hydrogen strategy	CCUS strategy	Green public procurement guidelines
Global Average		BOF 71.5	EF 28.2						
Australia	2050	73.5	26.5	✓			✓	✓	✓
Brazil	2050	75.1	23.8		✓		✓		
Canada	2050	53.9	46.1	✓			✓	✓	✓
China	2060	90.5	9.5	Pilot ETSs in 8 provinces			✓		✓
EU27	2050	56.3	43.7	✓			✓		
France	2050	67.4	32.6	✓ (EU ETS)	✓		✓	✓	
Germany	2045	70.2	29.8	✓ (EU ETS)	✓		✓		
India	2070	45.8	54.2			✓	✓		
Indonesia	2060	70.1	29.9				✓		
Italy	2050	16.0	84.0	✓ (EU ETS)			✓		✓
Japan	2050	73.3	26.7	ETS forthcoming			✓		
Korea	2050	68.5	31.5	✓	✓		✓		
Türkiye	2053	28.5	71.5		Forthcoming		✓		
United Kingdom	2050	80.9	19.1	ETS	✓		✓		
United States	2050	31.0	69.0	ETSs in California and Washington	✓		✓	✓	✓

Notes: The global averages for blast furnace (BF) and electric furnace (EF) production exclude 0.4% of 'other processes' including open hearth furnace. Countries included in this average account for approximately 99.9% of world crude steel production in 2022 according to Worldsteel. The data comes from World Steel Dynamics (2023). ETSs were only included when applicable to heavy industry. The source of Indonesia's share of EF production is the 2023 Steel Statistical Yearbook. Some countries (e.g. Indonesia) may have policies and regulations that cover important aspects of CCUS but no official strategy.

The carbon pricing instruments listed in this table refer specifically to explicit mechanisms, including ETSs and carbon taxes. It is important to note that the presence of a carbon pricing instrument in this table does not consider variations in sectoral or emission coverage, the extent of free allowances, or differences in carbon prices—all of which are critical factors influencing the effectiveness of these instruments. In most ETSs, emission-intensive and trade-exposed sectors, such as steel production, receive a significant share of free allowances, thereby reducing their exposure to the ETS-based carbon price. For further details, see Effective Carbon Rates 2023.

1. Introduction

The steel industry currently accounts for nearly 8% of global energy-related CO_2 emissions (IEA, 2022). If steelmaking were a country, it would be the third biggest emitter after the United States and China (WWF, 2024). Clearly, without advancing on the decarbonisation of the steel sector, it is impossible to reach the Paris Agreement objectives.

While the steel industry is making progress in decarbonisation, the current pace is insufficient to reach net zero by 2050 (OECD, 2022). This requires efforts from the industry, but also from policy makers. For industry to move forward in reducing emissions, governments must put in place a policy framework to both incentivise and safeguard the transition towards a low-carbon economy, ensuring the adoption of emerging low-carbon technologies and the transformation or scaling down of less emission-intensive processes as well as a just transition for workers from emissive facilities.

While there are various initiatives that monitor steel decarbonisation policies (see annex), there is currently no comprehensive overview of such policies that offers insight into the policy landscape across several key steel-producing jurisdictions.

This mapping report of steel decarbonisation aims to fill that gap. It was carried out with the aim of providing insights into how steel-producing economies are currently supporting the decarbonisation of their steel industry and differences therein and uses a data-driven approach for 15 key steel producing economies to illustrate the fields in which governments are taking action to support steel decarbonisation, how they are doing so, and where the gaps are.

It brings together information on steel decarbonisation policies from various existing resources and combines this with a further in-depth mapping of the policy landscape. To allow for comparison and interpretation of policy developments across countries, this study categorises policies according to different criteria such as objectives, instruments used, specificity, etc. (see the section on methodology and annex A for a full description of the approach used).

This steel decarbonisation policy mapping exercise is undertaken as part of the Work Programme of the Climate Club. The Climate Club Work Programme (Climate Club, 2023) is organised along three pillars:

Pillar 1: Advancing ambitious and transparent climate change mitigation policies,
Pillar 2: Transforming industries,
Pillar 3: Boosting international climate cooperation and partnerships.

This project is part of the second pillar, which includes a module (module 3) focused on proposing a toolkit for industry transition and assembling targeted support policies.

The steel decarbonisation policy mapping exercise, which is executed in parallel to a similar mapping of cement policies, will feed into further and more comprehensive work by the Climate Club on decarbonisation policies, built on the IEA toolbox of policies for industrial decarbonisation and decarbonisation policy frameworks developed by the OECD (IEA, 2022;

OECD, 2023). The mapping exercise is also relevant for Climate Club activities in the next period to provide targeted policy advice to member countries.

This report first discusses the methodological approach followed in the policy mapping[2], and thereafter describes the key results of the mapping exercise. Finally, the report zooms in on an analysis of various policy objectives regarding decarbonisation and how different countries are aiming to achieve these.

2. Methodology

This report focuses on steel decarbonisation policies in 15 jurisdictions, in force as of January 2024. Jurisdictions included account for around 1651.7 million tonnes (87.6%)[3] of the total crude steel production that reached 1.9 gigatonnes in 2023 (Table 2). The countries covered were selected according to two considerations: their annual crude steel production, and their membership (or not) in the Climate Club as of January 2024. Firstly, the top ten global steel producers were selected, excluding Russia and Iran. To this several Climate Club members were added with significant steel sectors.

Table 2 - Jurisdiction crude steel production covered in mapping and their steel production in 2023 (Worldsteel)

Jurisdiction	Crude steel production Million tonnes	Percentage of global crude steel production
Australia	5.7	0.3%
Brazil	34.1	1.8%
Canada	12.1	0.6%
China	1018	54.0%
EU	136.3	7.2%
India	152.3	8.1%
Indonesia	16.6	0.9%
Japan	89.2	4.7%
Korea	65.8	3.5%
Türkiye	35.1	1.9%
United Kingdom	6.0	0.3%
United States	80.5	4.3%
Total in mapping	1,651.7	**87.6%**
Global total	1,885.4	100.0%

A variety of databases and other sources were consulted to identify and select relevant policies and build an in-house database, which is the basis of the policy mapping (see annex A for an overview of resources used).

[2] Annex A includes an in-depth discussion of the methodology, including the different sources used.
[3] Calculated using Worldsteel in figures data

The starting point of the mapping exercise was the formulation of a definition of steel decarbonisation policies. For the purpose of this mapping exercise, a steel decarbonisation policy is a government-led policy that aims to reduce carbon emissions[4] in the steel sector.

To operationalise this definition, the following approach was followed:

1. First, policies were included that explicitly and exclusively target the decarbonisation of the steel sector.
2. Second, policies were included that target the decarbonisation of multiple industrial sectors including steel.
3. Third, more horizontal policies were included for which the literature suggests that they can have a significant effect on steel decarbonisation. Similarly, policies related to other sectors or activities of clear relevance for steel decarbonisation where included, such as policies to support hydrogen availability.

On the basis of this definition, 232 policy measures were identified for the 15 jurisdictions, in force as of January 2024.

The selected policies where subsequently categorised according to the following criteria:

- Their mandatory, voluntary or strategic nature
- Their demand- or supply-side orientation
- Their steel-specific or horizontal nature
- Their objectives
- The instruments used.

Identification of these criteria took place on the basis of a systematic word search in the policy documents in combination with desk research.

The policy information was collected in a database that will be available on the Climate Club website.

[4] Where relevant, the mapping exercise also includes policies that may be relevant to other greenhouse gases.

3. Key results

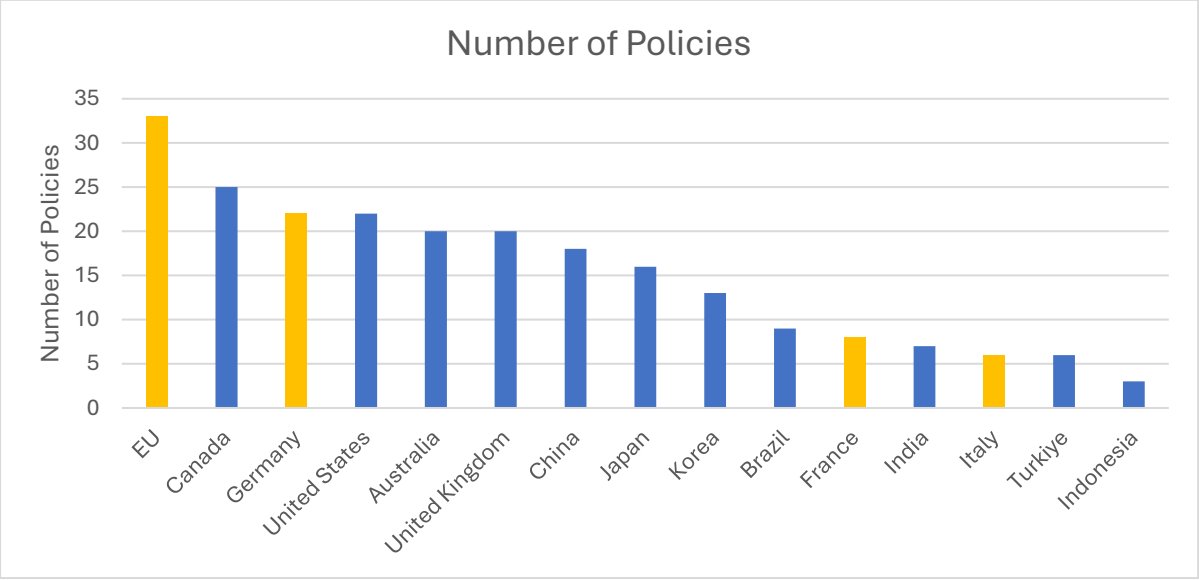
This section outlines the key conclusions from this policy mapping. The policy information collected allowed the identification of certain trends and patterns, of which the below are of particular interest.

3.1 State of play

All 15 countries included in the policy mapping exercise have implemented decarbonisation policies relevant to steel, although significant differences exist. This variation in absolute number of policies may result from differences in ambition, level of granularity, policy environments and accessibility of information. There was a notable increase in steel decarbonisation policies in recent years, due to increasing attention to the challenges faced by the sector. Many policies were put in place in 2020, in parallel to Covid-19 relief/stimulation packages.

As seen in Figure 1, there are a large number of EU-level policies relevant for steel decarbonisation. Given that these EU policies are in many cases relevant for EU members, member states themselves may have comparatively few policies of relevance. Next to the EU, Canada, the US, the UK and Australia rank high in the number of steel decarbonisation policies.

Figure 1 - Policy mapping dataset country distribution, number of policies



Note: EU policies here refer to policies implemented at EU level. They do not include policies implemented at the level of individual EU member states. Countries part of the EU are in yellow.

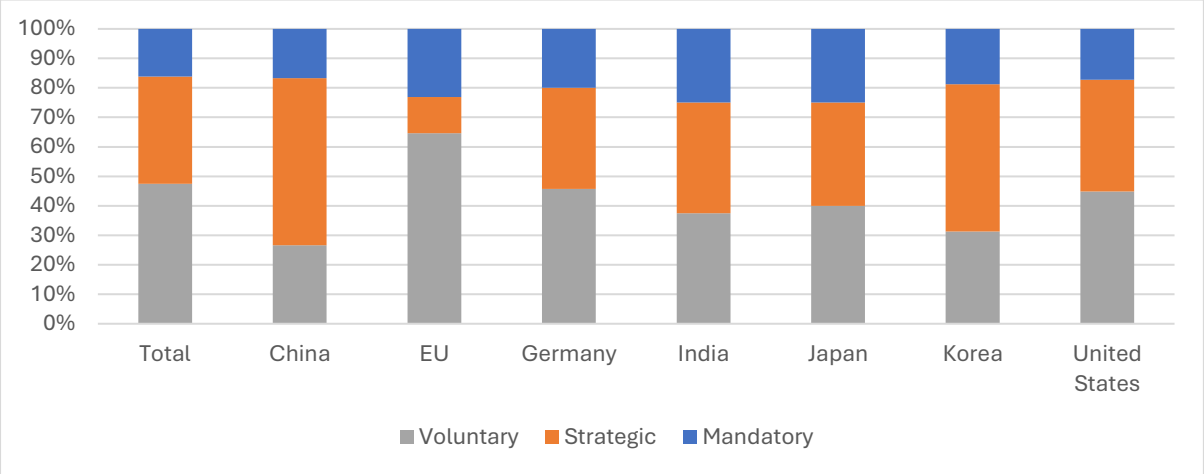
3.2 Mandatory, voluntary or strategic nature

Policies collected were categorised as either mandatory, voluntary, or strategic in nature. Only a small share of collected policies (16%) are legally imposed and thereby qualify as mandatory. Most policies collected are schemes that producers or other agents can voluntarily opt into or apply for (47%), such as funding programmes, tax deductions, or other forms of support.

Policies that are strategic in nature account for 36% of total policies. These policies are those that outline the direction of future policy developments in a given area/topic including for instance roadmaps, generally without specific rules or guidelines for the steel sector, but rather providing broad non-binding industry guidelines.

As shown in Figure 2, whether a policy is mandatory or voluntary varies among the different jurisdictions analysed. The EU, Japan, and India have a larger focus on implementing regulatory measures to decarbonise the steel sector compared to the rest of the sample studied. The EU, the United States, and Japan also have the largest shares of voluntary measures. China has the largest share of strategic policies, followed by Korea.

Figure 2 - Mandatory or Voluntary nature, share of policies (top 7 steel producing jurisdictions)

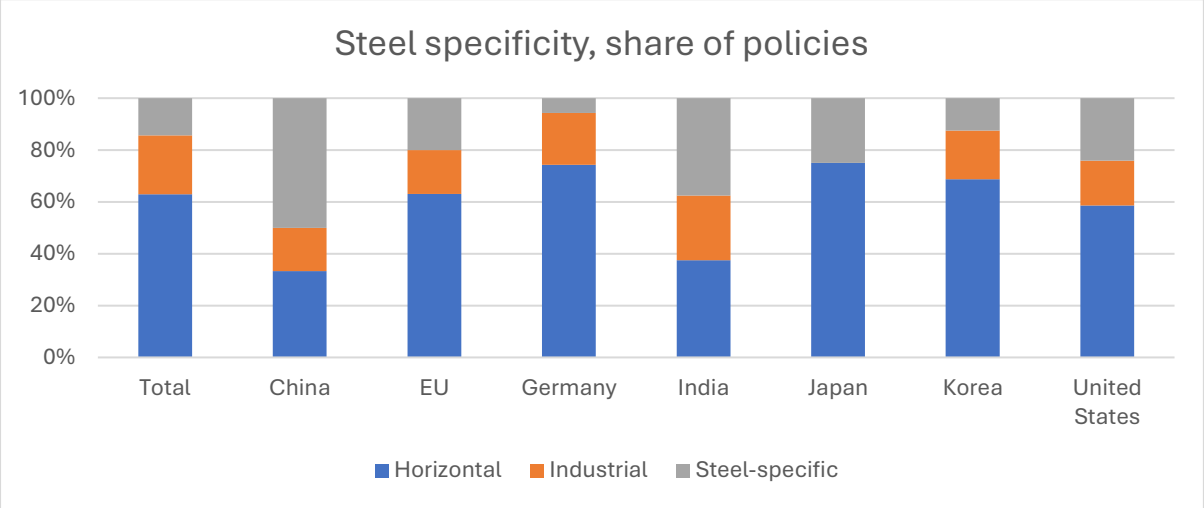


3.3 Steel specificity

Policies that affect the steel sector can be horizontal (affecting multiple sectors), focusing on several subsectors of heavy industry, or steel specific. A national ETS for example will usually target multiple sectors, including but not limited to heavy industry. These “horizontal” policies are of course not necessarily less effective than policies that target heavy industry or the steel sector specifically. But steel-specific policies may be helpful in some areas, given the unique challenges of the sector in the areas of innovation, bottleneck risks in supply chains, and the wide variety of downstream sectors.

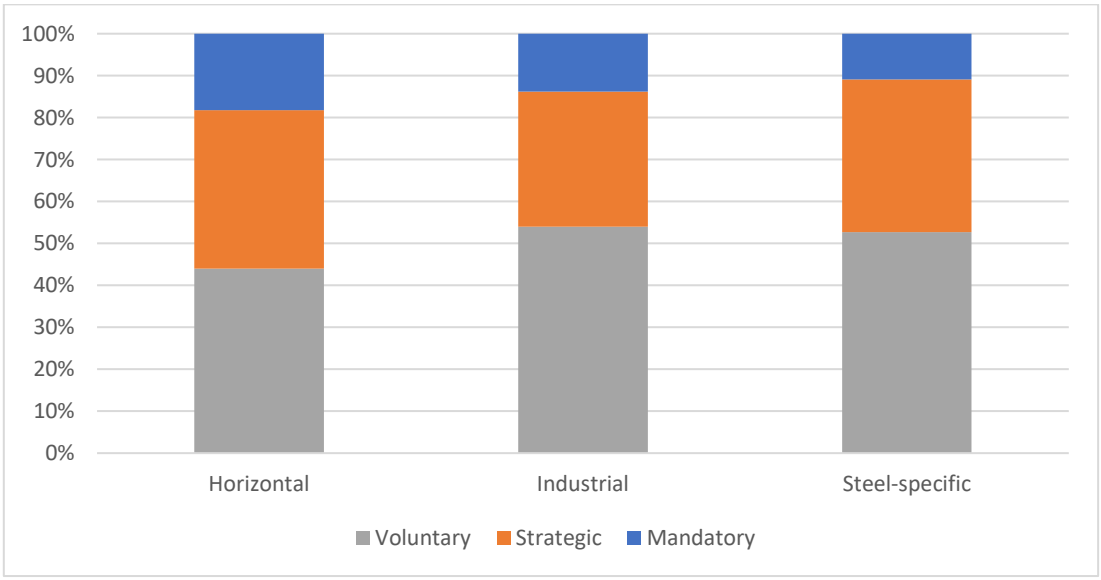
Out of the collected policies, 14% are steel-specific, 23% target heavy industry, and 63% are horizontal. Only four jurisdictions have a decarbonisation roadmap specifically for the steel sector (Germany, Japan, Korea, United Kingdom).

Figure 3 - Steel specificity, share of policies (top 7 steel producing jurisdictions)



There seem to be no significant differences between policies that are steel-specific or more horizontal as to the extent they are mandatory or voluntary. Policies were as likely to be horizontal, industrial, or steel-specific regardless of how mandatory or voluntary they were. Out of all horizontal policies, 44% are voluntary, 38% are strategic, and 18% mandatory. These proportions do not change much for steel specific policies where 53% of policies are voluntary, 36% are strategic and 11% mandatory.

Figure 4 – Mandatory nature by horizontality, share of policies

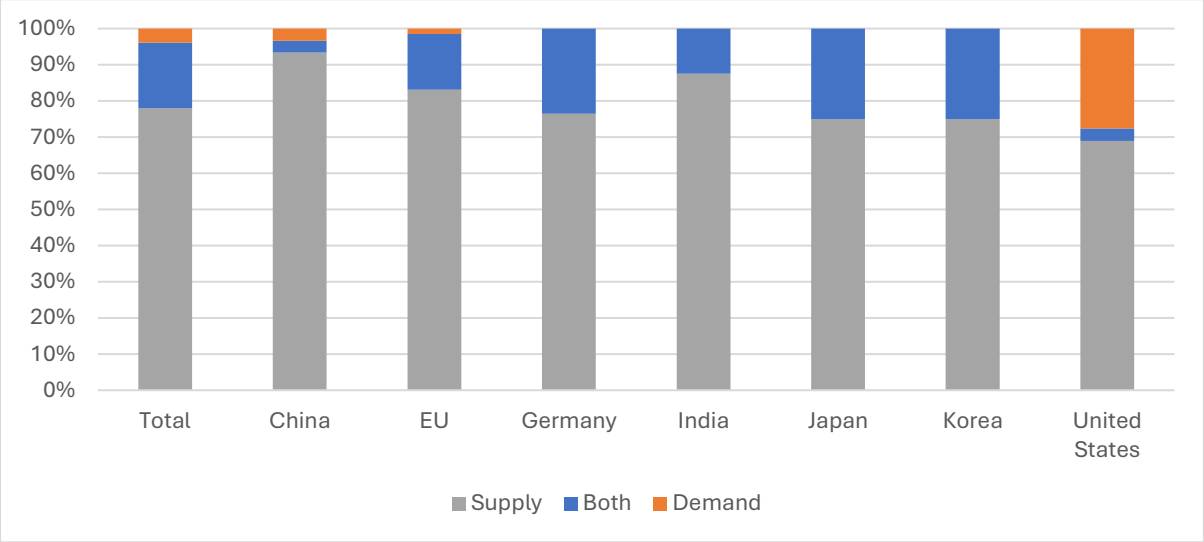


3.4 Demand or supply

There is an unmistakeable focus on supply-side policies when it comes to steel decarbonisation, with almost 80% of policies having a supply-side orientation. Where the purchase of steel was targeted, it was considered demand-side. Where the production of steel was targeted, it was considered supply-side. These categories are not mutually exclusive since many policies target both demand and supply and were tagged as such.

Supply-side policies include for instance public financing programmes for companies to build less emission-intensive capacity, research programmes to support low-carbon technologies, or incentivising emissions reductions from steel plants using various instruments.

Figure 4 - Supply vs demand side, share of policies (top 7 steel producing jurisdictions)

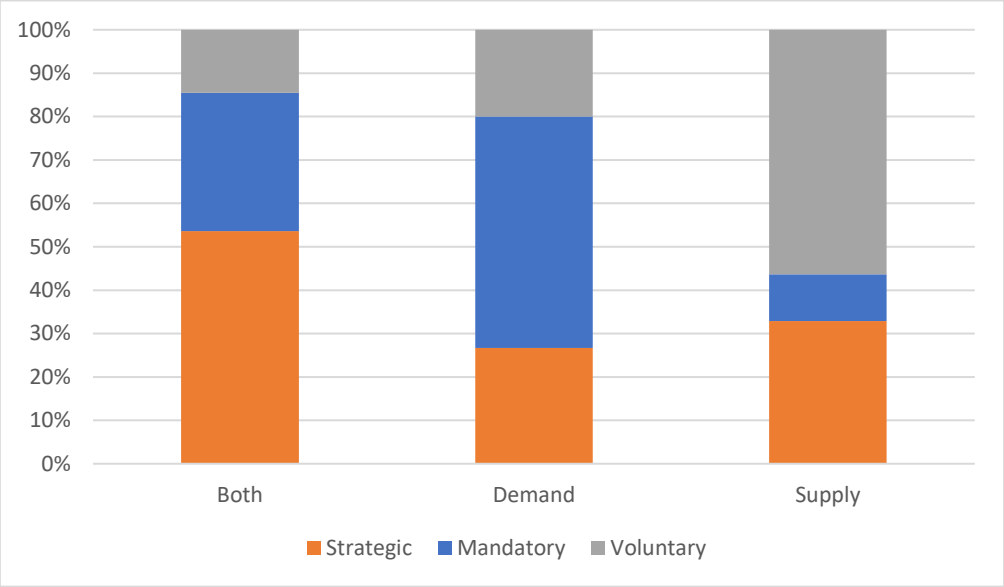


While efforts to foster agreement on standards and definitions are picking up steam, a lack of interoperable emissions standards has impeded progress on supporting green steel demand. Demand-side policies are in particular in place in the US, but on the whole account for only 4% of total policies. Nevertheless, in recent years several notable green public procurement guidelines have been implemented, driven by the goal of creating new low-carbon markets and reducing their emissions. Low-carbon markets will also be stimulated by the incoming pressure to meet trade requirements coming into play with various carbon border adjustment mechanisms (CBAMs), by improving the competitiveness of low-carbon products compared to their higher-emission counterparts.

However, procurement guidelines in many jurisdictions remain either absent or vague about their attention to steel. Green public procurement programmes and guidelines are often directed at the construction sector, which consumes about half of all steel produced (Moynihan, M, Allwood, J. 2012), but the sector is populated by a large web of individual procurers and suppliers which makes policy implementation complex, and the essential task of applying mandatory CO_2 intensity limits on steel used in public construction projects is severely lagging. In our policy dataset, of the demand side policies 20% are voluntary, 52% mandatory and 28% strategic.

In addition, there is a higher proportion of supply-side policies that are voluntary (56%), strategic (33%) and a smaller proportion of mandatory policies 11%. This suggests that there are comparatively more voluntary policies that aim to support lower-carbon steel, and governments aim to create green markets through procurement mandates (Figure 5).

Figure 5 – Supply vs Demand, by bindingness of policies



Box 1 - Climate Club cement policy mapping[5]

Cement policy mapping

In parallel to the OECD's steel policy mapping, the IEA carried out an analogous process for the cement sector. Policies by the 15 largest cement producer countries and some additional countries with strong industrial decarbonisation strategies were analysed. The IEA found 185 policies relevant to the decarbonisation of the cement and concrete sector, spanning from very horizontal roadmaps covering diverse industries to other policies more focused on the sector.

The first conclusion from the cement policy mapping was that there are significantly less cement-specific decarbonisation policies than the number (or share) of steel-specific ones. Most policies relevant to cement were found to be non-mandatory and integrated within broader industrial decarbonisation plans.

In terms of instruments, the majority of the analysed policies were high-level decarbonisation targets that included the cement and concrete sector as well as other sectors. Other common instruments were state subsidies (either grants, soft loans or various types of concessional finance), which were observed predominantly in developed economies. In addition, standards and guidelines were found to be present in all the analysed countries.

The IEA has identified a few policies that aim at defining terms such as "green cement" or "low-carbon cement" as a first step for broader policy design. This speaks to a certain need by policymakers to define uniform standards before embarking on technical requirements for the cement and concrete industry.

4. Policy objectives and instruments used

This chapter focuses on the objectives underlying the various policies put in place and the instruments used to achieve these. As described in the methodology, policies were categorised according to their policy objective(s), which were grouped into broad categories to provide a wider view: financing, supporting low-carbon technologies, fostering green demand, increasing circularity, carbon pricing and markets, phasing out high-emission steel capacity, and ensuring a supportive policy environment. Instruments distinguished include target setting, tax deductions, subsidies, loans, research programmes, standards, reporting requirements, export restrictions, carbon contracts for difference, training programmes and carbon-related border measures. The second part of the chapter (starting with section 4.2) zooms in on the way countries pursue the different policy objectives and discussed these in a wider policy context.

[5] Countries/regions in scope: Brazil, China, Egypt, European Union, France, Germany, India, Indonesia, Japan, Korea, Mexico, Saudi Arabia, Turkey, United Kingdom, United States, and Vietnam.

4.1 Overview

Policy objectives

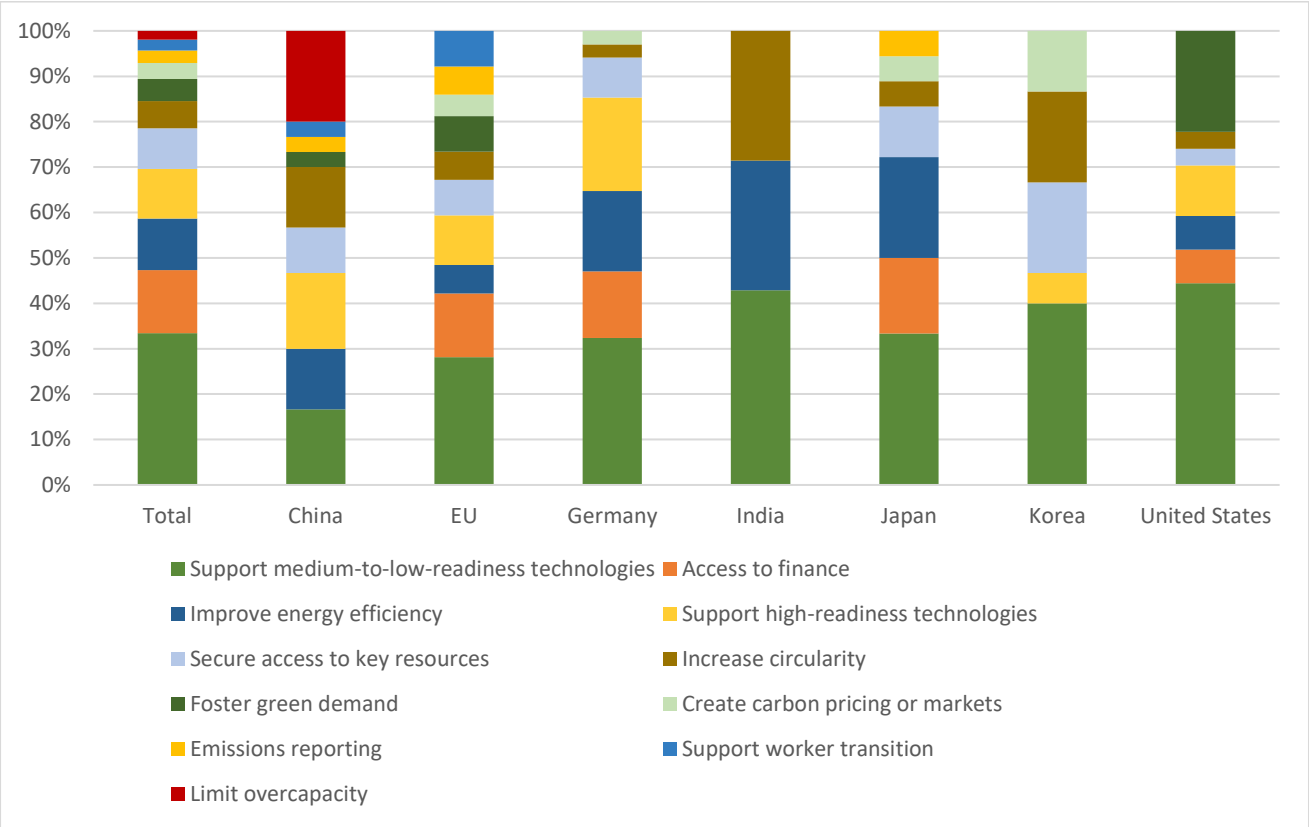
The main steel decarbonisation policy objectives pursued vary by country, with a significant emphasis (32%) on supporting medium- to low-readiness technologies, such as the development of green hydrogen and CCUS (Figure 6). While we note that the number of policies related to deep decarbonisation strategies has been increasing over recent years, most policies appear to focus on incremental emissions reductions.

Access to finance is the second most commonly pursued policy objective (13%) followed by improving energy efficiency (11%) and supporting high readiness technologies (10%) such as scrap-based EAF and Natural Gas DRI-EAF.

Implementing carbon prices and/or markets to incentivise emissions reductions is used in several countries, and multiple emissions trading schemes (ETS) have been extended to cover steel production in recent years. While some countries are consulting on possible carbon pricing and ETSs, many others including major producers, are staying away from carbon pricing for now. Additionally, carbon pricing is applied in diverse ways, and effectiveness is strongly impacted by price, coverage and the prevalence of free allowances— this report does not attempt to analyse these discrepancies[6].

[6] See OECD (2023), *Effective Carbon Rates 2023: Pricing Greenhouse Gas Emissions through Taxes and Emissions Trading*, OECD Series on Carbon Pricing and Energy Taxation, OECD Publishing, Paris, https://doi.org/10.1787/b84d5b36-en.

Figure 6 - Policy objectives targeted by country



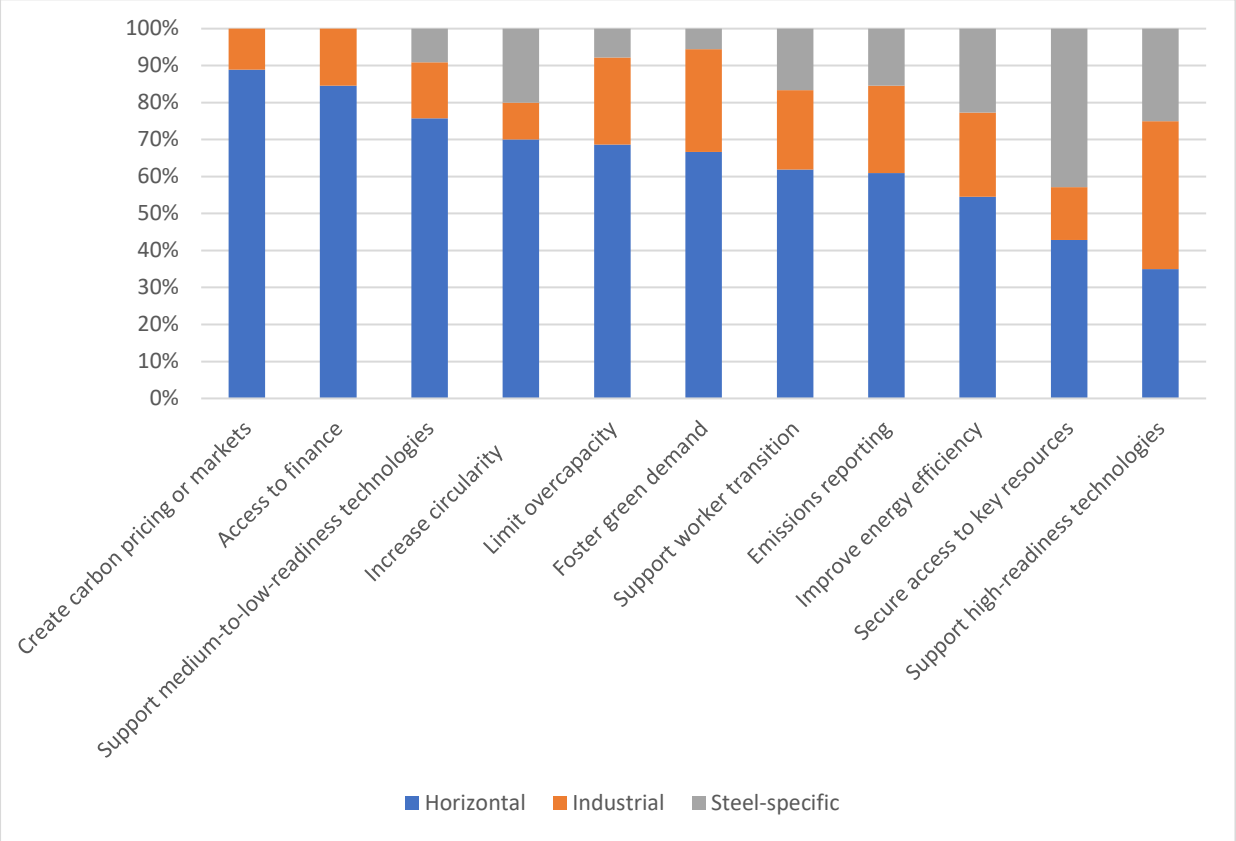
There are significant differences in the objectives that countries pursue. India and Korea put strong emphasis on circularity, with the Indian Steel Scrap Recycling Policy being the only steel-specific circular economy public policy so far globally, excluding scrap export restrictions. Both the US and India have a relatively high number of policies in place to support medium- to low-readiness technologies, whereas Germany has more policies to support high-readiness technologies than the majority of the countries analysed.

The EU has a number of policies (four) supporting (financially or through training) displaced workers including steelworkers. Australia also has three policies to this effect. Such social policies may be important in some countries in decades ahead, as structural changes to the steel industry imply changes in demand for workers (OECD, 2023). Energy efficiency takes up a significant portion of the focus in Japan. These different policy choices partly reflect the fact that while the global steel industry faces some key common challenges in decarbonisation, the steel industry in different countries and their decarbonisation pathways differ significantly (OECD, 2023).

Some policy objectives tend to be pursued in a more steel-specific way than others (Figure 7). For instance, whereas few countries focus on limiting overcapacity in pursuing steel decarbonisation, those that do so do this in a steel-specific way. The fostering of high technology readiness objectives appears to be approached in a more steel-specific way than the support for low or medium ready technologies, where industry wide approaches play a major role. Carbon

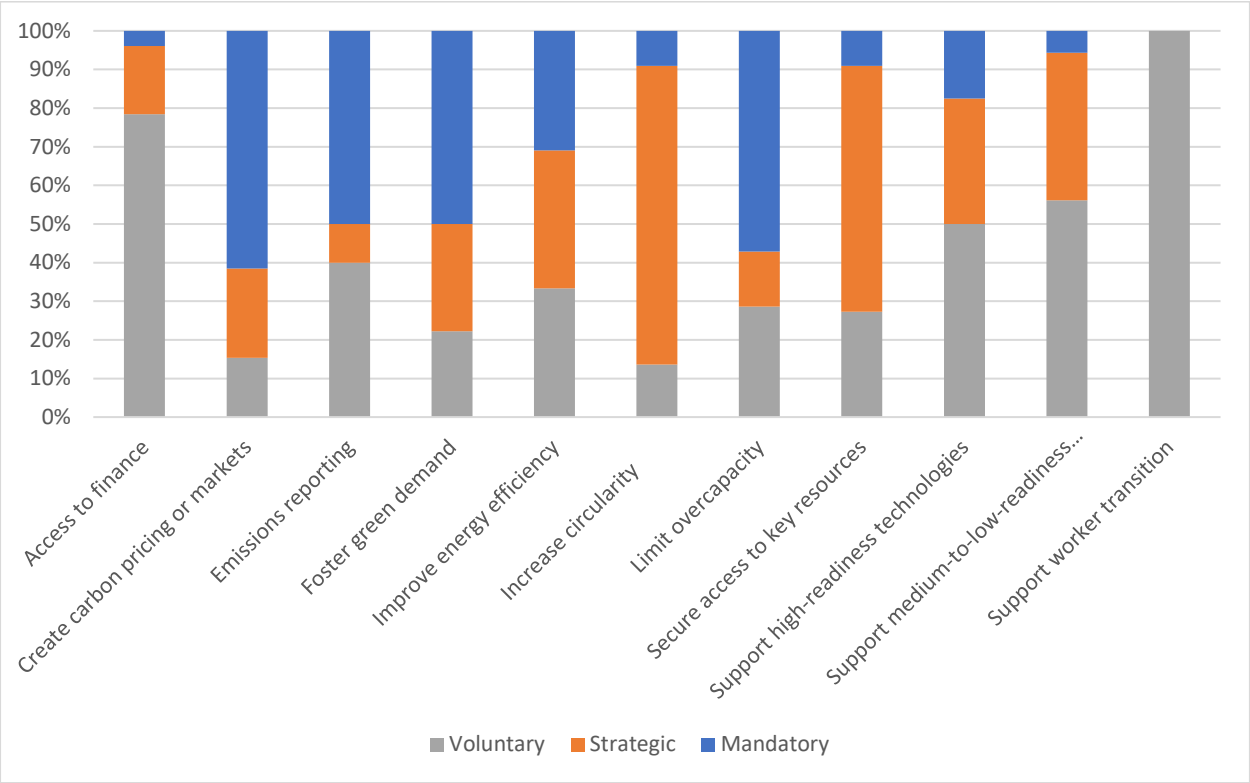
pricing or support for workers are almost always approached in a more horizontal way. Similarly, only 8% of policies pursuing access to finance have a steel-specific focus.

Figure 7 - Steel specificity by policy objective



Similarly, different policy objectives are pursued with different methods. While some countries use more mandatory policy instruments than others in their steel decarbonisation transitions, as explained in the key results section above, certain policy objectives are also associated with more or less mandatory policies in place. As shown in Figure 8 below, policies to create carbon prices or markets are most likely to be mandatory, as well as those limiting overcapacity. Additionally, half of the policies around emissions reporting and fostering green demand were also mandatory in nature, compared to only about a fifth of policies in general.

Figure 8 - Voluntary or mandatory nature of policies, by objective



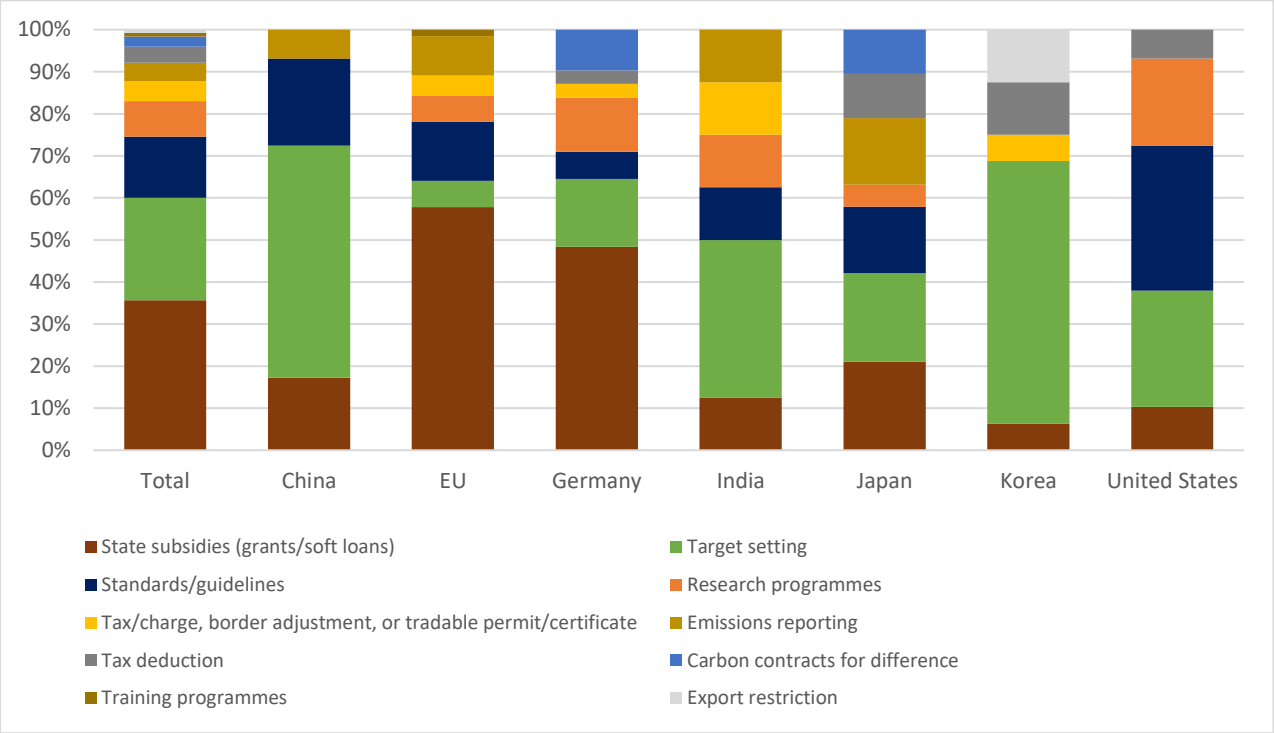
Policy instruments

To pursue the various objectives, governments use a variety of instruments. Figure 9 shows that the main instruments used are subsidies (35%) and target setting (24%), followed by standards and guidelines (14%).

However, there are wide variations across countries. Target setting makes up for the bulk of policies in India (38%) and China (55%). EU countries use a relatively large number of subsidy measures[7]. Standards and guidelines are particularly used in the United States.

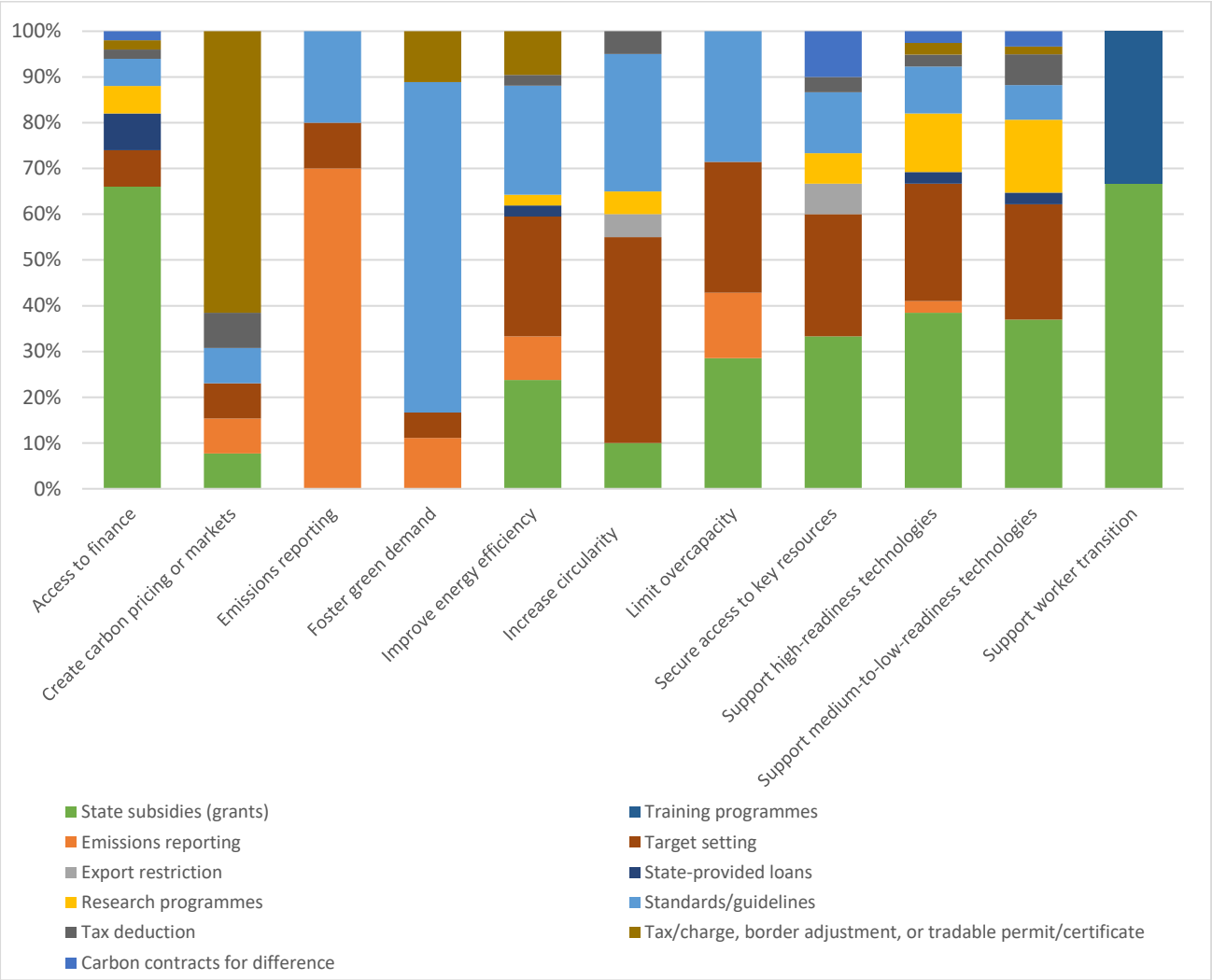
[7] Please note that this regards the number of measures, not the amount of subsidies provided.

Figure 9 - Share of instruments used, by country



The types of instruments used vary not only according to country or region but also according to the policy objective pursued, as seen in Figure 10. Unsurprisingly, policies aiming to support access to finance for the decarbonisation take the form of pools or programmes of public funding two thirds of the time. Similarly, policies that aim to support workers' transition also primarily make use of subsidy instruments (65%). Policies aiming to foster green demand take the form of standards or guidelines 70% of the time—often in the form of green procurement guidelines. Other policy objectives tend to be pursued with a more diverse array of instruments.

Figure 10 - Share of instruments used by objective



4.2 Financing

At COP29 in Baku, finance took centre stage in climate discussions (COP 29 Presidency, 2024). The global transition to a low carbon economy will require substantial investments of on average USD 500 billion annually until 2050, representing slightly more than 10% of the total investments needed to put the whole energy system on a net-zero pathway, according to the IEA. For this reason, financial assistance from all sources (international, domestic, public and private) will play a pivotal role (IEA, 2021).

This financing is essential for the scaling up of low-carbon technologies and the phase-out of more emissive technologies, thereby reduction of emissions— not only in the steel industry contributing to a climate-resilient economy. Scaling up finance from both public and private financial sources will be essential to get low-carbon steel projects off the ground. This is particularly important for emerging markets and developing economies (EMDEs) given that new

capacities will be installed mostly in these countries. Directly using new low-carbon production routes, and thereby leapfrogging high-emission production routes, can be important to avoid emissions lock-in and reduce the stranded asset risk. In this case, using blended finance approaches with public finance to de-risk investments and unlock private finance will be pivotal (Cordonnier & Saygin, 2023) (OECD, 2023)

There has been an observable shift over the last decade in governments' efforts to providing financing for the transition. Many countries are setting aside large pools of money made available for a variety of purposes (Anderson, B., et al. 2021; Criscuolo, C., et al. 2022; Agarwal, R. 2023). Policy examples such as Inflation Reduction Act (IRA), Horizon Europe (HE) and wider European support packages allocate large sums of finance available to enable the transition. However, differences emerge in the targeted stage of these investments. HE, for example, focuses on earlier stage research and innovation, whilst the IRA promotes the production and adoption of low carbon technologies.

Box 2 - Climate Club Pillar 1 mapping financial and technical assistance for industry decarbonisation in emerging markets and developing economies conducted by the Climate Club under Pillar III Module 1

Financing and technical assistance programmes for industry decarbonisation

More financial and technical assistance are needed to decarbonise industry sector, in particular sub-sectors such as steel and cement in EMDEs. Greater focus should be placed on assisting cross-cutting, breakthrough technologies as well as support toward project implementation. OECD analysis indicates that types of financial instruments and their providers/recipients in these sub-sectors would benefit from diversification. Expanding finance to the necessary scale to facilitate a net-zero industry will rely on a broad range of approaches, instruments, and sources of financing. International cooperation can help foster financial and technical assistance toward industry decarbonisation in EMDEs.

In accordance with Pillar III of the Climate club, recent evidence shows the emergence of innovative financing mechanisms that leverage public finance to unlock and mobilise private capital. However, only 40% of the development finance targeting the steel sector is directed towards mitigation efforts, with much of this stemming from multilateral sources in the form of debt instruments (80%).

Thus far, projects where assistance is received tend to focus on incremental emissions reductions, instead of disruptive approaches. According to the OECD DAC/CRS database, financial flows channelled to key industry decarbonisation enabling cross-cutting technologies (CCUS, hydrogen) emerge from bilateral country programmes via grant funding with technical assistance concentrating mainly on targeted research, education and capacity building as opposed to project implementation (Climate Club, 2024)

Investment levels need to increase by a factor of three to five by 2030

Recent OECD analysis shows that annual investments in low-carbon technologies for industrial decarbonisation need to increase at least threefold by 2030 compared to current levels to make industrial emissions compatible with net-zero pathways, and will require various types of financing: domestic, international, public and private (Climate Club, 2024; OECD, 2023).

4.3 Supporting low-carbon technologies

Emerging technologies will play a pivotal role in the decarbonisation of the steel industry and thus to meet national and international net-zero targets. Technological scale-up requires significant investments. In this respect, an important consideration for governments is if policies should remain technology agnostic to ensure that governments are not picking winners and losers in the

event new, emerging technologies could have higher mitigation impact. In the context of limited funding, governments must find the balance of sufficiently investing in high potential technologies whilst acknowledging investment trade-offs.

Technologies form part of an arsenal of tools to decarbonise the steel sectors. However low-carbon technologies exist at varying stages of development or readiness. The degree to which each technology is developed can be assessed using the technology readiness level (TRL). The TRL uses an 11-point scale which is clustered into 6 groups: concept (TRL 1-3), small prototype (TRL 4-5), large prototype (TRL 5-6), demonstration (TRL 7-8), early adoption (TRL 9-10), and mature (TRL 11) (IEA, 2020).

Decarbonising technologies can therefore be categorised as near-zero emission compatible technologies and interim technologies. The former includes CCUS, H_2DRI EAF, direct iron electrolysis (IOE), scrap-based EAF, and the latter includes energy efficiency, H2 injection in BF and smelting BOF. Interim technologies are technologies that have the potential to reduce emissions to a certain extent but are not compatible with a net zero endpoint. The benefit of these technologies is that they are more readily available, however, governments must weigh up the advantages and disadvantages of further carbon lock-in. Deep decarbonisation of the steel sector, i.e. one that aligns with the Paris Agreement objectives, will require the use of technologies that have not yet reached full maturity (OECD, Forthcoming, 2024).

Table 3 - Selected technologies and their maturity level

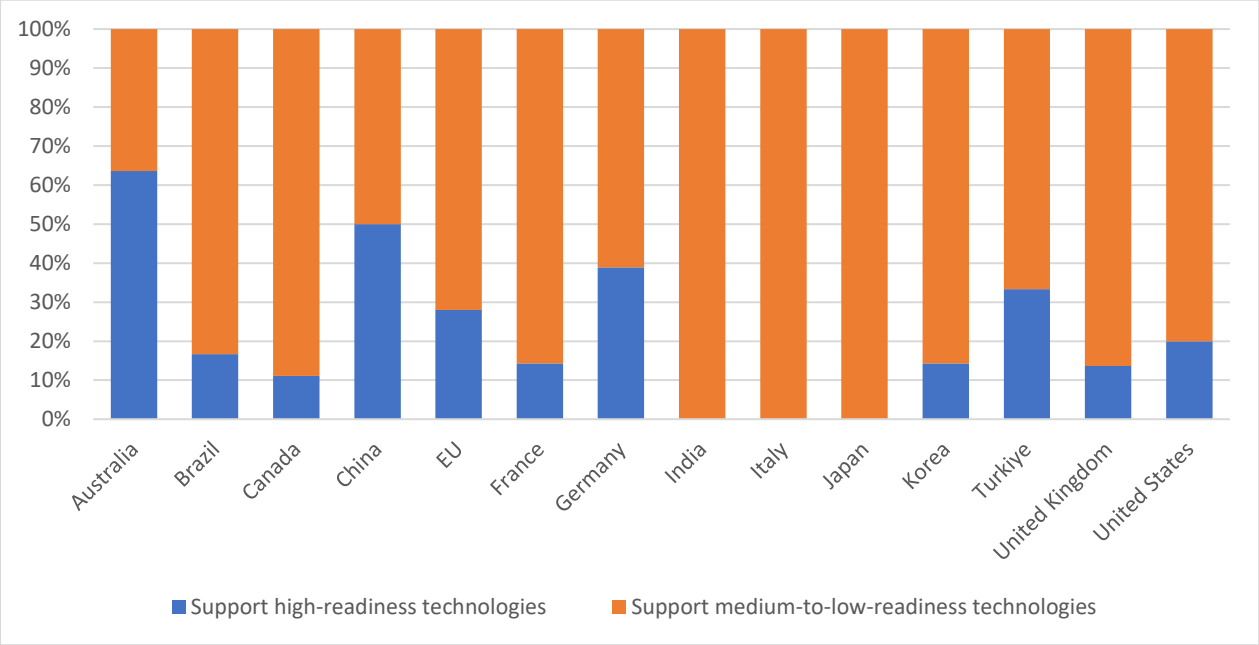
Technology		Current TRL	Description	Decarbonisation contribution
Blast Furnace with carbon capture		Large prototype (TRL 5)	Capturing CO_2 from the flue gases, transporting for storage. Recovering CO_2 from BF gas, reforming into CO and H2 for BF process or for external uses with surplus CO_2 for storage	The estimated CO_2 emissions is at 50-70% of a standard BF.
Natural gas DRI-EAF with carbon capture		Early Adoption (TRL 9)	DRI equipped with chemical absorption-based CO_2 capture	High potential for CO_2 reduction especially regions with high availability of natural gas usually used as a starting technology to the ultimate H2-DRI.
H2-DRI-EAF		Full prototype at scale (TRL 6)	Direct reduction with 100% hydrogen produced by electrolyser, using renewables	98% CO_2 emissions reduction to a BF. Despite lower TRL, the highest emissions reduction can be achieved compared to other technologies
Iron Oxide Electrolysis (IOE)	**Alkaline iron electrolysis**	Large prototype (TRL 5-6)	Use of renewable electricity to transform iron oxides into pure metals at low temperature electrolysis (<110C). A way to directly electrify primary steelmaking potentially using 15-30% less electricity overall per tonne of steel produced	Reduction of energy consumption to 30% to standard steelmaking. Its low temperature operation allows process easily stopped and restarted that can be easily adapted to the intermittent nature of renewable electricity. 95% of CO_2 reduction when electricity is generated by renewables
	Molten oxide electrolysis	Small prototype (TRL 4)	An electrometallurgical technique enabling the direct production of liquid metal from oxide feedstock with a substantially simplified process of the process and energy consumption reduction at high temperature	Resource & energy efficiency: the process only requires virgin ores and additives to produce liquid crude steel without further steps
EAF		Mature (TRL 11)	Electric arc furnaces fed by scrap powered by electricity	Less capital and energy intensity than ore-based production, avoiding furnace, DRI, coke ovens, pelletisers, and sinters.

Source: Adapted from (OECD, Forthcoming, 2024; IEA, n.d)

Around one quarter of steel decarbonisation policies included in this mapping exercise aimed to support low-carbon technologies. These were subdivided into supporting high-readiness (TRL 9 or above) technologies and medium- or low-readiness technologies (TRL 8 and below). Each of these technology routes have varying mitigation potentials, compatibilities with net zero pathways, as well as associated lock-in effects. The apparent favouring of policies supporting medium or low readiness technologies could be due to the needs of more nascent technologies requiring assistance via government support early on to progress along the TRL scale.

The mapping shows that policies that aim to support low carbon technologies take the form of grants, target setting and research programmes, the latter more popular with medium-low TRLs.

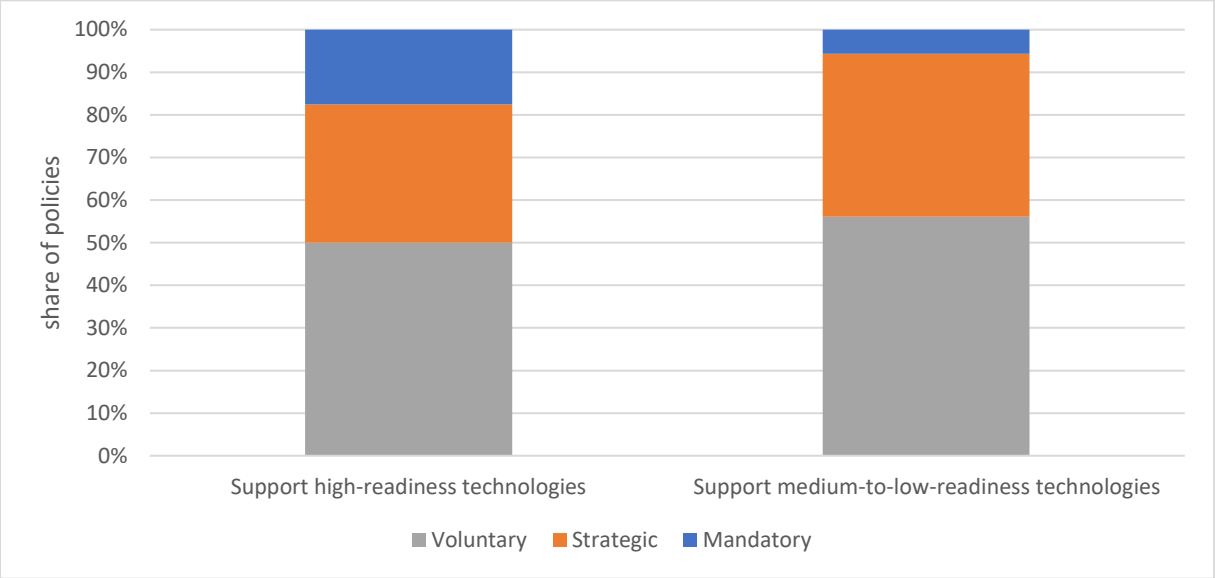
Figure 7 - Technology support policies among countries



Policies analysed in the mapping were overall found to predominantly target the supply side of steel with a lesser focus on demand, which is also the case with policies targeting low-carbon technologies for steel, regardless of their level of technology readiness.

As shown in Figure 8 below, over 50% of policies relating these technologies are voluntary in nature, with a large share also being strategies. The share of mandatory policies in this area is small, but particularly so for medium to low-readiness technologies.

Figure 8 - Technology and level of stringency, share of policies



In the past, steel decarbonisation policies focused overwhelmingly on energy efficiency, and while this mains the case in many countries, for others the focus has shifted towards supporting the development of low-carbon technologies. OECD research finds that most policy attention relates to the phase-in of novel technologies and their scale up. Although this is promising, little attention is being given to the exit of more emissive technologies. National decarbonisation policy mixes targeting low carbon technologies would benefit from a more balanced approach to address key technological challenges (OECD, Forthcoming, 2024).

4.4 Fostering green demand

While demand signals from governments for green steel are starting to grow, action remains slow, scattered, and vague. At COP28, the governments of Canada, Germany, the United Kingdom and the United States pledged to adopt timebound commitments to procure low-emission steel, cement and concrete— a major step in fostering demand for these products (UNIDO, 2023).

The policy mapping identified 13 policies with the objective of fostering green demand. These primarily took the form of guidelines and were mandatory half the time.

Table 4 - Selection of green procurement policies

Country	Example green procurement policy relevant for steel	Mandatory CO_2 intensity limits	Mandatory scrap content minimums
Australia	Environmentally Sustainable Procurement Policy and Reporting Framework	No	No
China	Green building materials procurement policy	No	No
Italy	Green Public Procurement - Criteri Ambientali Minimi	No	Yes
United States	Federal Buy Clean Initiative	No	No

The green public procurement (GPP) policies of both the United States (federal) and Germany specify global warming potential (GWP) limits for steel. Others, like the United Kingdom, have implemented third party certification systems that apply their own standards according to multiple factors.

In contrast, most countries are yet to apply GPP policies for steel with any certification systems, instead announcing commitments to develop these in future. These commitments may sometimes be timebound, as is the case for Australia, which announced it will have a certification system in place for its GPP by early 2025 but are often not— providing little clarity or direction for industry. Other countries, like the Netherlands, France, or Norway, have GPP that are very horizontal in nature and do not have guidelines that are specific to steel.

This explains why despite growing conversation about GPP for steel in policy spheres the number of GPP policies with clear certification systems (capable of generating real demand signals for low-carbon or zero-emissions steel) remains low.

4.5 Increasing circularity

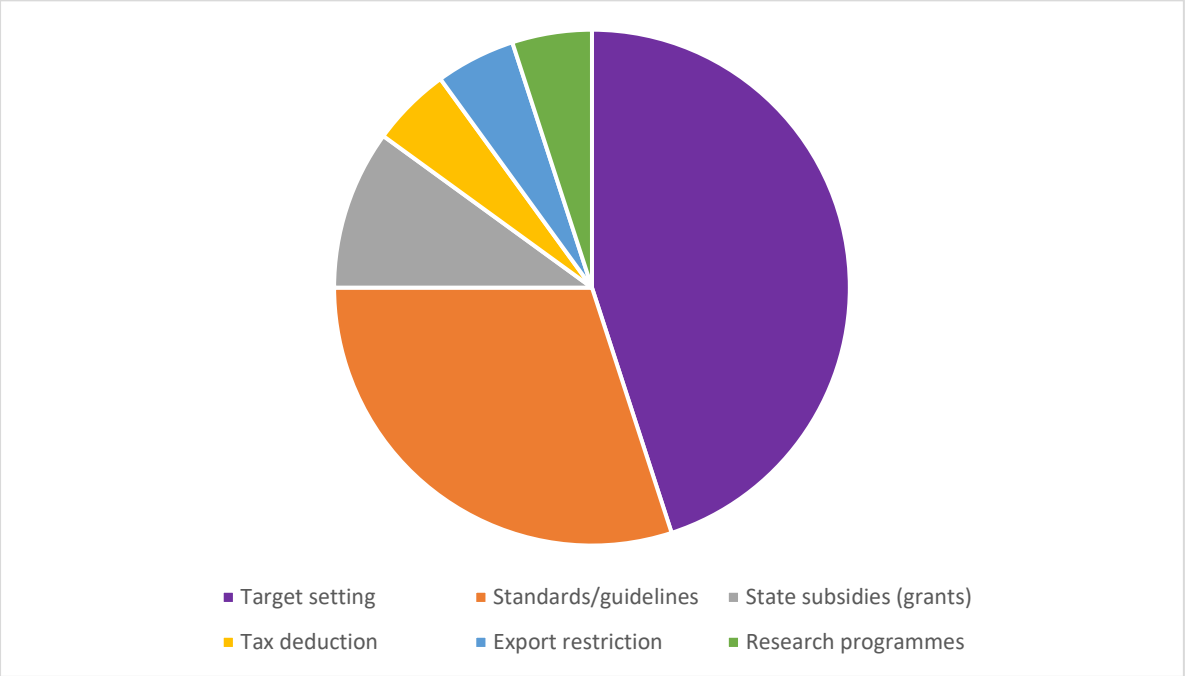
Net-zero scenarios suggest that circular economy will play a key role in reducing global emissions from the steel sector((IPCC, 2022), (IEA, 2021), (MPP, 2022), (E3G, 2021), (Net Zero Steel, 2021)). This includes not only the use of scrap, but the other three “R”s: “reuse”, “remanufacture” and “reduce”, of which strategy examples can be seen below (OECD, 2024). Examples of material efficiency strategies related to steel include optimising building design, improving manufacturing yields, increasing the intensity of use and lifetimes, and improving recycling rates (OECD, 2024).

Despite regional differences, there is a generic trend towards increased use of scrap in a decarbonisation context (OECD, 2024). Various net-zero scenarios for the steel sector suggest a share of scrap input in steel manufacturing increasing globally to around 45% by 2050, up from the current 30%. ((MPP, 2022), (E3G, 2021), (IEA, 2021)), (IEA, 2020). This trend will require more

advanced recycling operations to ensure added availability reaches the market, accompanied by major investments in scrap-based infrastructure (OECD, 2024). This added scrap availability, however, is expected to be quickly saturated, leaving primary steelmaking necessary.

The mapping of steel decarbonisation policies showed few policies (20) of which supporting circular economy in steel was a primary focus. As shown in the figure below, many of these took the form of voluntary targets set by governments. A number of guidelines were also identified, including GPP policies which included a circular economy angle.

Figure 9- Steel decarbonisation policies targeting circular economy, by instrument used



India's "Steel Scrap Recycling Policy" is a key example as the only steel-specific circular economy policy identified. It prescribes a series of steps to improve the efficiency of recycling systems (Government of India, 2019).

A series of barriers and policy challenges can be identified that are slowing down the implementation of a circular economy in the steel sector: economic factors (costs), lack of a supportive policy infrastructure, lack of a lifecycle approach, and challenges related to scrap (e.g. impurities in steel, lacking infrastructure, data availability) (OECD, 2024).

Total scrap steel exports and imports reached around 65 mmt in 2022, of which the United States and the European Union each roughly exported over 17 mmt, jointly accounting for 54% of global exports (International Steel Statistics Bureau , 2022). The five biggest exporters (also including Canada, Japan, and the United Kingdom) together represent nearly 85% of total exports (OECD, 2024). Most economies either import or export scrap, with little two-way trade. Net-importing economies tend to face limited availability of scrap, further heightened by export restrictions.

4.6 Carbon pricing and markets

Carbon pricing, through carbon taxes or emission trading systems (ETS) can be a key element of a cost-effective steel decarbonisation policy package. They incentivise emissions reductions and give a domestic price advantage to low-carbon steel products, thereby working on both the supply and demand side of the sector.

Within existing ETSs, competitiveness concerns, particularly among emission-intensive trade-exposed (EITE) sectors such as cement and steel, have often been addressed through the allocation of free allowances (OECD, 2023). In practice however, free allowances tend to reduce the incentives for emissions reduction (Dechezleprêtre, et al., 2018) (Flues & Van Dender, 2020).

Table 5 - Example of carbon pricing instruments in place

Policy	Average secondary market price	Cap (2024)	Free allowances for industry
Australian Safeguard Mechanism	NA	NA	Yes
Québec Cap-and-Trade System	EUR 30.48 (2023)	52 MtCO2e	Yes
EU Emissions Trading System	EUR 83.47 (2023)	1386 MtCO2e	Yes
Korea Emissions Trading Scheme	EUR 6.75 (2022)	548 MtCO2e	Yes

Note: Canadian dollars and Korean won were converted into EUR on 03/09/2024 using Google Finance. Source: (International Carbon Action Partnership, 2024)

Many economies are looking towards implementing (Japan, US states of Colorado and New York) or are looking at strengthening existing carbon taxes or ETSs by requiring deeper emissions reductions, extending the coverage, or reducing/removing free allowances (Australia, Korea). Other economies are hesitant to implement these policies due to a range of concerns, namely around political acceptability or carbon leakage.

A number of countries are gaining interest in an alternative to free allowances (e.g. UK, Australia): border carbon adjustments. In the EU, the carbon border adjustment mechanism (CBAM) will, after a transition period, be gradually phased in, replacing free allowances, which will be completely phased out for sectors covered by the CBAM. The objective of the CBAM is to ensure that imports face the same carbon price as a comparable good produced domestically and hence address the risk of carbon leakage in EITE sectors. Table 1 of the executive summary outlines the use of carbon pricing policies for the jurisdictions studied, and Table 5 provides some examples of key carbon pricing instruments currently in place— highlighting the variation in price and caps, as well as the fact that all ETSs provide free allowances for industry, which can undermine the incentivising effect of the policies.

4.7 Phasing out high-emission capacity

Steel overcapacity poses a serious threat to emissions reductions in the steel sector, and policies to ensure that high-emissions capacity is phased out in parallel to the creation of low-carbon capacity are severely lacking. Barriers to exit and a lack of targeted phase-out policies are increasing the risk of low-carbon steel projects increasing total steelmaking capacity without substantially reducing emissions (Algers & Åhman, 2024).

The many policies being implemented globally in the goal of decarbonising the steel sector will only be successful if accompanied by effective phase-out policies. Currently, a number of countries have policies in place that through subsidies or state-owned enterprises keep growing high-emissions capacity that in regular market circumstances would not be viable (OECD, 2024; OECD, 2023). To meet the Paris agreement goals, many blast furnaces will need to be retired before the end of their typical lifetimes of 40 years (Algers & Åhman, 2024) , and the sunk costs are increasing as emission-intensive capacity continues to grow in some jurisdictions. The removal of policies that keep high-emissions capacity in place by distorting normal market functioning constitutes an important aspect of decarbonisation policy efforts that needs to be further enhanced.

5. Conclusion

This report shows that the number of steel decarbonisation policies put in place by the 15 countries analysed in this study has significantly increased over the last decade, focusing primarily on non-binding and more horizontal policies on the supply side providing financial support for low-carbon technologies, although wide variations exist across countries. Given the nature of the challenge, policy efforts need to step up significantly to reach the Paris Agreement commitments, not just in fostering low-emissions production but also by reducing high-emission capacity.

The findings of the report will feed into Module 4 of the 2025-2026 Work Programme of the Climate Club, “Exploring collaborative demand and supply-side measures”. The mapping will provide a basis to update the policy toolkit and will serve as a key input to conduct the policy analysis and case studies. In addition, it will inform the content of the policy consultation and advice programme offered to Climate Club members.

In addition to this report, the full database of policies collected will inform a publicly available platform users can visit to identify policies in place and discover different policy options and routes.

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Annex

Full methodology

This steel decarbonisation policy mapping exercise was carried out with the aim of providing insights in how steel-producing economies are currently supporting the decarbonisation of their steel industry and differences therein. This methodology section outlines the approach taken to develop the steel decarbonisation policy mapping. It has two parts. The first part focuses on the selection of steel decarbonisation policies, including the countries covered, the sources used, the definition and scope of policies included, and the approach taken to identify them. The second part outlines what attributes and categories are distinguished in the steel decarbonisation policy database, with a view to analysing and comparing policies.

Selection of policies

Sources

This steel decarbonisation policy mapping relies on the use of several different sources and databases listed below:

- *2023 World Steel in Figures*, World Steel Association (2023) Link
- Economic instruments for a resource efficient circular economy Link (classified OECD document)
- EU Official Journal, EUR-lex. 2024. Link
- European Commission (2022). Communication from the Commission – Guidelines on State aid for climate, environmental protection and energy 2022, Document 52022XC0218(03), *OJ C 80, 18.2.2022, p. 1–89*. Link
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- OECD Policy Instruments for the Environment (PINE) database (2024) Link
- OECD STIP Compass database Link
- *Steel Statistical Yearbook 2023,* World Steel Association (2023) Link
- The Global Forum on Steel Excess Capacity (GFSEC) information-sharing 2023[8] (classified)
- Waagsaether, K., Waliszewska, A. & Lehne, J., 2024. *Raising Ambition on Steel Decarbonisation - 2023 Steel Policy Scorecard,* s.l.: E3G Link

Countries

The countries covered were selected according to two considerations: their annual crude steel production, and their membership (or not) in the Climate Club as of January 2024. Firstly, the top ten global steel producers were selected, excluding Russia and Iran. To this were added several

[8] The GFSEC information-sharing exercise is conducted twice a year and collects information on crude steel capacity figures (part 1), as well as policies (part 2) that affect the steel industry. It is based on inputs from its members. Only non-confidential information from the information-sharing exercise was included. Read more

Climate Club members with significant steel sectors. No policies have been included yet for Spain, Egypt, Austria, and Ukraine (9th, 10th, 14th and 15th biggest steel producers within the Climate Club, respectively) for reasons of linguistic limitations, but more detailed research may be carried out in the coming period to include them.

The following countries/regions were included in the exercise:

- Australia
- Brazil
- Canada
- China
- EU
- France
- Germany
- India
- Indonesia
- Italy
- Japan
- Korea
- Türkiye
- United Kingdom
- United States

Definition and scope

To identify steel decarbonisation policies, it is important to define such policies. For the purpose of this mapping exercise, a steel decarbonisation policy is a government-led policy that aims to reduce carbon emissions[9] in the steel sector.

To operationalise this definition, the following approach was followed (see sections further below for precise definitions):

1. First, policies were included that explicitly and exclusively target the decarbonisation of the steel sector.
2. Second, policies were included that target the decarbonisation of multiple industrial sectors including steel.
3. Third, more horizontal policies were included for which the literature suggests that they can have a significant effect on steel decarbonisation. Similarly, policies related to other sectors or activities of clear relevance for steel decarbonisation where included, such as policies to support hydrogen availability.

Only policies that are all currently in force as of January 2024 were included for the calculations.

Certain policy areas have been excluded from this policy mapping such as those that exclusively target the availability of and access to renewable energy. Although important for the steel decarbonisation transition, the inclusion of such policies would bring in too many policies, which would make analysis and comparison challenging. Policies related to process integration (reusing or redirecting resources, e.g. slag or gas, from steel plants to other industrial installations) have been excluded due to difficulties identifying emissions reductions objectives therein.

Finally, the mapping only focuses on policies at national (and EU) level, and at subnational levels (e.g., provincial, state, or local) whenever possible. There were limitations on access to some subnational policies of relevance, but the mapping attempts to include all provincial policies of relevance in Canada and China, and state policies in Australia. Future work may attempt better coverage of state-level policies in the United States.

Approach

Following this definition and scope, the mapping exercise used a word-search approach to assess if policies should be included in the database, followed by a manual assessment of each of the policies identified to ascertain their conformity with the formulated definition and scope. The approach differed depending on whether the source was specific to steel or not. For non-steel specific databases, the first step was to identify those policies of relevance to steel. For steel-specific databases, this first step was not necessary because it could be safely assumed that all policies were of relevance to steel. As a second step, for all sources search terms were used to identify steel decarbonisation policies in accordance with the definition and scope outlined above.

[9] Where relevant, the mapping exercise also includes policies that may be relevant to other greenhouse gases.

Table 6- Keyword search and descriptors

Source type	Keyword	Why
Non steel-specific sources	Steel	
Steel-specific and non steel-specific sources	Decarbon_	This precursor was used to capture words including decarbonising and decarbonisation, including when American spelling is used.
	Emission	To capture references to emissions reductions, emissions intensity, and more.
	Efficiency	To capture references to efforts to improve energy or material efficiency.
	Hydrogen	To capture references to policies to support the development and deployment of green or blue hydrogen energy, which shows immense decarbonisation potential for the steel sector.
	Scrap	To capture references to steel scrap: a key ingredient in all steelmaking but especially the low-carbon DRI route.
	Workers	This term was searched to identify efforts to upskilling and supporting steel workers in the context of a green transition.

This approach led to the identification of 232 policies of relevance. After this, Climate Club members included in the initial mapping were invited to complement the list of policies by suggesting additional policies to include and their corresponding policy objectives and instruments.

Categorisation

Their mandatory, voluntary or strategic nature

The first aspect regards the mandatory, voluntary or strategic nature of policies. To assess and compare steel decarbonisation policies, it is important to take into account if these are of a voluntary nature, or have mandatory elements for steel producers. As part of this perspective, the exercise also looked at policy document of more strategic or overarching relevance such as roadmaps or action plans. Such initiatives are often voluntary but can also be a precursor to more mandatory measures at a later stage. The identification of policy according to their mandatory/voluntary/strategic nature was done via qualitative assessment of all policies in the database. Table 7 summarises the approach.

Table 7- Mandatory, voluntary, and strategic policy initiatives

Policy type	Description	Document type
Mandatory	A legislative instrument passed through policymaking process (usually in a form of a regulation or a directive)	Law, act
Voluntary	A voluntary instrument with no legally binding nature	Guideline, program
Strategic/overarching	An initiative that outlines the direction of future policy developments in a given area/topic	Strategy, roadmap, action plan

Note: This breakdown of policy type is adapted from the IEEP approach (2022) on EU policy mapping.

Their demand- or supply-side orientation

A second categorisation made regards the way policies are directed. Some policies focus on the supply-side and aim to directly influence the way steel is produced. On the other hand, "demand-side policies" were distinguished, which aim to support green steel demand or hamper high emissions steel demand.

The process of categorising according to the above involved studying the documentation and identifying the stage targeted by the policy. Where the purchase of steel was targeted, it was considered demand-side. Where the production of steel was targeted, it was considered supply-side. These categorised are not fully mutually exclusive since many policies target both and were tagged as such.

Their steel-specific or horizontal nature

A third important aspect of the analysis regards the steel-specific nature of policies. Steel-specific policies are conceived specifically (exclusively) for the steel sector and are not applicable to other sectors. As was outlined above, other policies are of a more horizontal nature, or focus on a variety of industrial sectors (see Table 8). The distinction between these policy approaches allows for identifying differences in how countries address steel decarbonisation.

The identification of their steel-specific, multisectoral or horizontal nature was done through qualitative analysis of all policies in the database. The policies were categorised according to the above by studying the summaries or key information provided for each policy. This took the form of abstracts and executive summaries, or often, key information provided on government websites. Where the sectors targeted by the policy were still not clear, the official documentation was analysed.

Table 8- Horizontal, multi-sectoral and steel-specific policies

Type	Description	Key examples
Horizontal	Intervention to all firms irrespective of technology, activity or location.	A Healthy Environment and a Healthy Economy (Canada)
Industrial	Exclusively focused on sectors all within the "manufacturing" sector as defined by ISIC	Industrial Emissions Directive (EU)
Specific to steel	Exclusively focused on steel sector	Steel Scrap Recycling Policy (India)

Their policy objectives

The fourth aspect of the categorisation exercise regards the differences in objectives of steel decarbonisation policies. Policy objectives were defined by the focus that policies took and what they targeted. They range from technology development[10], access to resources, a just transition or reporting aspects. In various cases, policies serve multiple objectives and were categorised accordingly.

Table 9 shows the different policy objectives distinguished. It also identifies the search terms used to identify policies for each objective, which was accompanied by qualitative analysis of each policy document to ascertain the policy objective.

Keywords

Table 9- Policy objectives, descriptions and keywords

Objective	Description	Keywords
Support high-readiness technologies	The policy aims to support the scaling up or deployment of existing low-carbon technologies relevant to steel, including Scrap-based EAF (TRL 11), Natural Gas DRI-EAF (TRL 9).	EAF; electric arc
Support medium- to low-readiness technologies	The policy aims to support/finance research and development in technologies potentially of use for decarbonisation in steel, e.g. IOE (comprising of alkaline iron electrolysis (TRL 5) and molten oxide electrolysis (TRL 2)), H2-DRI-EAF (TRL 6), CCUS (TRL 5).	electrolysis; hydrogen; carbon capture; CCS; CCUS
Mobilise finance	The policy aims to support company or government-level access to finance for steel decarbonisation efforts. Policies that secure or facilitate access to funding were categorised as such.	grant; loan

[10] Please note that for policy objectives related to technology development a distinction in two objectives was made: "Support high-readiness technologies" and "Support medium- to low-readiness technologies".

Limit excess capacity	The policy aims to address the problem of excess steel production capacity, for example bans on net capacity additions	capacity
Improve energy efficiency	the policy aims to support/trigger enhancements in energy efficiency in steel production	efficien_
Foster green demand	the policy aims to stimulate or enhance the demand for low-carbon steel by incentivising its purchase, for example through green public procurement programmes	procurement; GPP
Create carbon market	The policy aims to incentivise decarbonisation by putting a price on emissions, via carbon taxes or border adjustments.	carbon tax, ETS, cap
Increase circularity	The policy aims to increase the use of scrap or improve material efficiency.	scrap; circular economy
Secure access to key resources	The policy aims to ensure or foster access to scrap, hydrogen, or critical minerals relevant to steel	scrap; hydrogen; critical mineral
Support worker transition	The policy aims to address the social and labour challenges and risks related to the decarbonisation of the steel industry. This may be by supporting or compensating workers displaced by the closure of high emissions plants, or by supporting the development of skills needed in the transition to low-carbon steel	workers
Emissions reporting	The policy aims to encourage or mandate the reporting of CO_2 emissions, including embodied carbon, emissions intensity, or total emissions.	reporting

The above categories are not mutually exclusive, and policies were tagged with multiple categories when necessary.

Instruments used to effectuate the policies

Finally, the policies were categorised according to the policy instrument employed (Table 10). This aspect allows for insight in possible differences across countries in how steel decarbonisation is pursued.

These categories are not mutually exclusive. Word searches could not be used here, so qualitative analysis of all policy documents took place to identify which policy instrument was in use.

Table 10- Instruments used with descriptors and examples

Instrument	Description	Example
Target setting	The establishment of a specific and quantified goal.	NDCs (International), Henan steel targets (China), The Ten Point Plan for a Green Industrial Revolution (UK)
Tax deduction	The use of tax credits/deductions to incentivise certain consumer or producer behaviours.	Research and Development Tax Incentive (R&DTI) (Australia)
State subsidies (grants)	A financial award given by a government for a perceived beneficial project	Net Zero Hydrogen Fund (NZHF)
State-provided soft loans	A government-backed loan which allows for lower interest rates or other preferential treatment.	Agreements for Innovation (Italy)
Research programmes	The establishment of groups that are supported by the government (institutionally or financially) in their research	Programme for Research and Innovation in Steel and Metals (UK)
Standards/ guidelines	Standards place thresholds or limits on how well an actor should perform according to certain indicators, for example emissions intensity. They may be voluntary or mandatory. Guidelines are rules or suggestions in a certain field that governments want actors to take into account when making decisions about how they produce or consume.	Energy Benchmark System (Japan); Energy Star for Industry certification (Canada & US) Buy Clean (US)
Emissions reporting	Actions that encourage or mandate the disclosure of level of emissions.	Greenhouse Gas Reporting Program - GHGRP (Canada)
Carbon contracts for difference	A financial mechanism to close the gap in operating costs linked to decarbonisation	Carbon contracts for difference (France); Directive on the promotion of climate-neutral production processes in industry through climate protection contracts (Germany)
Export restriction	State-imposed measures that aim to limit the export of certain critical products. Those relevant to steel decarbonisation include scrap and critical minerals.	Export prohibition on steel and iron scrap (Indonesia)

Tax/charge, border adjustment or tradeable permit/certificate	An added cost (tax, charge, tariff, fee) on certain aspects of production or consumption, aiming to disincentivise such methods/products.	CBAM (EU) Emissions trading schemes Safeguard Mechanism (Australia)
Training programmes	The provision of education/training to workers in the aim of enhancing their current or future employment opportunities	Local Jobs Program (Australia); Transition Support Network – TSN (Australia)

Limitations

The database needs to be regularly updated in order to be reliable. It intends to give an overview of the policies in force at a given moment in a selection of countries that could help decarbonise the steel industry. It does not claim to include every policy of relevance in force, and the following limitations should be kept in mind:

1. Access: Some countries have limited public information relating to their decarbonisation policies
2. Language: Certain materials were difficult to translate
3. Confidentiality.

Climate Club Policy Map List.xlsx

Policy list

Country	Year in force	Title	link
Australia	NA	Advancing Renewables Program	link
Australia	2021	Australian industry energy transitions initiative (Australian industry ETI)	link
Australia	2021	Carbon Capture, Use and Storage Development Fund	link
Australia	2012	Clean Energy Finance Corporation (CEFC)	link
Australia	2021	Clean Hydrogen Industrial Hubs Program grant	link
Australia	2015	Emissions Reduction Fund (ERF)	link
Australia	2019	Hydrogen strategy	link
Australia	2020	Local Jobs Program	link
Australia	2021	National CCUS Technology Emissions Abatement Strategy	link
Australia	NA	National Greenhouse and Energy Reporting Scheme	link
Australia	2022	National Industrial Transformation Program (under Australian renewable energy agency ARENA)	link
Australia	2023	National reconstruction fund (NRF)	link
Australia	2022	NDCs	link
Australia	2022	NSW: Net Zero Industry and Innovation Program	link
Australia	2024	Powering the Regions Fund	link
Australia	2011	Research and Development Tax Incentive (R&DTI)	link
Australia	2016	Safeguard Mechanism	link
Australia	2024	Townsville Region Hydrogen Hub	link
Australia	2022	Training Package Development Program	link
Australia	NA	Transition Support Network (TSN)	link
Brazil	2021	Critical minerals strategy	link
Brazil	2023	Ecological transformation Plan	link
Brazil	2015	Government subsidies for steel decarbonisation	link
Brazil	2021	Guidelines for National H2 Program (PNH2)	link
Brazil	2013	Low Carbon Emission Economy in the Manufacturing Industry Plan	link
Brazil	2023	Multi-year plan 2024-2027 (Plano Plurianual 2024-2027)	link
Brazil	2023	NDCs	link
Brazil	2023	New Growth Acceleration Program (PAC)	link
Brazil	2024	Nova Indústria Brasil Action Plan for Industrilisation 2024-2026	link
Canada	2022	2030 Emissions Reduction Plan	link
Canada	2020	A Healthy Environment and a Healthy Economy	link
Canada	2018	ACCELERATED INVESTMENT INCENTIVE (AII)	link
Canada	2021	Advancing CCUS Technologies (subsidy)	link
Canada	2022	Canada Growth Fund	link
Canada	1907	CanmetENERGY	link
Canada	1940	CanmetMATERIALS	link
Canada	2023	Carbon Management Strategy for Canada	link
Canada	2022	CCUS Investment Tax Credit	link
Canada	2020	Clean Fuel Regulations	link
Canada	2021	Clean Fuels Fund	link
Canada	2023	Clean Hydrogen Production Tax Credit	link

Canada	2016	Energy Innovation Program (EIP)	link
Canada	2017	Energy Star for Industry certification	link
Canada	2004	Greenhouse Gas Reporting Program (GHGRP)	link
Canada	2019	Greening Governemnt Strategy: A Government of Canada Directive	link
Canada	2020	Hydrogen strategy for Canada: Seizing the Opportunities for Hydrogen	link
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Canada	2013	Quebec ETS	link
Canada	2017	Strategic Innovation Fund (SIF)	link
Canada	2021	The Canadian Critical Minerals Strategy	link
China	NA	Chinese Environmental Products Declaration (EPD) platform for the steel sector	link
China	2021	14th Five-Year Circular economy development plan	link
China	2021	14th five-year plan for industrial green development [ETS to be extended to industry]	link
China	2021	14th Fyp For Raw Material Industry Development	link
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China	2022	Green building materials procurement policy	link
China	2015	Guideline for Energy Efficiency Credit	link
China	2022	Guiding Opinions on Promoting the High-Quality Development of the Iron and Steel Industry	link
China	2023	Henan steel targets	link
China	2023	Hunan energy efficiency and circularity targets	link
China	2022	Hydrogen medium to longterm plan	link
China	2016	Industrial Special Fund	link
China	2023	Inner Mongolia hydrogen target	link
China	2023	Jiangxi EAF target	link
China	2020	Key points of the work to resolve the excess capacity of coal power, coal mining, and steel China	link
EU	2018	A Clean Planet for all	link
EU	2013	Best Available Techniques Reference Documents (BREFs) - Iron and steel	link
EU	2020	Circular Economy Action Plan	link
EU	2021	Clean Steel Partnership (CSP)	link
EU	1993	Climate Monitoring Mechanism	link
EU	2022	Climate, Energy and Environmental State Aid Guidelines	link
EU	2023	Corporate Sustainability Reporting Directive (CSRD)	link

EU	2023	Critical Raw Materials Act	link
EU	2020	EIB support of steel decarbonisation projects	link
EU	2005	Emissions Trading System (ETS)	link
EU	2023	EU CBAM	link
EU	2007	European Globalisation Adjustment Fund	link
EU	2022	European Hydrogen Bank	link
EU	2022	European Research Area (ERA) industrial technology roadmap for low-carbon technologies	link
EU	2014	European Social Fund + (ESF+),	link
EU	2021	Horizon Europe (HE)	link
EU	2020	Hydrogen IPCEIs (hy2Tech; hy2Use)	link
EU	2020	Hydrogen strategy	link
EU	2011	Industrial Emissions Directive (IED)	link
EU	2019	Innovation Fund	link
EU	2021	Invest EU Programme	link
EU	2021	Just Transition Fund	link
EU	1992	LIFE Programme	link
EU	2018	Modernisation fund	link
EU	2023	NDCs	link
EU	2024	Net-Zero industry act (part of Green Deal Industrial Plan)	link
EU	2021	Processes 4 Planet (under Horizon Europe)	link
EU	2021	Product Environmental Footprint (tool)	link
EU	2021	Recovery and Resilience Fund	link
EU	2022	REPowerEU plan	link
EU	2021	Research Fund for Coal and Steel (RFCS)	link
EU	2023	Strategic Energy Technology (SET) Plan	link
EU	2020	Taxonomy for sustainable activities	link
France	2024	Carbon contracts for difference	link
France	2024	Decarbonisation support for industry	link
France	2022	France 2030 investment	link
France	2023	Hydrogen strategy	link
France	2022	*Low Carbon Industrial Zones (ZIBAC) Call*	link
France	2022	*Planification "50 Sites Industriels les plus émetteurs"*	link
France	2020	*RE2020*	link
France	2022	Roadmap for metals	link
Germany	2019	"Federal funding for energy and resource efficiency in commerce" (EEW)	link
Germany	2018	7th Energy Research Programme	link
Germany	2023	8th Energy Research Programme	link
Germany	2020	Action plan for a strong steel industry in Germany and Europe	link
Germany	*2024*	*BIK (Bundesförderung Industrie und Klimaschutz)*	link
Germany	2024	Carbon Contracts for Difference (Directive on the promotion of climate-neutral production processes in industry through climate protection contracts)	link
Germany	2016	Climate Action Plan 2050 Principles and goals of the German government's climate policy	link
Germany	2023	Climate action programme 2023	link

Germany	2019	Competence Centre on Climate Change Mitigation in Energy-Intensive Industries	link
Germany	*2013*	*electricity price compensation*	link
Germany	2019	Energy efficiency strategy 2050	link
Germany	2021	Federal Climate Change Act	link
Germany	2023	Federal funding to steel companies for decarbonisation projects	link
Germany	2021	Fuel Emissions Trading Act (BEHG)	link
Germany	2021	Funding programme 'Decarbonisation in industry'	link
Germany	2021	H2 Global initiative	link
Germany	2019	KfW energy efficiency financing for industry	link
Germany	2021	KlimPro-Industrie (measure of the Research for Sustainability - FONA Programme)	link
Germany	2023	National Hydrogen Strategy	link
Germany	2024	Power price package	link
Germany	2020	Raw Material Strategy	link
Germany	2020	Research for Sustainability - FONA	link
India	2019	Draft National Resource Efficiency Policy	link
India	2023	Green hydrogen mission	link
India	2010	Iron & Steel R&D scheme	link
India	2021	NDCs	link
India	2011	Perform, Achieve, Trade (PAT) Scheme	link
India	2018	Steel Research and Technology Mission of India	link
India	2019	Steel scrap recycling policy	link
Indonesia	2009	Energy conservation regulation	link
Indonesia	2018	Export prohibition on steel and iron scrap	link
Indonesia	2023	National Hydrogen Strategy	link
Indonesia	2022	NDCs	link
International	2023	Steel Science-Based Target-Setting Guidance	link
Italy	2023	Agreements for Innovation (Accordi per l'innovazione)	link
Italy	2017	Circular Economy Strategy	link
Italy	2023	Green Public Procurement - Criteri Ambientali Minimi	link
Italy	2020	Hydrogen strategy	link
Italy	2021	Long-term italian Strategy on GHGs emissions reduction	link
Italy	2005	White Certificates	link
Japan	2021	Basic Guidelines on Climate Transition Finance	link
Japan	2023	Carbon pricing scheme	link
Japan	2008	COURSE 50 Programme	link
Japan	2009	Energy benchmark system	link
Japan	2023	Energy conservation act	link
Japan	2018	Fundamental Plan for Establishing a Sound Material-Cycle Society	link
Japan	2021	Green Growth Strategy	link
Japan	2021	Green Innovation Fund	link
Japan	2006	Greenhouse Gas Accounting and Reporting System	link
Japan	2023	Hydrogen Strategy	link
Japan	2023	*Investment Strategy by Sector*	link
Japan	2021	NDCs	link
Japan	2015	Open Innovation and R&D	link
Japan	2023	Securing a Stable Supply of Important Minerals	link

Japan	2015	Subsidies for Chiyoda Steel Corporation	link
Japan	2021	Technology Roadmap for "Transition Finance" in Iron and Steel Sector	link
Korea	2023	1st National Basic Plan for Carbon Neutrality and Green Growth	link
Korea	2020	2050 carbon neutrality Strategy roadmap	link
Korea	2023	CE (Circular Economy) 9 Policy	link
Korea	2015	ETS	link
Korea	2018	Framework Act on Resource Circulation	link
Korea	2022	Hydrogen Economy Policy Direction: Plan to Create a Clean Hydrogen Ecosystem and Strategy	link
Korea	2019	Industrial Technology Innovation Promotion Act	link
Korea	2021	NDCs	link
Korea	2023	Steel Industry Development Strategy for Transition to Low-Carbon Steel Production	link
Korea	2021	Strategy for Technology Innovation for carbon neutrality	link
Korea	2022	Tax incentive (Restriction of special taxation act, enforement decree)	link
Korea	1995	tax incentive for R&D	link
Korea	2023	Technology Development Program to Solve Climate Change	link
Turkiye	2024	Climate Change Mitigation Strategy and Action Plan (2024-2030)	link
Turkiye	2024	Green Growth Technology Roadmap	link
Turkiye	2023	Industrial Emissions Strategy	link
Turkiye	2023	NDC	link
Turkiye	2021	Türkiye Green Deal Action Plan	link
Turkiye	2023	Türkiye Hydrogen Technologies Strategy and Roadmap	link
United Kingdom	2024	British Industry Supercharger	link
United Kingdom	2021	Carbon Capture Storage and Infrastructure Fund	link
United Kingdom	2019	Industrial Decarbonisation Challenge	link
United Kingdom	2021	Industrial decarbonisation strategy	link
United Kingdom	2019	Industrial Energy Transformation Fund (IEFT)	link
United Kingdom	2016	Industrial Strategy Challenge Fund (ISCF)	link
United Kingdom	NA	National Wealth Fund	link
United Kingdom	2022	NDC	link
United Kingdom	2023	Net Zero Hydrogen Fund (NZHF)	link
United Kingdom	2021	Net Zero Innovation Portfolio	link
United Kingdom	2021	Net Zero Strategy: Build back Greener	link

United Kingdom	2020	Package to Reduce Emissions in Heavy Industry and Drive Economic Recovery (Including Jet Zero Council)	link
United Kingdom	2020	Programme for Research and Innovation in Steel and Metals (PRISM)	link
United Kingdom	2023	Public funding to transition Tata Steel's Port Talbot site	link
United Kingdom	2015	Roadmap for steel	link
United Kingdom	2023	Steel public procurement 2023	link
United Kingdom	2019	SUSTAIN Future Manufacturing Research Hub	link
United Kingdom	2020	Ten Point Plan for a Green Industrial Revolution	link
United Kingdom	2020	Transforming foundation industries	link
United Kingdom	2021	UK Emissions trading Scheme (ETS)	link
United Kingdom	2021	UK Hydrogen strategy	link
United States	2019	Buy Clean California Act (BCCA)	link
United States	2022	Buy Clean Initiative (Federal)	link
United States	2021	CCUS infrastructure funding under the Infrastructure Investment and Jobs Act	link
United States	2022	Clean Hydrogen Production Tax Credit	link
United States	2021	Climate Innovation Research Opportunity investment program	link
United States	2021	Colorado: Global Warming Potential For Public Project Materials	link
United States	1992	Energy star guides for industry	link
United States	N/A	Federal subsidies	link
United States	2021	Federal Sustainability Plan: Catalyzing America's Clean Energy Industries and Jobs	link
United States	2023	Final List of Critical Minerals	link
United States	2022	Industrial Decarbonisation Roadmap	link
United States	2023	Industrial Demonstrations Program (IRA & BIL)	link
United States	2022	Initiative for Interdisciplinary Industrial Decarbonization Research and Industrial Technology Innovation Advisory Committee	link
United States	2020	National Hydrogen Program Plan	link
United States	2021	National Recycling Strategy	link
United States	2022	NDCs	link
United States	2022	New CCUS guidelines	link
United States	2021	Regional clean hydrogen hubs (Bipartisan Infrastructure Law)	link
United States	2023	Revolutionising Ore to Steel to Impact Emissions (ROSIE)	link
United States	2018	Section 45Q tax credit for CCUS	link
United States	2022	SUPER (CHIPS and science act)	link
United States	2021	The Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse gas Emissions by 2050	link

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EU	2018	A Clean Planet for all	link
EU	2013	Best Available Techniques Reference Documents (BREFs) - Iron and steel	link
EU	2020	Circular Economy Action Plan	link
EU	2021	Clean Steel Partnership (CSP)	link
EU	1993	Climate Monitoring Mechanism	link
EU	2022	Climate, Energy and Environmental State Aid Guidelines	link
EU	2023	Corporate Sustainability Reporting Directive (CSRD)	link
EU	2023	Critical Raw Materials Act	link
EU	2020	EIB support of steel decarbonisation projects	link
EU	2005	Emissions Trading System (ETS)	link
EU	2023	EU CBAM	link

EU	2007	European Globalisation Adjustment Fund	link
EU	2022	European Hydrogen Bank	link
EU	2022	European Research Area (ERA) industrial technology roadmap for low-carbon technologies	link
EU	2014	European Social Fund + (ESF+),	link
EU	2021	Horizon Europe (HE)	link
EU	2020	Hydrogen IPCEIs (hy2Tech; hy2Use)	link
EU	2020	Hydrogen strategy	link
EU	2011	Industrial Emissions Directive (IED)	link
EU	2019	Innovation Fund	link
EU	2021	Invest EU Programme	link
EU	2021	Just Transition Fund	link
EU	1992	LIFE Programme	link
EU	2018	Modernisation fund	link
EU	2023	NDCs	link
EU	2024	Net-Zero industry act (part of Green Deal Industrial Plan)	link
EU	2021	Processes 4 Planet (under Horizon Europe)	link
EU	2021	Product Environmental Footprint (tool)	link
EU	2021	Recovery and Resilience Fund	link
EU	2022	REPowerEU plan	link
EU	2021	Research Fund for Coal and Steel (RFCS)	link
EU	2023	Strategic Energy Technology (SET) Plan	link
EU	2020	Taxonomy for sustainable activities	link
France	2024	Carbon contracts for difference	link
France	2024	Decarbonisation support for industry	link
France	2022	France 2030 investment	link
France	2023	Hydrogen strategy	link
France	2022	*Low Carbon Industrial Zones (ZIBAC) Call*	link
France	2022	*Planification "50 Sites Industriels les plus émetteurs"*	link
France	2020	*RE2020*	link
France	2022	Roadmap for metals	link
Germany	2019	"Federal funding for energy and resource efficiency in commerce" (EEW)	link
Germany	2018	7th Energy Research Programme	link
Germany	2023	8th Energy Research Programme	link
Germany	2020	Action plan for a strong steel industry in Germany and Europe	link
Germany	*2024*	*BIK (Bundesförderung Industrie und Klimaschutz)*	link
Germany	2024	Carbon Contracts for Difference (Directive on the promotion of climate-neutral production processes in industry through climate protection contracts)	link
Germany	2016	Climate Action Plan 2050 Principles and goals of the German government's climate policy	link
Germany	2023	Climate action programme 2023	link
Germany	2019	Competence Centre on Climate Change Mitigation in Energy-Intensive Industries	link
Germany	*2013*	*electricity price compensation*	link
Germany	2019	Energy efficiency strategy 2050	link
Germany	2021	Federal Climate Change Act	link

Germany	2023	Federal funding to steel companies for decarbonisation projects	link
Germany	2021	Fuel Emissions Trading Act (BEHG)	link
Germany	2021	Funding programme 'Decarbonisation in industry'	link
Germany	2021	H2 Global initiative	link
Germany	2019	KfW energy efficiency financing for industry	link
Germany	2021	KlimPro-Industrie (measure of the Research for Sustainability - FONA Programme)	link
Germany	2023	National Hydrogen Strategy	link
Germany	2024	Power price package	link
Germany	2020	Raw Material Strategy	link
Germany	2020	Research for Sustainability - FONA	link
India	2019	Draft National Resource Efficiency Policy	link
India	2023	Green hydrogen mission	link
India	2010	Iron & Steel R&D scheme	link
India	2021	NDCs	link
India	2011	Perform, Achieve, Trade (PAT) Scheme	link
India	2018	Steel Research and Technology Mission of India	link
India	2019	Steel scrap recycling policy	link
Indonesia	2009	Energy conservation regulation	link
Indonesia	2018	Export prohibition on steel and iron scrap	link
Indonesia	2023	National Hydrogen Strategy	link
Indonesia	2022	NDCs	link
International	2023	Steel Science-Based Target-Setting Guidance	link
Italy	2023	Agreements for Innovation (Accordi per l'innovazione)	link
Italy	2017	Circular Economy Strategy	link
Italy	2023	Green Public Procurement - Criteri Ambientali Minimi	link
Italy	2020	Hydrogen strategy	link
Italy	2021	Long-term Italian Strategy on GHGs emissions reduction	link
Italy	2005	White Certificates	link
Japan	2021	Basic Guidelines on Climate Transition Finance	link
Japan	2023	Carbon pricing scheme	link
Japan	2008	COURSE 50 Programme	link
Japan	2009	Energy benchmark system	link
Japan	2023	Energy conservation act	link
Japan	2018	Fundamental Plan for Establishing a Sound Material-Cycle Society	link
Japan	2021	Green Growth Strategy	link
Japan	2021	Green Innovation Fund	link
Japan	2006	Greenhouse Gas Accounting and Reporting System	link
Japan	2023	Hydrogen Strategy	link
Japan	2023	*Investment Strategy by Sector*	link
Japan	2021	NDCs	link
Japan	2015	Open Innovation and R&D	link
Japan	2023	Securing a Stable Supply of Important Minerals	link
Japan	2015	Subsidies for Chiyoda Steel Corporation	link
Japan	2021	Technology Roadmap for "Transition Finance" in Iron and Steel Sector	link
Korea	2023	1st National Basic Plan for Carbon Neutrality and Green Growth	link
Korea	2020	2050 carbon neutrality Strategy roadmap	link
Korea	2023	CE (Circular Economy) 9 Policy	link

Korea	2015	ETS	link
Korea	2018	Framework Act on Resource Circulation	link
Korea	2022	Hydrogen Economy Policy Direction: Plan to Create a Clean Hydrogen Ecosystem and Strategy	link
Korea	2019	Industrial Technology Innovation Promotion Act	link
Korea	2021	NDCs	link
Korea	2023	Steel Industry Development Strategy for Transition to Low-Carbon Steel Production	link
Korea	2021	Strategy for Technology Innovation for carbon neutrality	link
Korea	2022	Tax incentive (Restriction of special taxation act, enforcement decree)	link
Korea	1995	tax incentive for R&D	link
Korea	2023	Technology Development Program to Solve Climate Change	link
Türkiye	2024	Climate Change Mitigation Strategy and Action Plan (2024-2030)	link
Türkiye	2024	Green Growth Technology Roadmap	link
Türkiye	2023	Industrial Emissions Strategy	link
Türkiye	2023	NDC	link
Türkiye	2021	Türkiye Green Deal Action Plan	link
Türkiye	2023	Türkiye Hydrogen Technologies Strategy and Roadmap	link
United Kingdom	2024	British Industry Supercharger	link
United Kingdom	2021	Carbon Capture Storage and Infrastructure Fund	link
United Kingdom	2019	Industrial Decarbonisation Challenge	link
United Kingdom	2021	Industrial decarbonisation strategy	link
United Kingdom	2019	Industrial Energy Transformation Fund (IEFT)	link
United Kingdom	2016	Industrial Strategy Challenge Fund (ISCF)	link
United Kingdom	NA	National Wealth Fund	link
United Kingdom	2022	NDC	link
United Kingdom	2023	Net Zero Hydrogen Fund (NZHF)	link
United Kingdom	2021	Net Zero Innovation Portfolio	link
United Kingdom	2021	Net Zero Strategy: Build back Greener	link
United Kingdom	2020	Package to Reduce Emissions in Heavy Industry and Drive Economic Recovery (Including Jet Zero Council)	link
United Kingdom	2020	Programme for Research and Innovation in Steel and Metals (PRISM)	link
United Kingdom	2023	Public funding to transition Tata Steel's Port Talbot site	link
United Kingdom	2015	Roadmap for steel	link
United Kingdom	2023	Steel public procurement 2023	link

United Kingdom	2019	SUSTAIN Future Manufacturing Research Hub	link
United Kingdom	2020	Ten Point Plan for a Green Industrial Revolution	link
United Kingdom	2020	Transforming foundation industries	link
United Kingdom	2021	UK Emissions trading Scheme (ETS)	link
United Kingdom	2021	UK Hydrogen strategy	link
United States	2019	Buy Clean California Act (BCCA)	link
United States	2022	Buy Clean Initiative (Federal)	link
United States	2021	CCUS infrastructure funding under the Infrastructure Investment and Jobs Act	link
United States	2022	Clean Hydrogen Production Tax Credit	link
United States	2021	Climate Innovation Research Opportunity investment program	link
United States	2021	Colorado: Global Warming Potential For Public Project Materials	link
United States	1992	Energy star guides for industry	link
United States	N/A	Federal subsidies	link
United States	2021	Federal Sustainability Plan: Catalyzing America's Clean Energy Industries and Jobs	link
United States	2023	Final List of Critical Minerals	link
United States	2022	Industrial Decarbonisation Roadmap	link
United States	2023	Industrial Demonstrations Program (IRA & BIL)	link
United States	2022	Initiative for Interdisciplinary Industrial Decarbonization Research and Industrial Technology Innovation Advisory Committee	link
United States	2020	National Hydrogen Program Plan	link
United States	2021	National Recycling Strategy	link
United States	2022	NDCs	link
United States	2022	New CCUS guidelines	link
United States	2021	Regional clean hydrogen hubs (Bipartisan Infrastructure Law)	link
United States	2023	Revolutionising Ore to Steel to Impact Emissions (ROSIE)	link
United States	2018	Section 45Q tax credit for CCUS	link
United States	2022	SUPER (CHIPS and science act)	link
United States	2021	The Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse gas Emissions by 2050	link