

# The potential of EU-Chinese cooperation in the decarbonisation of the steel and automotive industries

*Policy recommendations and sectoral guidance*

## Introduction

To stay within the 1.5°C limit, as required by the Paris Agreement, the EU and China have a vital role to play. Together they account for around one-third of global economic output – and of global greenhouse gas (GHG) emissions. They are also the world’s two biggest traders. Green supply chains are therefore a key strategic area for EU-China climate collaboration. This is particularly the case in GHG-intensive sectors such as the steel and automobile industries. However, to date, the decarbonisation of Sino-European supply chains in these two critical sectors has not been sufficiently addressed.

This policy brief provides policy recommendations and sectoral guidance on how to strengthen the exchange and cooperation between European and Chinese stakeholders to advance the decarbonisation of the two sectors.

The policy brief is based on interviews with experts and literature research, which resulted in a research report<sup>1</sup>. In addition to that, it draws on the findings of two workshops with experts from Europe and China arranged by the project team in cooperation with SinoCarbon Innovation & Investment Co., Ltd. (SCII) in February of 2023. In the workshops, practitioners from the steel and automotive industries, representatives from civil society, politics and academia discussed the main challenges and opportunities for closer EU-China cooperation in decarbonising industry supply chains.

The brief is directed at policy makers and industry practitioners from Europe and China who work on decarbonisation and sustainable supply chain management.

<sup>1</sup> This policy brief has been prepared within the framework of the project “Greening value chains in the steel and automotive industries: potential for dialogue and cooperation between the EU and China” which is supported by the European Climate Foundation (ECF). The responsibility for the content lies solely with the authors. Download the report in English: <https://adelph.it/5R> or in Chinese: <https://adelph.it/5Q>

## Opportunities for greening the EU and China value chain for the steel and automotive sectors

**One of the key findings of the study is that China and the EU share many common policies but also challenges in the decarbonisation process of the steel and automotive sectors.**

In the **steel sector**, both China and the EU have set ambitious sectoral targets and are focusing their efforts on developing the maturity and scale of new production methods – particularly hydrogen-based steelmaking as a decarbonisation strategy. Major challenges include the low maturity of current decarbonisation technologies and the need for substantial investment in research and innovation for the further development of low-carbon technologies.

With regard to the **automotive sector**, both the EU and China have embarked on a transition towards e-mobility, placing even greater emphasis on supply chain GHG emissions in decarbonisation strategies. Policy makers and industry stakeholders face challenges in appropriately calculating vehicle life cycle emissions due to the complexity and length of automotive supply chains, and are therefore developing approaches to uniform standards. Other challenges include the insufficient availability of “green” materials (e.g. green steel), which have not yet been able to fully meet the demand of the automotive sector, and the lack of availability of green energy. In addition, both China and the EU have identified improving the circular economy, particularly for electric vehicle batteries, as a key approach to reducing environmental impacts in the automotive supply chain.

Industry representatives from Europe and China are willing to exchange and collaborate on decarbonisation approaches. Policy makers can play a crucial role in this industry exchange for decarbonisation. The study and workshop findings show that successful exchange and collaboration will be decided by two key factors:

- Exchange and communication are key for European and Chinese policy makers to clarify the policy intentions and requirements for industry actors. The study and workshops have shown that the policy exchange could be further improved. Without clarification efforts, the risk of misunderstanding and misinterpretation may increase.
- Chinese and European stakeholders are working towards common standards for supply chain decarbonisation in both the steel and the automotive industry. The study and the workshops have shown that, in the EU and China, groups of stakeholders are working on standardisation with the goal to reduce inconsistencies and unclarity. Yet, key to achieving this will be that these groups harmonize their individual efforts, build a common understanding and criteria into a globally applicable standard.

The results can be deduced into the following recommendations for policy makers and guidance for the industry sectors, taking into account the areas with **great potential for GHG emission reduction through improved dialogue and cooperation between European and Chinese stakeholders.**

---

## I. Areas for policy action

---

1. **Facilitate the dialogue between policy makers and industries in the EU and China on climate policy and “carbon clubs”:** Policy ambitions and fears on both sides need to be taken seriously regarding climate regulations, such as the possible carbon border adjustment policies. Policy makers on both sides need to communicate their intentions to increase the mutual understanding of policy approaches. This requires appropriate dialogue formats for an exchange: multilateral and bilateral platforms between the EU and China could be used to dialogue on carbon and trade policies as well as on respective decarbonisation ambitions. With clear communication, the EU and China can jointly move towards an inclusive “climate club” based on mutual trust and common climate ambitions rather than exclusion. Technical exchange on CBAM is important for China industries to understand the intentions of the policy, technical details and required criteria for compliance. It is recommended to extend and address CBAM outreach campaigns to key global players, such as Chinese industry representatives. Vice versa, China should address European policy and industry representatives on relevant upcoming climate regulations that may affect them.
2. **Develop a common price signal:** Both the EU and China use carbon pricing mechanisms, especially emissions trading schemes, in order to enhance the shift towards low carbon technologies. Cooperating on carbon pricing in the steel and automotive sector in the form of policy dialogues helps to establish a long-term, increasing price signal for CO<sub>2</sub> emission reductions on different levels of the supply chain. Mutual learning from ETS experiences can support the convergence of both carbon pricing approaches and generate a clearer and more consistent policy framework for businesses and investors along the supply chain. Therefore, policy dialogues on emissions trading and carbon pricing could enhance a regulatory framework which empowers industry actors to contribute to joint climate objectives.
3. **Policy support for the development of global industry standards for decarbonisation:** Industry representatives in China and Europe face the challenge that existing standards for decarbonisation are inconsistent or not detailed enough. Key to achieving solid data quality are clear and internationally accepted accounting criteria.

The study and workshops have shown that European and Chinese stakeholders are making progress in the development of common accounting standards. Often these efforts are supported by the respective governments, i.e. the Chinese Ministry of Industry and Information Technology authorised the Automotive Data of China to carry out research based on which four project plans for standardisation of carbon footprints in the automotive industry were issued. Equivalent efforts in Europe include the [Battery Pass](#), a project funded by the German Federal Ministry for Economic Affairs and Climate Action. Policy makers on both sides should be encouraged to continue and increase support for such efforts at national level, but also for increased collaboration between different sectors and across national borders. For example, in the automotive sector, new initiatives for comprehensive life cycle accounting of GHG emissions such as WALCA, should be encouraged to refer to existing international standards (e.g. the GHG Protocol) and exchange with international partners should be supported to ensure global comparability of standards.

In the steel industry, political and economic stakeholders from the EU and China could work closer on the development of internationalised standards that include, for example, hydrogen steel, secondary steel and steel scrap. The joint standards can

cover, for instance, the establishment of a monitoring, reporting and verification (MRV) guideline, data platforms, regional default emission factor, supplier evaluation metrics, the alignment of fuel consumption standards, and scenario modelling.

4. **Ensure sufficient funding for the development of pilot projects to advance current decarbonisation technologies:** Investment is also needed in both China and the EU to make existing low-carbon technologies market-ready. The exchange of effective research and innovations funding can help to accelerate the development of mature technologies in the foreseeable future and scale-up existing approaches. The possibility of funding joint pilot projects, for example related to the low-emission production of electric vehicles or recycling of battery materials, should also be explored. Discussion could entail the promotion of finance approaches to green steel. Joint finance mechanisms could be developed that are available to both European and Chinese stakeholders. This also concerns an alignment of the taxonomies on sustainability standards that serves as a basis for private investments and for decisions on the allocation of public funds.

---

## II. Sectoral guidance

---



1. **Set decarbonisation targets for the supply chain and communicate them transparently:** Both automotive and steel manufacturers have enormous potential to drive the decarbonisation of their supply chains. As a starting point, Chinese and European industry representatives need to set clear, measurable decarbonisation targets for their supply chain and communicate them in the form of key requirements to their key suppliers. Clear and transparent communication is crucial for holding European and Chinese stakeholders accountable for the decarbonisation of their supply chains. The steel industry and the companies themselves should also establish clear decarbonisation plans with explicit climate targets (ideally based on scientific scenarios). Steel companies can learn from the experience of the automotive industry, which can drive decarbonisation in the steel industry due to its central role as a buyer of high-value steel products, e.g. through green steel purchasing agreements.
2. **Agree on common GHG emission accounting criteria and jointly increase the transparency of GHG emission along the supply chain:** Industry representatives in China and in Europe still face the challenge that existing standards are inconsistent or not detailed enough and data quality is inconsistent. Key to achieving solid data quality are clear and known accounting criteria.
3. As described in the policy recommendations, both Chinese and European government(s) are supporting research projects that aim at the development of common accounting standards. Important for the supply chain actors – who, in the end, will need to apply any developed standards – is worldwide consistency and applicability. **To this end, it is recommended for industry stakeholders to engage in the exchange between Chinese and European stakeholders with the aim to agree on common criteria.** Industry actors can do this, for example, by engaging in business initiatives for standardisation.

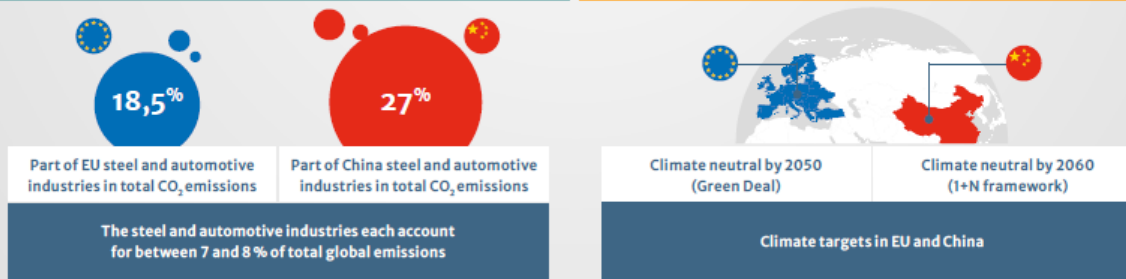
Furthermore, a key solution for increasing transparency is the development of digital exchange platforms through which emissions data can be shared among suppliers and customers in a standardised, simple way that meets rules of data confidentiality. It is recommended for companies in the automotive and steel sectors to increase the best practice exchange to ensure the usability of technical solutions across borders. At the same time, the workshop has shown that, especially when it comes to data

transfer and confidentiality, open questions remain from stakeholders and will require further exchange to build agreements and trust in the exchange of data across borders.

4. **Strengthen cross-sector collaboration:** Sector and industry initiatives such as the World Business Council for Sustainable Development's PACT, the Global Battery Alliance, Catena-X Automotive Network, Drive Sustainability, ResponsibleSteel, Aluminium Stewardship, etc. provide a framework for cross-sector exchange on the development of common standards for the transfer of GHG emission levels, the exchange of best practices and lessons learned. In addition, they help identify shared emission hotspots and provide a platform to jointly engage with key stakeholders in the deeper supply chain (e.g. mining companies) towards increased decarbonisation efforts. Chinese and European companies from both sectors – steel and automotive – should consider joining initiatives that facilitate the direct exchange between international actors. In the EU, the EU Clean Steel Partnership in the frame of Horizon Europe in synergy with the Research Fund for Coal and Steel, is an active network in supporting EU steel decarbonisation. In China, the China Iron and Steel Association (CISA) developed an industrial decarbonisation roadmap. Increased cooperation between European and Chinese industry initiatives and associations could provide a platform for increased industry exchange.
5. **Increased investment in joint R&D pilot projects:** There are already some examples of major automotive OEMs supporting research on decarbonisation pathways in the steel sector with investments and commitments to reduce emissions along their own supply chain, such as the HYBRIT collaboration with Volvo Cars and the Volkswagen's collaboration with the Salzgitter AG in Germany. These initial collaborations on new decarbonisation technologies will help to secure demand and launch the new technology into the market; therefore, these leading examples should serve as encouragement for other industry actors to collaborate. The exchange of Chinese and European industry actors on the existing best practices could be increased to support the launch of more similar pilot projects. R&D investments should also cover the topics of improved circularity, material efficiency and recycling techniques, especially in the areas of steel, battery (materials) and aluminium.
6. **Improve the sharing of knowledge on decarbonisation with suppliers:** Many suppliers do not yet have the same know-how on decarbonisation strategies as large Original Equipment Manufacturers (OEMs). Options for knowledge transfer, such as training courses for suppliers on CO<sub>2</sub> accounting and emission reduction, should therefore be scaled up. Here, a special opportunity arises from the fact that many large European OEMs have joint ventures in China; through these business relationships, training and knowledge exchange formats can be established between OEMs and steel producers in China. Initiatives such as the CDP Supply Chain programme offer existing structures for entering into an intensified exchange on the topic of decarbonisation with the company's own suppliers.

### The Potential of EU–Chinese Cooperation in the Decarbonisation of the Steel and Automotive Industries

|  <span style="background-color: #800000; color: white; padding: 5px; font-weight: bold;">In the EU and China, the automotive and steel sector face similar decarbonisation challenges and take the same key approaches to address them</span>  |   |  |  |
|--|---|--|--|
| Automotive   |   | Steel  |  |
| CHALLENGES   | APPROACHES  | CHALLENGES   | APPROACHES   |
| <p>Lack of primary emission data and uniform approach to calculate vehicle life cycle emissions</p> <p>Insufficient availability of “green” materials (e.g. green steel)</p> <p>Green energy supply does not always meet companies' demand</p>   | <p>Harmonise accounting standards for vehicle life-cycle emissions</p> <p>Advance circularity in electric vehicle batteries</p> | <p>Low maturity and scale of net-zero steel technologies</p> <p>Substantial investments needed to develop pilot and demonstration projects of decarbonisation technologies</p> | <p>Setting ambitious sectoral targets</p> <p>Scale-up and improve maturity of new production approaches, especially hydrogen-based steelmaking</p> |
| The EU sources significant amounts of steel, aluminium and battery materials from China that flow into automotive construction, and European carmakers increasingly scale up China-based production with localized supply chains   |   | In 2020, the EU exported 1.4 million tons of steel to China, while China exported 2.1 million tons to the EU   |  |



Source: This infographic depicts the study results, for further references see study.

## Acknowledgements

The authors would like to express their gratitude to all who agreed to be interviewed and participate in the workshops on the EU-China cooperation in the decarbonisation of the steel and automotive industries.

Suggested citation: Steinlein, A.; Grüning, C.; Chen, Z.; Kropf, M.; Weiß, D. 2023: The potential of EU-Chinese cooperation in the decarbonisation of the steel and automotive industries: Policy recommendations and sectoral guidance. Berlin: adelphi research gGmbH

Publisher: adelphi research gemeinnützige GmbH  
Alt-Moabit 91  
10559 Berlin  
+49 (030) 8900068-0  
office@adelphi.de  
www.adelphi.de

© 2023 adelphi