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Editorial: Technologies and policies for decarbonisation of the industrial and transport sectors

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Editorial on the Research Topic

Technologies and policies for decarbonisation of the industrial and transport sectors

1 Introduction

Today's environmental challenges force new approaches for climate and energy policies. Based on the Paris Agreement, most countries have fixed a set of new targets, such as reducing greenhouse gas emissions, increasing the energy efficiency or the share of renewable energy in the total gross final energy consumption.

The industrial and transport (terrestrial, maritime and air) sectors are known to be relevant sectors to fulfil the climate objectives. The necessary transformation of these sectors requires a green revolution of a system-wide nature, from the generation to the final consumption of their demanded energy, which has to involve different technologies and energy policy approaches. In this regard, the proposed Research Topic has focused its attention on the current initiatives applied in the maritime and road transport sector in China and Europe, as well as the methodologies to assess and forecast the evolution of these policies and to identify the hot spots of carbon emissions.

2 Published articles

In the undertaken Research Topic a pair of research articles has focused their attention on the energy policy and strategies to reduce the impact of transport sector, mainly terrestrial and marine, in the carbon emissions.

Concerning the terrestrial transport sector, the article *An analysis of trends and policies supporting alternative fuels for road freight transport in Europe* analyses the road freight transport decarbonization in Europe (Gómez Vilchez et al.). Concentrating the attention on the 2016–2018 period, the authors analyse the European countries' measures. In this regard, the paper highlights the differences in the strength of policy support by each European country, concluding the need for more decisive action to decarbonize road freight transport in Europe timely.

Continuing the path of energy policy analysis, the article *An Analysis of Trends and Policies Promoting Alternative Fuel Vessels and Their Refuelling Infrastructure in Europe* focuses on the European policies addressed to promote alternative fuel vessels (Gómez Vilchez et al.). In this regard, the article stresses the impact of navigation activities on greenhouse gas emissions and assesses the waterborne transport decarbonization in Europe, analysing key policies and trends. The authors' findings highlight the lack of practical initiatives to promote alternative fuel and electric vessels in Europe and encourage enhancing the policy measures to tackle the challenge of waterborne transport decarbonization within reach in Europe.

Despite the undertaken efforts and policies, the above-referenced articles stress the need for more decisive action in Europe and worldwide to face the effects of terrestrial and waterborne transport activities. Besides, the articles highlight the importance of the economic barriers as one of the most remarkable cons when promoting the new decarbonisation solutions. In this regard, the article *A Race Between Economic Growth and Carbon Emissions: How Will the CO₂ Emission Reach the Peak in Transportation Industry?* (Wu et al.), through the logarithmic mean Divisia index (LMDI) and Tapio elastic analysis, relates the economic growth and the CO₂ emission of China's transportation sector. In the same way, the provided prospective CO₂ emissions point out the difficulties in limiting those emissions and the need for economic incentives, as well as a better diffusion of the energy policies in place.

The development of energy policies aimed at lowering the greenhouse gas emissions has the economic cost of new technologies as one of its deterrent causes. Planning and optimising the implementation of these new technologies must be a must when undertaking the path. On this subject, the article *Marine Biofuels Costs and Emissions Study for the European Supply Chain Till 2030* (Gartland and Pruyn) proposes a Mixed Integer Linear Programming model that represents biofuel supply chains across Europe for the production of three novel marine fuels. The model allows the selection of fuel conversion technologies, biomass supply locations, and transportation logistics from resources to conversion and from conversion to final markets, as well as provides optimal distribution and conversion systems. The research concludes that forestry residues are the best-suited biomass for producing these fuels and their potential for reducing CO₂ emissions.

The previous paper proves the need of disposing and using real data for a better understanding and planning the designed energy policies. On this subject, the paper *Mapping Highway Mobile Carbon Source Emissions Using Traffic Flow Big Data: A Case Study of Guangdong Province, China* (Li et al.) stresses the need to monitor the transportation sector's CO₂ emissions not to jeopardise the emission reduction management. The authors focused on road transportation, building a highway traffic carbon emissions monitor and spatial analysis system. The resulting system can calculate vehicle carbon emissions and create a mobile carbon source emissions map. Besides, it has proved helpful in accurately identifying vehicle types with higher emissions while assisting with source management and locating road sections characterised by high carbon emissions.

Finally, in the last article, *Demand-driven NEV supplier selection: An integrated method based on ontology-QFD-CBR* (Zheng et al.), while the authors stress the merits of the electric vehicle, they propose a new methodology to help new energy vehicles manufacturers manage component suppliers more effectively to obtain a more environmentally friendly industry.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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