

SNAPFI webinar on steel decarbonization (EU 2022/23 study)

Summary

Study topic: *Steel decarbonization in emerging economies: What case for international climate finance and support?*

Date and time: December 16, 2022, 12:00 – 13:30 CET.

Platform: Webex

Number of participants: 26

Invited speakers:

1. Jörn Richstein (DIW Berlin)
2. Will Hall (IEA)
3. Vaibhav Pratap Singh (CEEW)
4. Parth Kumar (CSE India)

Moderator: Sangeeth Raja Selvaraju (DIW Berlin)

Technical assistance: Egor Trushin (DIW Berlin)

Summary of the webinar:

Sangeeth Raja Selvaraju (DIW Berlin) opened the webinar by sharing some of the findings of the study by DIW Berlin, developed under the project “Strengthen national climate policy implementation: Comparative empirical learning & creating linkage to climate finance (SNAPFI)”, which is funded by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). The study outlines an international climate cooperation framework for decarbonizing the steel industry and analyzes potential financial instruments for transformational change. In particular, this research discusses how international carbon contracts for difference (CCfDs) could be implemented in emerging economies in interplay with further policy objectives. The study by DIW Berlin recommends a change of cooperation modalities to enhance the effectiveness of international climate finance as a catalyst for mitigation actions and policies. Relevant reference: Von Lüpke, H., Marchewitz, C., Aebischer, C., Kröger, M. (2022). Steel decarbonization in emerging economies: What case for international climate finance and support? The German Institute for Economic Research - DIW Berlin, https://www.diw.de/documents/dokumentenarchiv/17/diw_01.c.852563.de/220915_snapfi_report_eu.pdf

Jörn Richstein (DIW Berlin) shared the presentation on CCfDs (attached), which outlined the relevance of steel decarbonization, the challenges of investing in climate-neutral material production & corresponding market failures, the working mechanism of CCfDs, its implications for carbon price and risks. The main conclusions are available in the presentation. Relevant reference: Richstein, J. C., & Neuhoff, K. (2022). Carbon contracts-for-difference: How to de-risk innovative investments for a low-carbon industry?. *iScience*, 25(8), 104700. <https://doi.org/10.1016/j.isci.2022.104700>.

Will Hall (IEA) presented the findings on the Steel Breakthrough (presentation attached), displaying how international collaboration could be strengthened to accelerate transitions to net zero global emissions in the steel sector. Five recommendations are available in the presentation and the IEA Breakthrough Agenda Report 2022: <https://www.iea.org/reports/breakthrough-agenda-report-2022>.

Vaibhav Pratap Singh (CEEW) disclosed the quantitative assessment of the steel sector in India, covering the total and green steel production, GHG emission shares and details on different types of production methods. Electricity system and EV transitions were mentioned as prospective sectors for decarbonization. The following three issues were seen as crucial for unlocking Indian decarbonization potential, especially with the use of CCfDs: identifying the technological risk carrier(s), understanding the effect on Indian steel competitiveness, and deciding on who finances the CCfDs.

Parth Kumar (CSE India) shared the findings from the study on Indian steel decarbonization by 2030. Currently, 45% of steel is produced by the blast furnace–basic oxygen furnace (BF-BOF) method, and 55% is made using an electric arc furnace (EAF). By 2030 the proportion is aimed by the state to shift to 65% BF-BOF and 35% EAF/IF. While EAF is seen globally as a “cleaner” production method in terms of GHG emissions due to the use of natural gas, in India EAF is coal-based. Indian steel producers have differences in scale: direct reduced iron (DRI) is mostly a small-scale sector, while large producers use primarily BF-BOF. This needs to be taken into account when designing finance flows, targeted for industry decarbonization. The following emerging technologies in steel were mentioned: the use of scrap (potential due to vehicular scrappage and ship-wrecking sites); the use of natural gas, biomass or plastics in BF-BOF (though coal is hard to eliminate); and CCUS as a thriving technology with pilot projects by leading steel producers. The CSE India report on decarbonizing steel can be accessed via <https://www.cseindia.org/decarbonizing-india-s-iron-and-steel-sector-report-11434>.

The discussion section raised the following questions and comments:

1: how to apply CCfDs in developing countries when there’s no proper carbon mechanism in place? How to set a strike price when there’s no carbon price available?

Reply: what’s needed is a regulatory set benchmark, based on the best available technology. In EU there’s EU ETS and there are other international benchmarks. The carbon price can be set irrespective of the local CO₂ price – the common approach is tenders/auctions, another way is negotiations. The main question in the international context is – who (which government) carries the risk?

2: Indian electric route has not only EAF, but also an induction furnace (IF). DRI is connected to IF, this method leads to low-quality steel, which is used for construction and infrastructure projects. Natural gas is less used in India due to its high price and the availability of coal in India. The biggest challenge is the availability of natural gas and hydrogen. There’s also a difference in production in different parts of India. Another important aspect is that DRI producers are small and medium enterprises (SMEs), downstream processes are undertaken by SMEs, so they require technological support in terms of CAPEX.

Reply: indeed, currently around 27% is EAF and 28% is IF, and gas pricing is a big issue. Due to air pollution, some producers have pressure to switch to natural gas. Plus, there’s a national grid planned to supply natural gas across the country. Coal bed methane and other gas alternatives are being discussed. On territorial differences: the east of India has a lot of coal mining (partly due to coal power plants). Finding gas alternatives is important as India imports 50% of its natural gas. After coal, natural gas is the biggest scalable fuel, with biomass being competitive in some regions.

3: design of finance mechanisms and incentive structures is a critical issue. MDBs have a fixed proportion of equity that they need for provision of each loan or guarantee which is 20% - this could be expensive for the steel sector. Are there any other risk sharing arrangements?

Reply1: differences in the maturity of carbon markets in India and internationally may come into play. On MDBs – they take a lot of developing market risk coming from developed countries, especially by investing in research & development projects, which is why they require 4- to 5x on capital raised. For CCfDs it’s important to understand the risk distribution and how much of it can be mitigated.

Reply2: launch of a climate investment fund is a good step towards more cooperation. Another innovative international collaboration is an energy transition council, which unites donor and recipient countries, MDBs and other actors for common goals, e.g. to stop new coal plants from being built. A big advantage of green steel is the independency from market fluctuations – the green premium (e.g. 25%) can be higher than the market price, but would lead to the absence of market volatility. Today at least 65 companies have committed to buy green steel, which is double the number from 2021. Another question is whether the steel market concentration is a reason to worry.

Reply3: the projected share of EAF/IF (35%) is not a small number for 2030 – the question is what type of technology and which fuels will be used.

Follow up and next steps:

- DIW will continue work on CCFD for steel decarbonization through an Indian case study.
Release date: 3Q2023
- Participants and related stakeholders are invited to workshops during study process (details to be shared)
- For further discussion and comments please feel free to contact Heiner von Lüpke (DIW Berlin) via hluepke@diw.de or Sangeeth Raja Selvaraju (DIW Berlin) via sselvaraju@diw.de