



Analysis and Evaluation of the Actors Landscape and Development Prospects for the Decarbonisation of Industry

Executive Summary

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Industry in Germany is under a **high level of pressure** to take action. By 2030, greenhouse gas emissions in this sector must be reduced by 27 percent compared to 2022 in order to meet the objectives of the Federal Climate Change Act. Industry is the second-largest source of German greenhouse gas emissions after the energy sector. Germany has committed to climate-neutrality by 2045. This is the objective set by the federal government with the enactment of the Climate Change Act 2019, in order to counteract man-made climate change and comply with the specifications of the Paris Agreement.

In view of the above, the federal government is supporting the Decarbonisation of Industry by means of different measures. One of these measures is the foundation of the **Cluster Decarbonisation in Industries (CDI)**. With its interdisciplinary orientation, the cluster initiative is intended to support the objectives of the federal government by linking technical, infrastructural, economic and social aspects of decarbonisation, and to contribute to paving the way for climate-neutral industry.

It is planned that the CDI will become the **leading contact partner in terms of the Decarbonisation of Industry (“one-stop shop”)**, offering **suitable solutions, skills and a network of experts** for important future decarbonisation issues.

More recently, in addition to the requirements of decarbonisation, the COVID-19 pandemic, Russia’s internationally illegal war of aggression, **global crises as well as geopolitical tensions** have put pressure on industry and its established value chains. Given these rapid developments, **up-to-date knowledge about the industrial landscape, its challenges and upcoming trends** is more important than ever before.

The present study therefore pursues the following **objectives**:

- the **quantitative and qualitative recording of the landscape of actors** involved in the Decarbonisation of Industry in Germany and the preparation of an overview of relevant companies and research institutions,
- the indication of the current **status quo and the challenges** with which industry is faced in terms of reducing CO₂ emissions, also based on current key figures as well as on **development trends** in the Decarbonisation of Industry,
- the derivation of **specific links and fields of action** for CDI **cluster management**.

On the basis of a broad empirical analysis of the player landscape for the Decarbonisation of Industry as well as an online survey of companies and expert discussions with representatives from various sectors, the study highlights the current challenges, trends and developments for the mitigation of CO₂ emissions from industry in Germany, thus making a current contribution to the discussion on the Decarbonisation of Industry in Germany. Furthermore, the results of this study also form an important basis for the action and **strategic orientation of the CDI**.

As a whole, the results of the analysis show that the various energy- and greenhouse gas-intensive industrial sectors considered (the chemical, glass, ceramics, non-ferrous metals, paper and pulp, steel and cement industries) **are absolutely optimistic about reaching the sector-related climate targets**. Nevertheless, it is also evident that **numerous challenges** still need to be mastered and that there is a **great need for support from industry** by means of appropriate measures.

The actor landscape: Unused potentials in decarbonisation must be activated by means of targeted measures

With regard to the **actor landscape** of organisations in Germany involved in the Decarbonisation of Industry, it has become clear that there is still unused **potential for decarbonisation** in the various sectors. So far, only a part of the total number of companies is involved in decarbonisation activities. **The activation of this potential** by means of suitable measures is **necessary** to specifically address the challenges and needs of these companies and facilities in the implementation of decarbonisation activities and to acquire tailor-made solutions for these companies. A **network-based exchange platform** such as the CDI can help at this point.

The analysis of the actor landscape shows that there are very few contacts and overlaps between the sectors to date. Therefore, particularly the support in the formation of **cross-sectoral cooperation projects, knowledge transfer and networking are of high relevance** for the actor landscape in the Decarbonisation of Industry in Germany. So far, cross-sectoral solutions can only be established to a limited extent. The **inclusion of companies from the energy supply sector** that are responsible for the production and operation of energy and heat-relevant infrastructures, thus fulfilling an important core task in the Decarbonisation of Industry, has also hardly taken place so far. This shows the need for a cross-sectoral approach like the one pursued by the CDI.

Finally, the regional distribution of actors in the industry, who must decarbonise their processes in the coming years, signals that the reduction of CO₂ emissions is not only a task for the classic industrial regions, but one that needs to be addressed **nationwide**. Here, a measure at national level such as the CDI has an optimal basis for reaching the numerous actors and pressing on with supra regional decarbonisation.

Status quo and challenges of the Decarbonisation of Industry

As a whole, the industry relies on a broad **mix of strategic approaches** for the implementation of decarbonisation measures with a focus on the reduction of directly energy-related greenhouse gas emissions. These range from approaches for increasing energy efficiency to the inclusion of renewable energies. This results in a variety of different challenges that need to be tackled by the relevant stakeholders, as process modifications in particular are time-consuming and cost-intensive.

The central challenge is the fact that the **implementation of decarbonisation measures entails high investment costs**, which, in combination with the **long investment cycles** that are typical of the sectors in question, pose a **high economic risk** for the companies involved. They therefore require a high level of planning security. This is additionally impeded by the current geopolitical and economic situation and the resulting volatile energy prices, among other things. Therefore, many companies are currently investing in presumably secure technological approaches. The problem is, however, that these may in future invoice corresponding subsequent costs, for example due to high CO₂ pricing. On the other hand, sustainable technologies are currently frequently associated with relatively high operating costs, the development of which depends on economic and political framework conditions and is currently difficult to estimate. This results these companies needing a **high level of guidance**, which must be covered by appropriate exchange and information offers, such as those already partly offered by the CDI.

Other hurdles on the way to the Decarbonisation of Industry are the **long and complicated bureaucratic administrative and approval procedures**. Therefore, supporting offers that can be reflected on a platform such as that offered by the CDI are required, not only for the appropriate addressing of this challenge to the legislator, but also for the exchange of experience with a view to accelerating these processes.

Development prospects for the Decarbonisation of Industry

Finally, with regard to the development prospects of the industry, it is obvious that the companies questioned view **cooperation projects as a great opportunity for decarbonisation**. This underlines the need for cross-sectoral knowledge transfer and networking. The majority of companies see **great potential in the activities of the cluster management** in consolidating and communicating scientific conclusions and approaches into practicable and industry-specific information. The **bundling of cross-sectoral needs and skills** is also considered a central necessity by the industry. This enables synergies between the different sectors to be developed and used for the purpose of promoting the Decarbonisation of Industry. Activities such as those that can be initiated and offered by a cross-sectoral network like the CDI play a decisive role here.

Outlook: Industry is motivated to implement decarbonisation

In all, the survey of companies demonstrates a cross-sectoral optimism that **Germany can not only be “green” but also attractive as an industrial location in 2045**. Many of the companies questioned also consider the innovation location Germany to be strong enough to successfully complete the transformation and believe that temporary high investments will pay off as a competitive advantage in the long run.

The results also show the need here for support from a partner who can **bundle strengths across sectors**, thus **enabling synergies**, and who can provide the industry with reliable and long-standing support across all stages of the value chain and the decarbonisation process.

With its cross-sectoral approach, the CDI forms an important key element for decarbonisation.

The results of this study show specific fields of action, which form the basis for the further strategic and need-based orientation of the CDI in order to continue to exactly fulfil this role as a key decarbonisation element in the future.

The following fields of action are derived for the CDI based on the results of the study: Partner network, knowledge transfer/cooperation platform, communication, work groups, neutral consultation, international visibility, cross-clustering, cross-sectoral activities. The present study provides a detailed overview of the results.

Published by

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Design

Tinkerbelle GmbH, Berlin/Köln

Cover image

Erik Krüger Photography

Date

July 2023

The CDI coordination office is run by the Competence Centre on Climate Change Mitigation in Energy-Intensive Industries (KEI). The KEI is a division within Zukunft – Umwelt – Gesellschaft gGmbH.