



ITEM 9. CIRCULARITY, RAW MATERIALS, AND LONG-TERM STEEL SCRAP TRENDS

*FINAL REPORT: STEEL SCRAP AND THE CIRCULAR ECONOMY:
ASSESSING THE STATE OF PLAY*

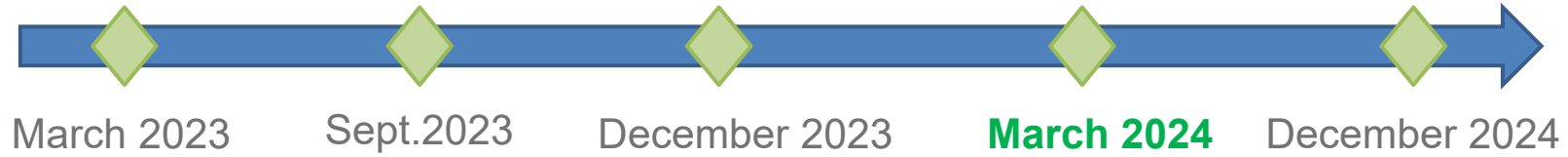
Steel Committee, 95th Session – 25th March 2024

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PWB 2023-24 – Decarbonisation Workstream Overview

Output Result 4 (OR 4)



Indicators on Decarbonisation Progress (IOR 4.1)

The Steel Industry & the Low-carbon Transition (IOR 4.2)

The Circular Economy & Scrap (IOR 4.3)

Hydrogen as a new Strategic Input (IOR 4.4)

Workshop on Technological Solutions (IOR 4.5)



Interim Report
DSTI/SC(2023)13



Final Report
DSTI/SC(2024)6



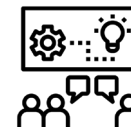
Interim Report
DSTI/SC(2023)14



Final Report
DSTI/SC(2024)5



Final Report





IOR 4.2 – Outline of the Report

1. Scrap flows: states of play

Trade monitoring

- ✓ Scrap use
- ✓ Top-5 trading countries
- ✓ Export restrictions

- ✓ Role of trade
- ✓ Regulation in place
- ✓ Trade facilitators

2. Forecasting scrap availability and usage

Joint work WSD-OECD

- ✓ Steel production
- ✓ Scrap availability
- ✓ Scrap usage

- ✓ Regional imbalances
- ✓ Perspectives

3. The Circular Economy: implications for the steel industry and related challenges

Research desk

- ✓ CE-based knowledge
- ✓ 4Rs
- ✓ Enablers for steel decarbonisation
- ✓ Barriers and challenges

4. Policy aspects

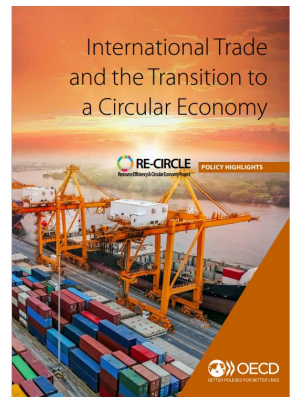
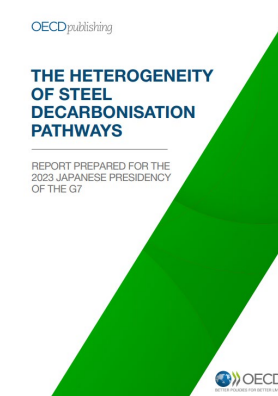
Policy mapping

- ✓ Policy questions
- ✓ Country differences
 - Policy type
 - Sectors
 - Priorities
- ✓ Potential synergies
- ✓ Cross-cutting issues



Why the circular economy is transforming the steel industry

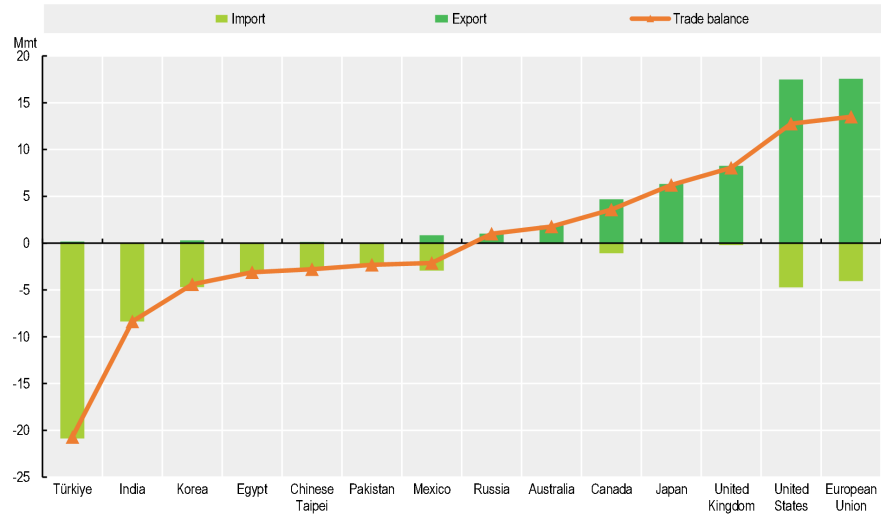
- Increasing attention on ferrous scrap for steel recycling routes
- Circular strategies supporting steel decarbonisation beyond recycling
 - What about Reduce, Reuse and Remanufacture steel?
- Greater complexity of the trade and policy landscapes:
 - How to reflect steel industry specificities for a low-carbon transition?
 - What is circular trade? What are the benefits?
 - What are the effects from export restrictions on scrap trade?
 - Will global supply of steel scrap lag demand growth ?
- Policies are key to implement circular solutions and accelerate steel decarbonisation





Assessing the State of Play – Key findings

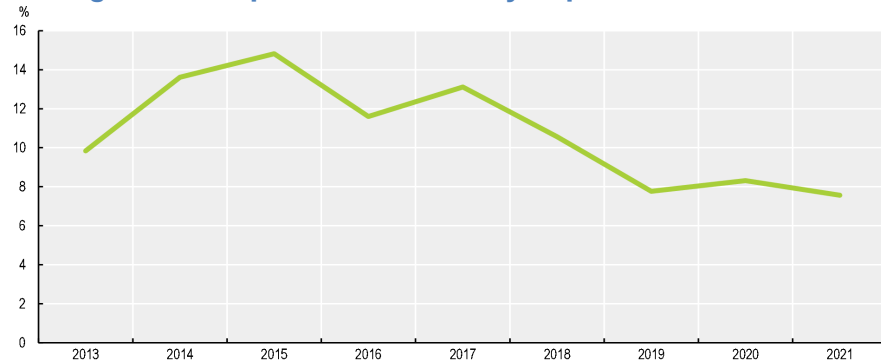
Recycled steel trade balance, 2022



Countries with greatest number of scrap steel export restrictions, 2021

Country	Region	Type of Restrictions	Number of Restrictions
Democratic Republic of the Congo	Africa	Export surtax	5
		Export tax	
		Fiscal tax on exports	
		Licensing requirement	
		Other export measures	
Burundi	Africa	Export prohibition	5
		Export tax	
		Fiscal tax on exports	
		Fiscal tax on exports	
		Licensing requirement	
Malaysia	Asia	Export tax	3
		Export tax	
		Licensing requirement	
Nigeria	Africa	Export prohibition	3
		Licensing requirement	
		Other export measures	
Zambia	Africa	Export tax	3
		Licensing requirement	
		Other export measures	
South Africa	Africa	Export tax	3
		Licensing requirement	
		Licensing requirement	

Share of global scrap trade covered by export restrictions, 2013-21



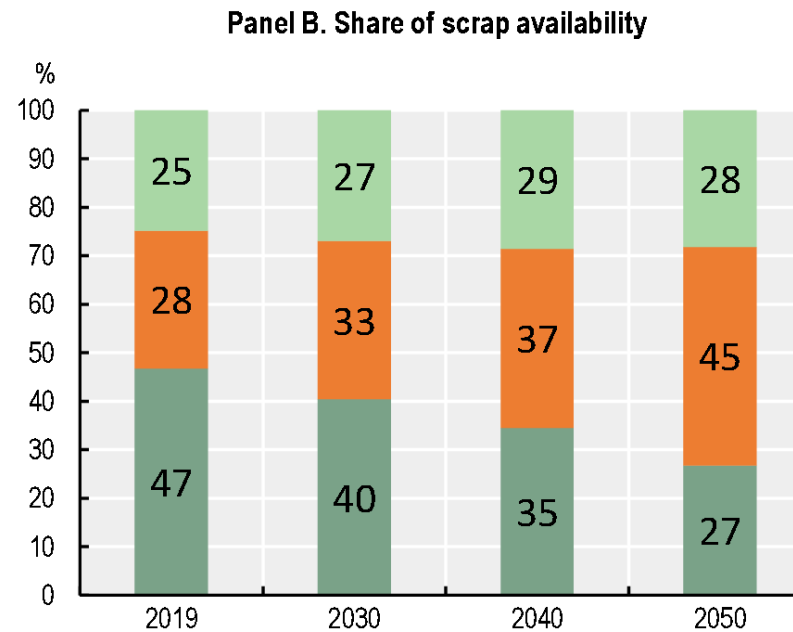
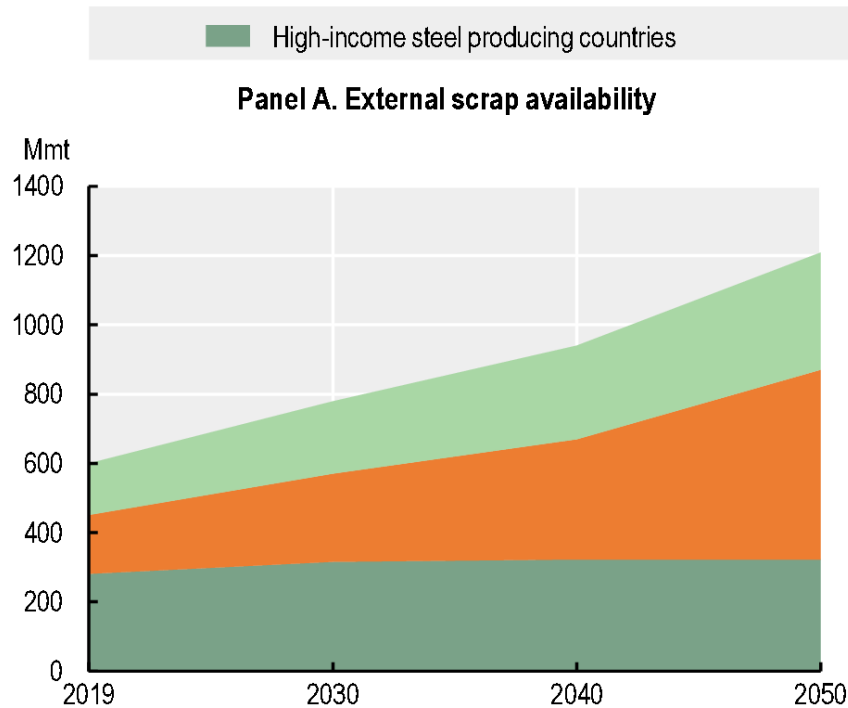
Note: Scrap products include HS codes 720410, 720421, 720429, 720430, 720441, 720449, 720450.

Source: Authors' calculations based on (International Steel Statistics Bureau , 2022) and (OECD, 2022b).



The future of scrap availability

Scrap availability is rising until 2050, but significantly differs across steel-producing countries



In 2050

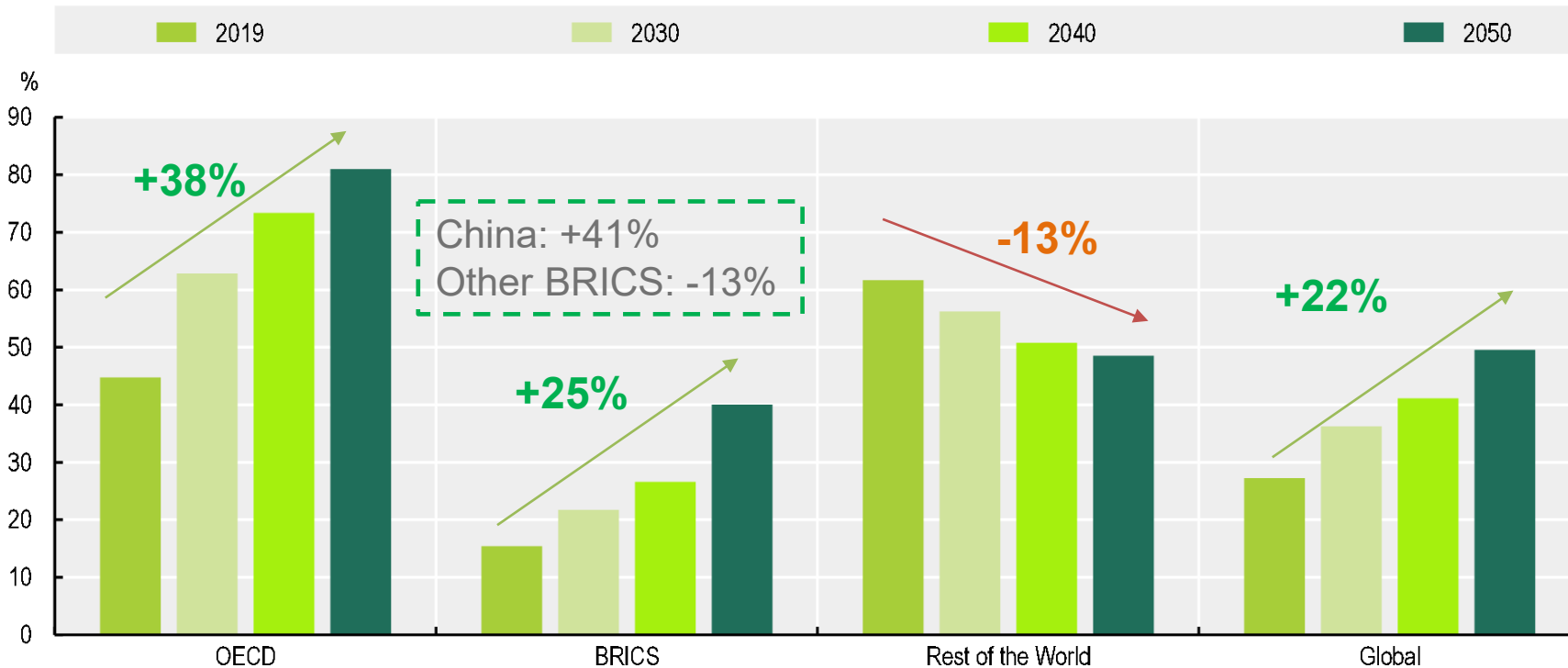
- **1200 mmt** of external available scrap
- About **45%** of available scrap in China
- Drivers:
 - Historical recoverable rates
 - Growing steel consumption
 - Construction and automobile sectors

Note: High-income steel producing countries=EU27 countries, Canada, Japan, Korea, Mexico, Chinese Taipei, United States.
Source: World Steel Dynamics (WSD) model.



Future development of scrap usage

Growth of recycled steel will support regional steel production at a different pace



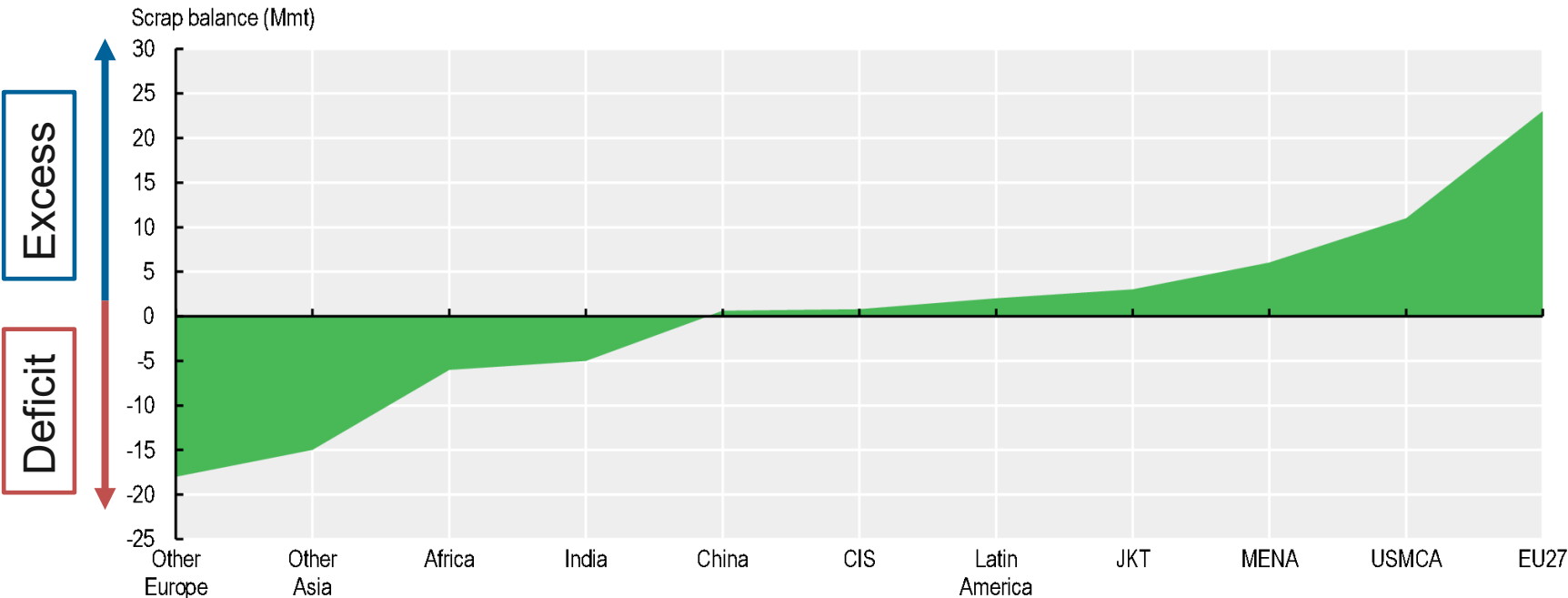
In 2050

- **50%** of EAF production share:
 - 81% in OECD countries
 - 41% in BRICS countries
 - 49% in the RoW
- Drivers:
 - Rising scrap availability
 - Potential for EAF-DRI production (**260 mmt**)
 - Increasing scrap use in BOF production



Identifying potential imbalances in scrap supply-demand

More scrap will still lack in certain region despite a global excess



Source: World Steel Dynamics (WSD) model.

In 2040

- Global excess of scrap supply by **5mmt**
- 4 regions at risks of shortages (between **-5 mmt** and **-18 mmt**)
- 6 regions in excess (between **2 mmt** to **23 mmt**)
- Large potential for global recycling market



Circular Economy policy overview at a glance

Policies supporting steel circularity are still in their infancy

Policy type	Count
Horizontal	17
Sectoral	11
Product-level	13
Mandatory	11
Strategic/voluntary	20

Coverage	Count
Steel	5
Automobile	9
Construction	12
Shipbuilding	3
Renewable sector	6

Priorities	Count
4Rs	6
Reduce	20
Reuse	24
Recycle	27
Remanufacture	9

Common features:

- ✓ Circular Economy horizontal approach
- ✓ Recycling is a top-priority
- ✓ Focus on downstream sectors
- ✓ Main instruments in place: taxes

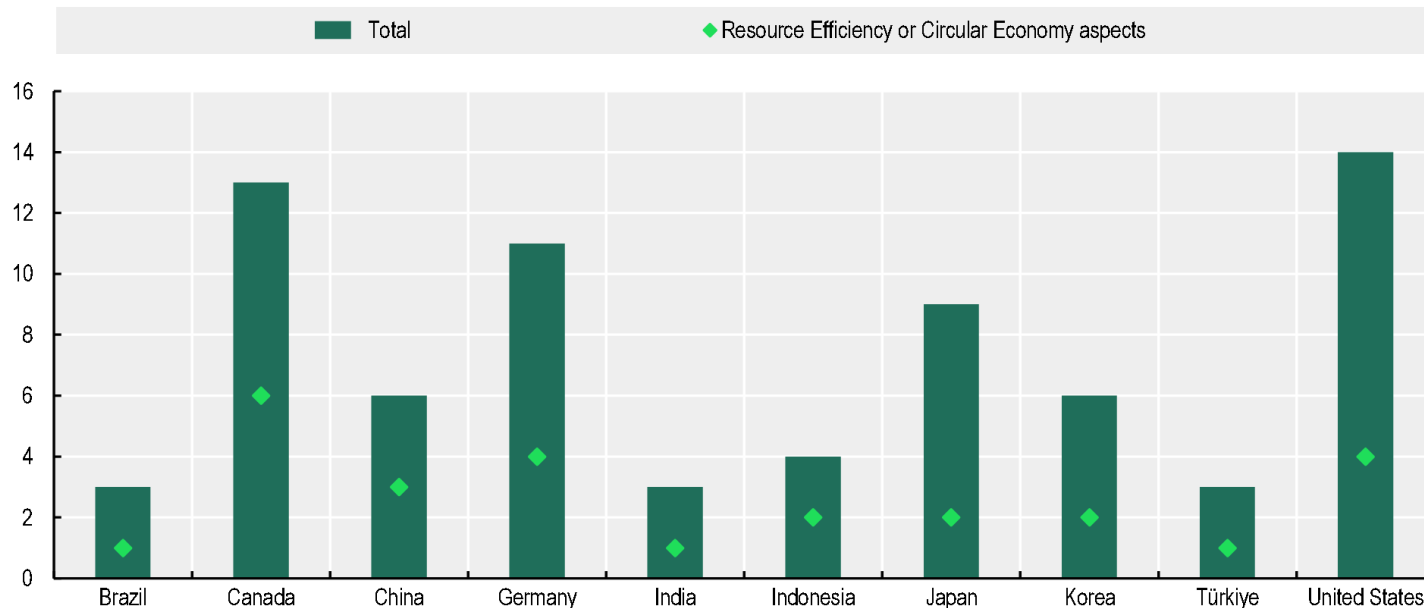
Key differences:

- × Mandatory policies (Germany, Korea, Japan)
- × 9Rs policy (Germany and India)
- × Few priorities on remanufacturing
- × Few steel scrap-specific policies (India)



Are circular economy aspects part of the steel decarbonisation strategies?

Circular Economy aspects need to be a key part of steel decarbonisation policies



Source: Authors' compilation based on Steel Decarbonisation Policy dataset (OECD, 2024).

Steel decarbonisation policy

- Main components:
 - Recycling
 - Resource efficiency
 - Waste prevention
- Few considerations for:
 - 3Rs (Reduce-Reuse-Recycle)
 - Life Cycle Assessment

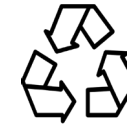
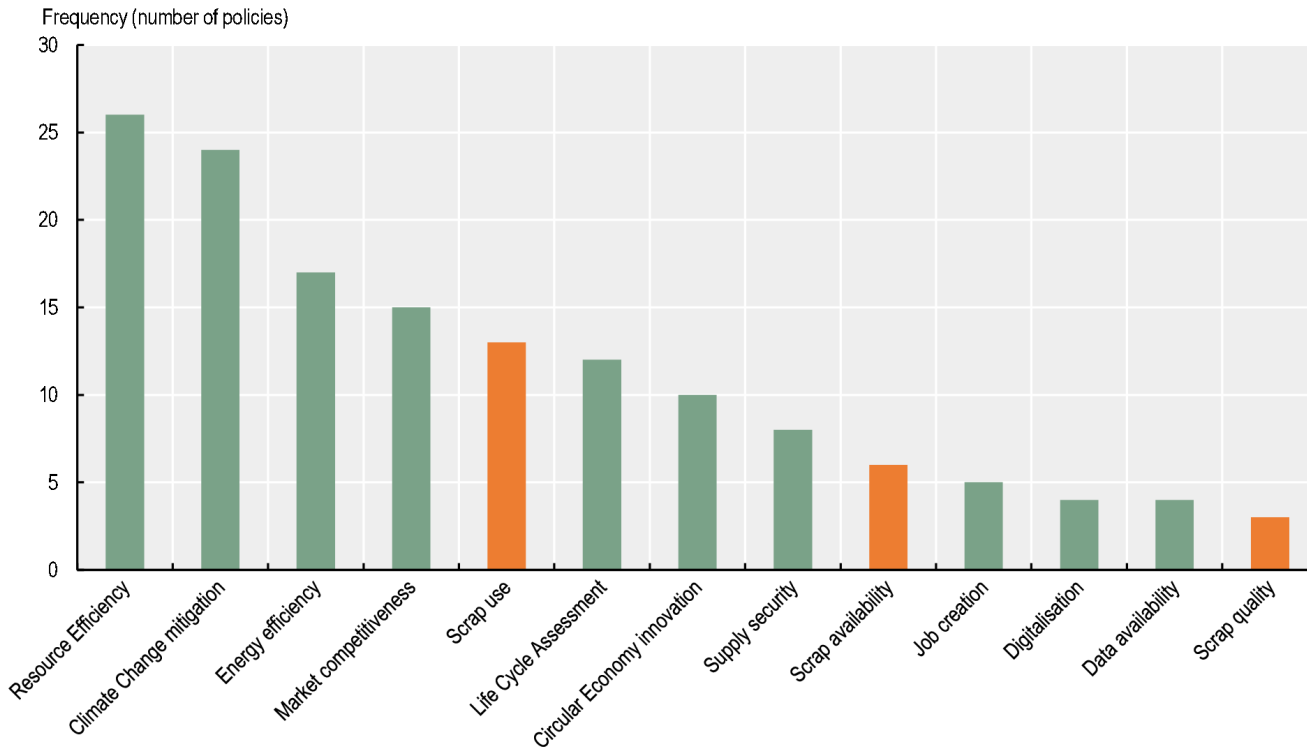
CE policy instruments

- Taxes: **7.6%** of all environmentally-relevant revenues
- Policy mix (mainly taxes and subsidies) to support decarbonisation objectives



What is the possible role of scrap in the scope of Circular Economy Policies?

Few Circular Economy strategies address scrap-specific challenges: availability – accessibility – quality



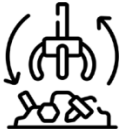
Examples of government's approaches

- Use of Artificial Intelligence in 9 CE project policy (Korea)
- Charge on steel and aluminium beverage packaging (Japan)
- Steel Scrap Recycling Policy (India)
- Green Public Procurement scheme (United States)
- VAT policy to incentive circular economy business model (China)

Source: Authors' compilation based on Steel Decarbonisation Policy dataset (OECD, 2024).

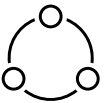


Summary of key findings



The present and future role of scrap:

- Scrap plays an increasing role to expand steel secondary markets
- The future of scrap availability is a critical ingredient for steel decarbonisation



Circular economy:

- Scrap top challenges remain availability, accessibility and quality requirements
- The transition to the circular economy will have long-term impacts on steel production



Circular trade as part of the solution:

- Regional scrap imbalances are paving the way for a global recycling market
- Trade barriers may risk disrupting reverse supply chains



Policy aspects for consideration:

- 4Rs policies are still in their infancy for steel
- Digital transformations are driving policy responses to scrap challenges.



Moving forward



DSTVSC(2024)5

For Official Use

English - Or. English

5 March 2024

DIRECTORATE FOR SCIENCE, TECHNOLOGY AND INNOVATION
STEEL COMMITTEE

Cancels & replaces the same document of 5 March 2024

Steel Scrap and the Circular Economy

[Final report: Assessing the state of play]

Information Note: This document constitutes a final version of the Output Result (OR) 4.3 of the 2023-24 Steel Committee's PWB. The report follows the outline described in the interim report DSTVSC(2023)14, which was presented at the 94th Steel Committee meeting (September 2023), and includes members' written comments following the September meeting.

This final version complements the interim report by presenting analysis and forecasts for the long-term availability and usage of scrap (Section 3) as well as a policy mapping of existing circular economy and scrap-based policies in major steel-producing economies (Section 5).

A panel discussion under Item 9 of the 95th Steel Committee meeting (25-26 March 2024) will provide an overview of some government approaches to the use of digitalisation (e.g., artificial intelligence and blockchain) to address scrap-specific challenges. Furthermore, members are invited to inform the Secretariat of any possible new research directions they may wish to focus on, including for the next Programme of Work and Budget.

Action required: Delegates are invited to discuss and declassify the report for publication. Should more time be needed for declassification, delegations are invited to send their written comments by 16 April, after which the document will be considered declassified.

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- **Final Report:** Delegations are invited to declassify the report for publication and provide comments by 16 April
- **Cross-cutting topics:**
 - Digital transformations and steel circularity
 - Potential synergies between steel circularity and decarbonisation
 - Transport and recycling infrastructures in developing countries
- **Panel discussion:**
 - Use of Artificial Intelligence
 - Country's availability and usage of scrap
 - Trade developments in recycled steel
 - Trade-related policy measures



THANK YOU FOR YOUR ATTENTION