International Energy Agency

Achieving Net Zero Heavy Industry Sectors in G7 Members

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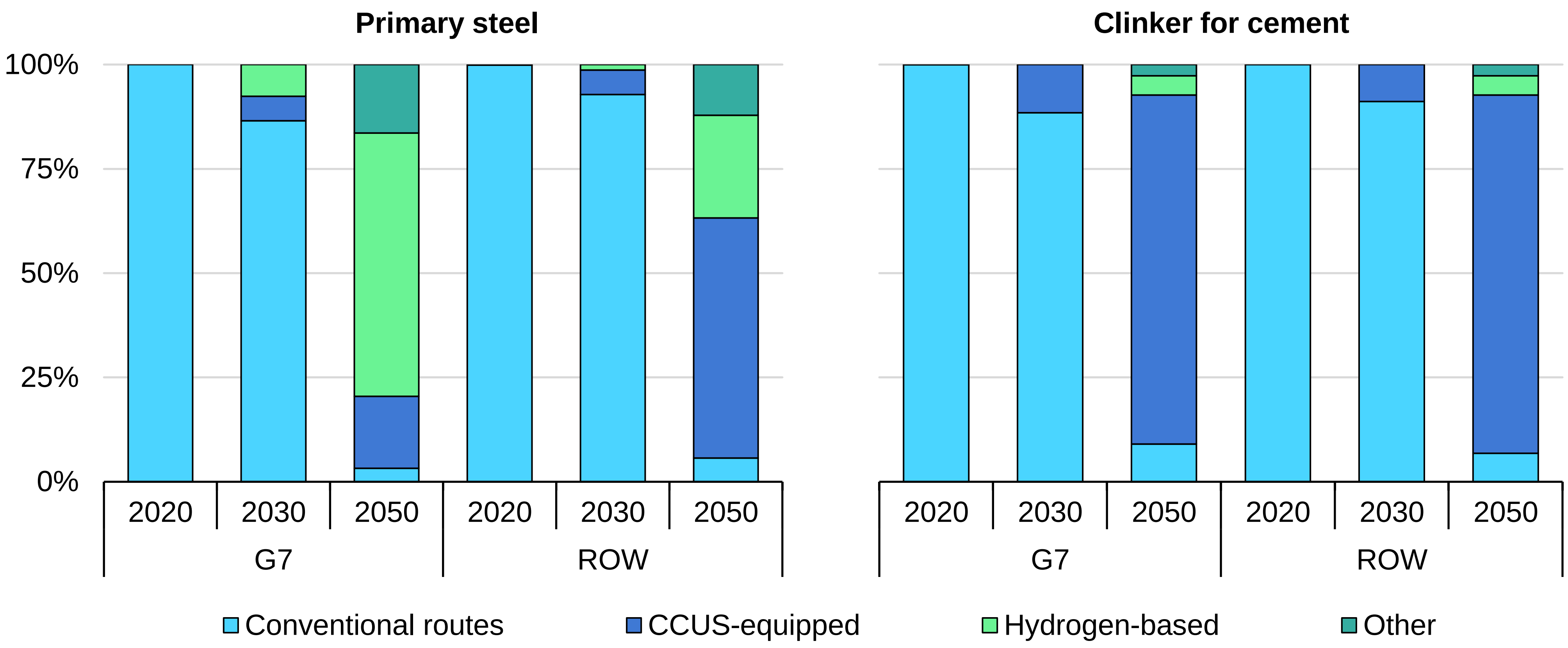
Overview

- The IEA was requested by Germany's 2022 G7 Presidency to support the advancement of its climate and energy agenda, with industrial decarbonisation identified as a priority area
- There are different pathways to net zero heavy industry sectors, but any path will need a strong policy foundation to be successful:
  - Policies and financing mechanisms to drive down industrial emissions
  - Definitions of what constitutes near zero emission material production
- The aim of the project was to provide the technical basis for G7 discussions, arrived at through inclusive engagement of a wide range of stakeholders
- The report builds on two technical workshops on each of these topics, convened in February 2022, and extensive additional consultations
- The focus of the report is on steel and cement production, but many of the principles established are applicable to other heavy industry sub-sectors and materials, and countries beyond the G7

The G7 moves faster than the rest of the world

Production by route in the G7 and the rest of world in the Net Zero Emissions by 2050 Scenario



Among the G7, by 2030, near zero emission routes account for more than 10% of primary steel and clinker for cement production in the NZE; by 2050, they account for upwards of 90% of production.

Governments hold the pen: a policy toolbox for the industry transition

Driving force: stakeholder collaboration

Governments, producers & other actors

Framework fundamentals

Planning and policy for long-term CO_2 emission reductions

Mobilising finance and investment

Targeted actions for specific technologies and strategies

Production technologies

- Managing existing assets & near-term investment
- Creating a market for near zero emission materials production
- Developing technologies

Demand & recycling

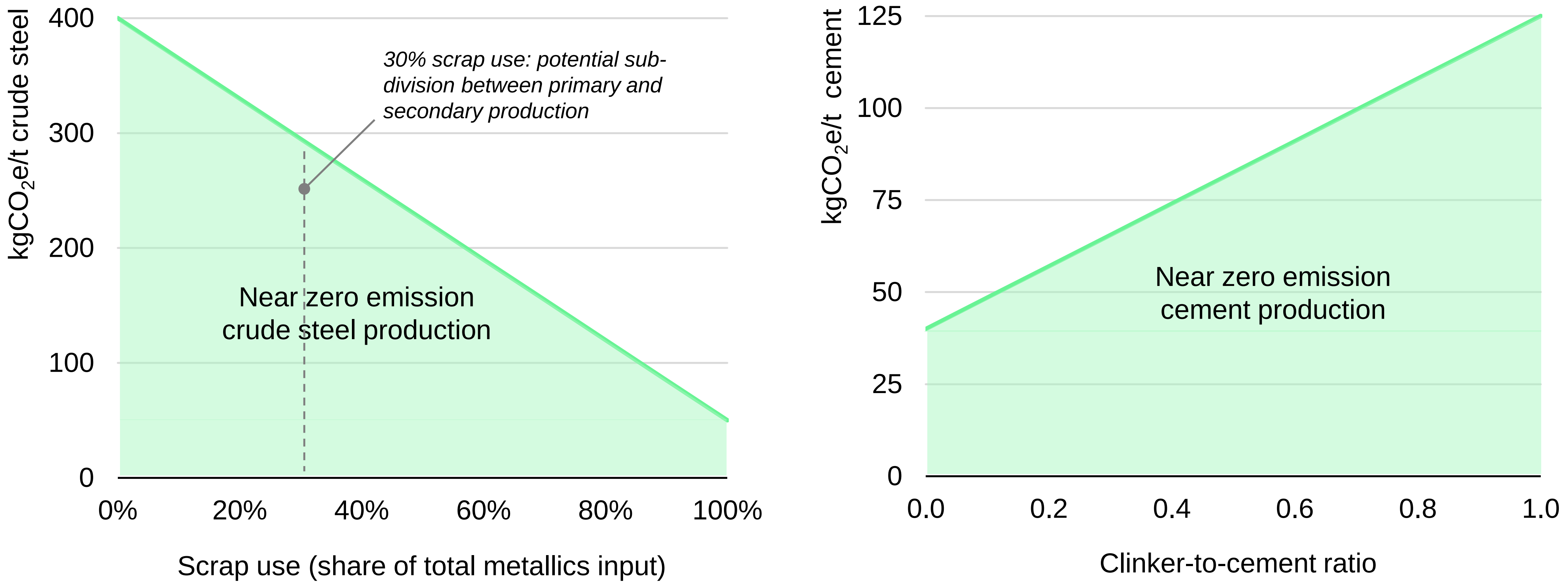
- Accelerating material efficiency and circularity

Necessary enabling conditions

- International co-operation & a level playing field
- Infrastructure planning & development
- Tracking progress & improved data

Definitions of near zero emission material production

Near zero emission steel and cement production emissions intensity thresholds



The threshold ranges for steel production are 50-400 kgCO_2e/t and 40-125 kgCO_2e/t for cement production, depending on the share of scrap use and the clinker-to-cement ratio respectively

Recommendations on policy and financing

1. Develop ambitious long-term sustainable transition plans for industry, backed by policy
2. Finance a portfolio of demonstration projects for near zero emission industrial production technologies
3. Develop finance mechanisms to support deployment of near zero emission industrial technologies and associated infrastructure
4. Create differentiated markets for near zero emission material production
5. Explore a non-binding intergovernmental international industry decarbonisation alliance in support of the industry transition
6. Establish a cement sectoral Breakthrough at COP27

Recommendations on common definitions

1. Consolidate existing work on measurement standards, ensure their fitness for purpose, and avoid the development of duplicate standards and protocols

2. Adopt stable, absolute and ambitious thresholds for near zero emission material production that take account of sector-specific nuances

3. Value interim steps taken to substantially lower emissions intensity, without compromising the stringency of the thresholds for near zero emission production

4. Extend the reach of work on definitions down existing supply chains, and into new ones