Research Network on Industrial Decarbonisation

NEWSLETTER #22

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The rules of the net-zero game: Improve and expand climate policies

As we are entering this new fall term, one can only ratify the conclusion of our last newsletter (June 2024) that there is still much to do… But, what is there to do?

This month's featured researchers Marc Jaccard and Chris Bataille argue that, while there is progress in industrial decarbonisation, the lack of international cooperation in climate mitigation efforts is hampering decarbonisation, especially in trade-exposed industries. Through a savvy mix of policy sticks and carrots, they reckon more can be done, especially if one doesn't forget regional differences.

To improve and expand these climate policies, there is also a need to know our starting point. This can be done by assessing the efficiency of currently implemented climate policies. A recent paper published in *Science*, cited by the Economist, has conducted a systematic review of climate policies. This paper led us, coordinators of RENEW Industry, to prepare an upcoming survey on the state of advancement of decarbonisation efforts in our field, industry, that we will like to share with you in the upcoming weeks. Stay tuned!

Do you have content to share, ideas or other thoughts?

- Contact us: renew.industry@gmail.com
- Remind a colleague to join!
- Follow us on Twitter! @RENEWIndustry
- Share our homepage! LINK
- Visit our blog for (intermittent) updates

Regional variability and its impact on the decarbonisation of emissions-intensive, trade-exposed industries

Featured piece by Marc Jaccard and Chris Bataille

Emissions-intensive, trade-exposed (EITE) industries, responsible for a large share of global industrial emissions, are crucial for producing the materials and products we rely on daily. Despite the urgent need for decarbonization to meet net-zero targets by 2050, significant technological and political challenges persist. These industries are marked by carbon-reliant assets, competitiveness concerns, and high costs for low-emissions technologies.

Global efforts to tackle industrial emissions, such as the EU's Green New Deal and the U.S. Inflation Reduction Act, show progress, but emissions reductions remain modest. In Canada, where industrial heterogeneity and regional resource variability are prominent, a recent study reveals that policy stringency needs to rise dramatically to achieve deep decarbonization.

We conducted a study to assess how regional variability influences the adoption of low emissions technologies in EITE industries at different levels of policy stringency. Our goal was twofold: first, to explore the potential for EITE decarbonization under different policy stringencies, and second, to evaluate major decarbonization pathways and their costs based on regional circumstances. results highlight the need for further policy mechanisms to aid the EITE industry decarbonization in a world without global consensus on climate policy. First, policymakers can introduce support mechanisms that encourage the uptake of low carbon technologies, such as investments in R&D, subsidies, and infrastructure build-out. Second, they can address international competition directly by penalising climate laggards through trade mechanisms such as the formation of climate clubs and BCAs.

The research article “Regional variability and its impact on the decarbonization of emissions-intensive, trade-exposed industries in Canada” can be read and downloaded here.

A longer introduction to the article can be found on the RENEW-industry blog.

Projects and initiatives

[Hydrogen Valley Platform]
Showcasing hydrogen flagship projects around the world: A platform for project developers. LINK

ScienceForUkraine

#ScienceForUkraine is a community group of volunteer scholars and students around the world to help scholars and students affected by Russia's war in Ukraine. LINK

Events

Here, you can find tips about upcoming events and summaries from past events that might have skipped your attention.

UPCOMING EVENTS

[Conference]
Young Energy Researchers Conference
March 4, 2025. Wels, Austria
Deadline for papers: October 10, 2024
More information: LINK

[Seminar, in German]
3. Symposium Klimaneutrale Unternehmen. CSRD und Klimaneutralität: Lästige Pflicht oder Chance für Unternehmen?
November 27, 2024, Stuttgart
More information: LINK

[Webinar]
Enhancing Resilience and Efficiency: Circularity-by-Design
UNECE: Group of Experts on Energy Efficiency, Task Force on Energy Efficiency in Industry
Bi-monthly open discussion forum,
October 10, 2024, online
More information: LINK

PAST EVENTS

[UNECE Sustainable Energy Week]
Building Resilient & Just Energy Systems
September 16-20, 2024, Geneva
More information: LINK

[Forum]
ENERGYNOW SDG7 Action Forum 2024
September 25-27, 2024, New York
More information: LINK

[Climate Week NYC Panel Event]
Decarbonizing the Chips - Challenges to Ensure the Semiconductor Industry Towards Net Zero
September 27, 2024, New York
More information: LINK

[Roundtable Event]
Public Procurement of Steel and Cement in Construction - Creating a Lead Market for Green Materials
June 26, 2024, Brussels
More information: LINK

[Panel discussions]
IDDRI, Forum Energii & Agora Industry
How to make the European Industrial Deal succeed - going beyond national approaches towards a European solution for clean industry

June 11, 2024, online
More information: LINK

Please let us know if you want your event featured in this newsletter!

Open positions

We aim to publish all open positions we receive via the network. Do you know of an open position in the field? Send us an email: renew.industry@gmail.com. Positions with short notice could be relevant to some of our members, and we can share them with the network between the newsletters.

[National Technical Officer - Industry]
The UNIDO's Energy Systems and Industrial Decarbonization Unit (TCS/ECA/ESD) is looking for a Brazilian national that will be responsible for delivering activities of the Brazil Industrial Decarbonisation Hub (ID Hub) workplan at official level, working closely with the ID Hub to execute UNIDO-led areas of work and coordinating/collaborating with international technical assistance providers to ensure delivery coherence elsewhere. Sectors: metals, cement and fertilisers. Deadline: 10 October 2024. LINK

[Postdoc]
The Climate Policy Department at DIW Berlin has an open postdoc position in electricity market design and risk management in both electricity markets and the industrial sector. Duration: 3 years.Deadline: 15 October 2024. LINK

[Postdoc]
The sustainable engineering Initiative at NYU Tandon School of Engineering has multiple postdoctoral openings in the area of energy systems and industrial decarbonization. The specific topics of interest and preferred qualifications can be found here LINK. Duration: 1 + 2 years. Deadline: 15 October 2024. Start dates are flexible (Fall 2024 or Spring 2025).

[PhD position]
PhD fellowship in public policy and sustainable transition at the University of Copenhagen. Green transition policies in agriculture and food production, energy-intensive industries and maritime transport. Duration: 3 years. Deadline**:** 4 November 2024. LINK

[Intern - Decarbonization and Sustainable Energy Talent Pool]
The UNIDO's Division of Decarbonization and Sustainable Energy (TCS/DSE) is looking for a university student intern to work under the direct supervision of a project manager. The unpaid internship will contribute to the study and analysis of selected technical cooperation projects from the division's portfolio from the perspective of upscaling the project impacts through normative and policy functions of UNIDO. Place: Vienna, Austria. Deadline: ongoing. LINK

Open calls

[Call for Papers: Special Issue] Special Issue Proposal for the International Journal of Pedagogy, Innovation and New Technologies (IJPINT): 'The Role of Science in Shaping Global Futures: Localizing Climate Action and Sustainable Development,' invites authors to publish free of charge in this open-access journal. This special issue explores innovative approaches to localising Nationally Determined Contributions (NDCs) and Sustainable Development Goals (SDGs) in the Global North and South. Submit your paper here: LINK. Please add the comment when submitting: For the Special Issue "The Role of Science in Shaping Global Futures: Localizing Climate Action and Sustainable Development".

Recent publications

This section combines peer-reviewed journal publications, project reports and other scientific work that has been published recently. We follow a sectoral classification for the publications listed below complemented by a General / cross-sectoral / circular category for publications spanning across several industrial sectors or even the entire economy. Please feel free to share any publication you would like to see listed here in the next newsletter, by sending an email to renew.industry@gmail.com.

General / cross-sectoral / circular

[Peer-reviewed] Wiedenhofer D, Streeck J, Wiese F, Verdolini E, Mastrucci A, Ju Y, Boza-Kiss B, Min J, Norman J, Wieland H, Bento N. (2024). Industry Transformations for High Service Provisioning with Lower Energy and Material Demand: A Review of Models and Scenarios. Annual Review of Environment and Resources, 49. LINK

[Peer-reviewed] Lee, H., McJeon, H., Yu, S., Liu, Y., Kim, H., & Eom, J. (2024). Decarbonization Pathways for Korea's Industrial Sector Towards Its 2050 Carbon Neutrality Goal. Journal of Cleaner Production, 143749. LINK

[Peer-reviewed] Saussay, A., & Sato, M. (2024). The impact of energy prices on industrial investment location: evidence from global firm level data. Journal of Environmental Economics and Management. LINK

[Peer-reviewed] Löfgren, Å., Ahlvik, L., van den Bijgaart, I., Coria, J., Jaraitė, J., Johnsson, F., & Rootzén, J. (2024). Green industrial policy for climate action in the basic materials industry. Climatic Change, 177(9), 1-12. LINK

[Peer-reviewed] Otto, S., & Oberthür, S. (2024). International cooperation for the decarbonization of energy-intensive industries: unlocking the full potential. Climate Policy, 1-17. LINK

[Peer-reviewed] Lotz, M. T., Herbst, A., Müller, A., Kranzl, L., Carreon, J. R., & Worrell, E. (2024). A material flow model of steel and concrete in EU buildings: National differences of the service-stock-flow nexus. Cleaner Waste Systems, 8, 100153. LINK

[Peer-reviewed] Mayer, P., Heer, M., Shu, D. Y., Zielonka, N., Leenders, L., Baader, F. J., & Bardow, A. (2024). Flexibility from industrial demand-side management in net-zero sector-coupled national energy systems. Frontiers in Energy Research, 12, 1443506. LINK

[Peer-reviewed] Määttä, S., Covarrubias, M., & de Gooyert, V. (2024). Resistance to market interventionism: an analysis of the European industrial carbon management strategy consultation. Climate Policy, 1-22. LINK

[Peer-reviewed] Swennenhuis, F., de Gooyert, V., & de Coninck, H. C. (2024). Socio-technical dynamics of carbon dioxide capture and storage: A systems view on enablers and barriers at North Sea Port. International Journal of Greenhouse Gas Control, 137, 104201. LINK

[Peer-reviewed] Scharnhorst, L., Xie, X., Kleinebrahm, M., & Fichtner, W. (2024, June). Techno-Economic Analysis of Future Process-Specific Demand Response in European Industries. In 2024 20th International Conference on the European Energy Market (EEM) (pp. 1-10). IEEE. LINK

[Peer-reviewed] Toktarova, A., Göransson, L., & Johnsson, F. (2024). Electrification of the energy-intensive basic materials industry–Implications for the European electricity system. International Journal of Hydrogen Energy. LINK

[White Papers] GEI. 2024. Electrification of Industrial Heating in India. LINK

[Report] Bataille, C., Stiebert, S., Algers, J., Li, F., & Alfare, M. (2024). Triggering Investment in First-of-a-Kind and Early Near-Zero Emissions Industrial Facilities. LINK

[Report] Rehfeldt, M., Bußmann, S. L., & Fleiter, T. (2024). Direct electrification of industrial process heat. LINK

[Policy brief] (In German) Fleiter, T., Rehfeldt, M., Neusel, L., Hirzel, S., Neuwirth, M., Schwotzer, C., Kaiser, F. & Gondorf, C. (2024). CO2-neutrale Prozesswärme durch Elektrifizierung und Einsatz von Wasserstoff: Technologien, Hemmnisse und Handlungsbedarf (No. 01/2024). Fraunhofer Institute for Systems and Innovation Research (ISI). LINK

Steel

[Peer-reviewed] Adhikari, N., & Khanam, S. (2024). Toward Sustainable Production: Emerging Trends in Iron and Steel Making. ChemBioEng Reviews. LINK

[Peer-reviewed] Durga, S., Speizer, S., & Edmonds, J. (2024). The role of the iron and steel sector in achieving net zero US CO2 emissions by 2050. Energy and Climate Change, 5, 100152. LINK

[Peer-reviewed] Di Foggia, G., & Beccarello, M. (2024). Decarbonization in the European steel industry: Strategies, risks, and commitments. Environmental Challenges, 16, 100988. LINK

[Peer-reviewed] Bhardwaj, N., Seethamraju, S., & Bandyopadhyay, S. (2024). Decarbonizing rotary kiln–induction furnace based sponge iron production. Energy, 306, 132516. LINK

[Peer-reviewed] Copley, J. (2024). Green Vulcans? The political economy of steel decarbonisation. New Political Economy, 1-14. LINK

[Report] Wilmoth, R., Homann, Q., Gamage, C., Wright, L., Ramirez, K., Flesch, S., Ha, T., Rosas, J., & Janzow, N. (2024). Green Iron Corridors: Transforming the Steel Supply Chains for a Sustainable Future. LINK

[Report] Bataille, C., Stiebert, S., & Li, F. (2024). Facility level global net-zero pathways under varying trade and geopolitical scenarios: Final Technical & Policy Report for the Net-zero Steel Project, Part II, netzeroindustry.org. LINK

[Report] Ministry of Steel. (2024). Greening the Steel Sector in India: Roadmap and Action Plan. LINK

[Report] Chao, C.-W., Lin, Y.-J., & Fang, Y.-I. (2024). Shareholder Action for China Steel to Accelerate its Net-Zero Transition. LINK

[Report] Climate Action Tracker. (2024). Decarbonising steel: national circumstances and priority actions. LINK

[Report] Climate Action Tracker. (2024). Forging a sustainable future: Brazil's opportunity to lead in steel decarbonization. LINK

[Report] CPI. 2024. Discussion Paper: Financing Industrial Decarbonization. Challenges and Solutions for the Indian Iron and Steel Sector. LINK

[Report] Hasanbeigi, A., Zuo, B., Kim, D., Springer, C., Jackson, A., & Heo, E. H. (2024). Green Steel Economics. Global Efficiency Intelligence, TransitionAsia, Solutions for Our Climate. LINK

Chemicals / plastics

[Peer-reviewed] Riedel, F. (2024). Deconstructing corporate net-zero and climate neutrality targets in the German chemical industry. Climate Policy, 1-18. LINK

[Peer-reviewed] Mingolla, S., Gabrielli, P., Manzotti, A., Robson, M. J., Rouwenhorst, K., Ciucci, F., ... & Lu, Z. (2024). Effects of emissions caps on the costs and feasibility of low-carbon hydrogen in the European ammonia industry. Nature communications, 15(1), 3753. LINK

[Peer-reviewed] Gonella, S., & de Gooyert, V. (2024). What are sustainable plastics? A review of interrelated problems and solutions to help avoid unintended consequences. Environmental Research Letters. LINK

Cement / ceramics / glass

[Peer-reviewed] Strunge, T., Küng, L., Sunny, N., Shah, N., Renforth, P., & Van der Spek, M. (2024). Finding least-cost net-zero CO 2e strategies for the European cement industry using geospatial techno-economic modelling. RSC Sustainability. LINK

[Peer-reviewed] Turakulov, Z., Kamolov, A., Norkobilov, A., Variny, M., & Fallanza, M. (2024). Techno-Economic and Environmental Analysis of Decarbonization Pathways for Cement Plants in Uzbekistan. Chemical Engineering Research and Design. LINK

Out of the scientific box

In this section, we keep track of news, op-eds, blog posts, videos and other content on industrial decarbonisation that has gained attention beyond the research community. Have you spotted something? Contact us: renew.industry@gmail.com!

[Article] ## @NVJRobins1 writes in @BusinessGreen on Port Talbot and the road to a just transition

[Article] The Economist tells the tale of industrial transition in Blyth in the Northern England industrial heartland. LINK

[Article] The Economist underlines the need for systematic review of the effectiveness of climate policies by measuring their impact on GHG emission reductions. LINK

[Article] The Financial Times explains how capital markets are driving Indonesia's coal producers to diversify away from their coal activities and to the non-ferrous metals sector (nickel, aluminium). LINK

From the social media feed (#industrydecarbonisation)

@nwormbot spotted an illustrative graph of how the cost premium of using renewable hydrogen drops as you move downstream in the supply chain in IEA:s Global Hydrogen Review 2024

A PhD journey in 33 (?) tweets. @JPTilsted on 'Transforming a Synthetic World'.

Paavo Järvensivu @biosresearch urge you to read-the-draghi-report

Getting to know the Network

The RENEW Industry Network aims to connect researchers and strategists focused on industrial decarbonisation. We continue to grow with more than **750 members** working in organisations located in **20 different countries**, including many European countries but also the U.S., Canada, India, Australia and beyond.

From time to time, we include a short interview with a network member on their research topic and ongoing work on industrial decarbonisation. **Do you want to introduce yourself in this section, or share your latest research with the network**? Contact us: renew.industry@gmail.com

Get involved!

The RENEW Industry Network is constantly looking for interested researchers who want to share their work, organise events or in other ways interact with other researchers in the field. Any ideas are welcome, regardless of whether you want to be involved in our activities on a regular basis, or do a short one-off stunt.

We are looking forward to hearing from you!
Contact us via email at renew.industry@gmail.com or drop us a direct message via Twitter at @RENEWIndustry!

/The RENEW-Industry coordinators

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