

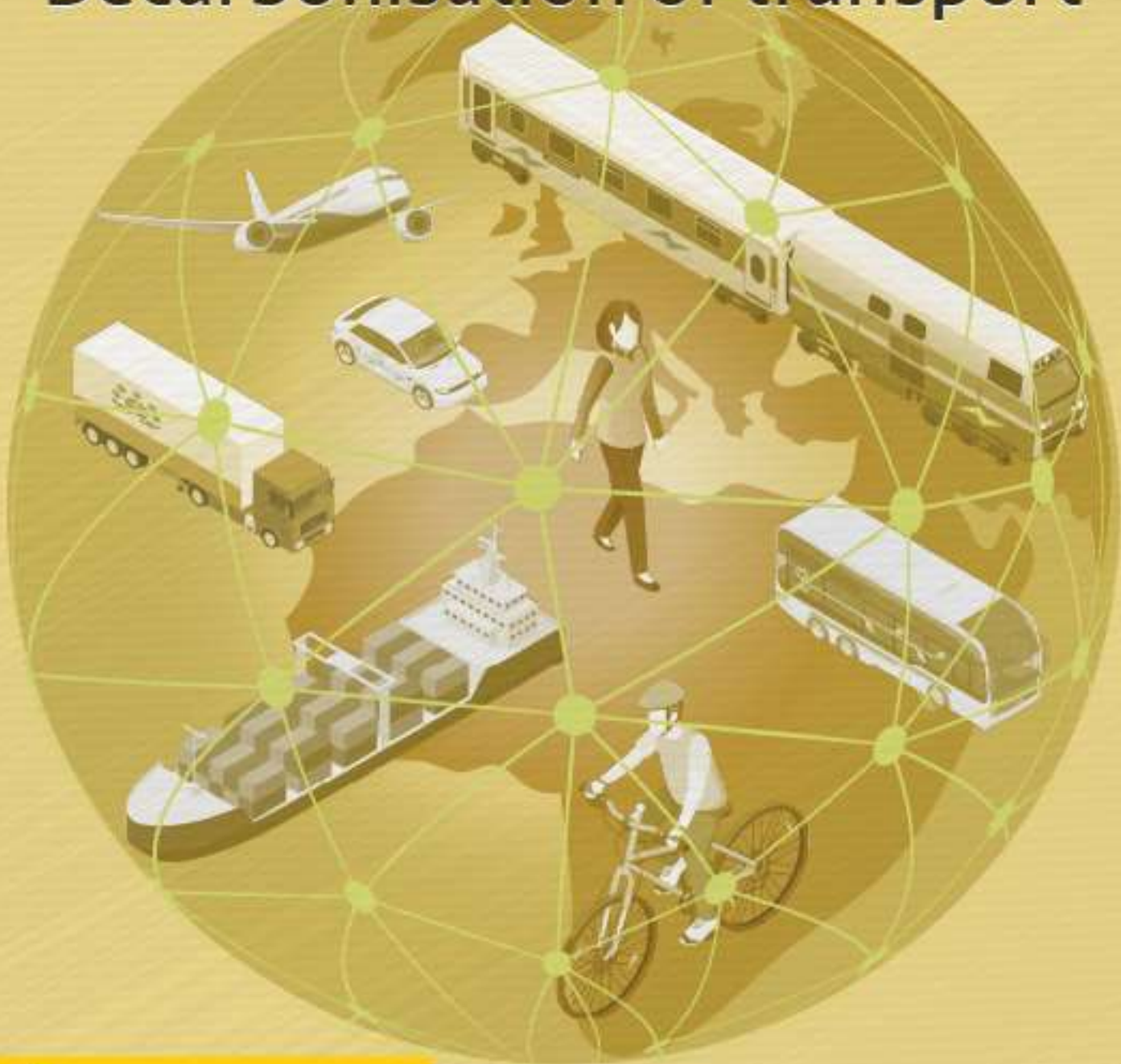


Observatorio

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TOPICAL REPORT

Decarbonisation of transport



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ABSTRACT

Transport stands as a pivotal economic activity, serving not only the **mobility of individuals** but also playing a vital role in the **facilitation of goods supply, distribution, exports**, and the **growth of the tourism sector**. Consequently, the transport system is intricately intertwined with the competitiveness and productivity of crucial sectors within the economy, while also serving as a key element in fostering social and territorial cohesion. Furthermore, as a commercial and economic sector within the nation, transport significantly contributes to economic growth and employment opportunities.

However, transport activities give rise to a range of adverse impacts or externalities: pollutants and greenhouse gas emissions, noise pollution, accidents, congestion, etc., which exert a profound and detrimental influence on public health, quality of life, the economy, and the Earth's climate. Particularly, the burning of fossil fuels in combustion engines leads to the emission of greenhouse gases (GHG) with far-reaching global consequences, contributing to climate change. Concurrently, the burning of fossil fuels generates other pollutants that have direct and localised effects, influencing air quality and public health.

The transport sector consumes approximately 29% of the nation's total energy, with a predominant reliance on oil-derived energy sources. Consequently, transport is responsible for a significant portion of greenhouse gas emissions, including carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), which contribute to climate change. Transport activities –encompassing all modes of transport and all contexts: urban, interurban and rural–constitute a prominent contributor to the nation's greenhouse gas emissions. In fact, transport was responsible for 29,6% of GHG emissions in Spain in the year 2019.

National GHG emissions stemming from transport have exhibited a consistent upward trend since 1990. There are two notable exceptions: the period from 2008 to 2012, which was associated with the financial crisis, and the year 2020, primarily due to the COVID-19 pandemic. This persistent increase can be attributed primarily to the close interconnection between economic progress and transport demand. It is essential to recognise that transport serves as a means to an end rather than an end in itself. Furthermore, fossil fuels are the predominant energy source in motorised transport.

The imperative to combat climate change is understood by European and national climate change mitigation policies. These policies aim to attain a **climate-neutral economy by 2050**, with several **intermediate milestones**. Consequently, every sector, including transport, must exert substantial efforts to decarbonise or decrease their greenhouse gas emissions. The objective is to ensure that any remaining GHG emissions in 2050 are offset by the Earth's natural absorption mechanisms, often referred to as “sinks”. Given the significant contribution of the transport sector to greenhouse gas emissions, **the decarbonisation of transportation assumes paramount importance in achieving the overarching goal of climate neutrality of the economy by 2050**.

It is worth noting that, while this [OTLE Topical Report](#) primarily focuses on the decarbonisation of transport and the reduction of GHG emissions, **it is essential to acknowledge that the transport sector also generates other gases with localised and short-term impacts**, which can be detrimental to human health. These include particulate matter (PM), sulphur oxides (SO_x), nitrogen oxides (NO_x), ammonia (NH₃), non-methane volatile organic compounds (NMVOCs), and carbon monoxide (CO). Despite a decrease in air pollution from transport over recent decades, attributable to the implementation of more stringent standards governing vehicle type approval and fuel quality, concentrations of air pollutants still persist at elevated levels, particularly in certain metropolitan areas, surpassing the guidelines set by the World Health Organisation (WHO). Hence, **climate change policies are accompanied by additional measures aimed at mitigating and controlling air pollution**.

The [OTLE Topical Report](#) delves into the subject of decarbonising transport within the present context as outlined below:



- **Chapter 2** conducts an analysis of the current and projects status concerning greenhouse gas emissions and energy consumption associated with transport activities. Furthermore, it evaluates the situation regarding other pollutants that significantly contribute to air pollution.
- **Chapter 3** provides an overview of the diverse **regulatory and policy instruments**, ranging from global agreements to the latest developments, which have been devised by institutions at all levels (global, European, and national) to combat climate change.
- **Chapter 4** elaborates on the primary **tools and measures that are currently being implemented to advance the decarbonisation of transport**. These initiatives follow the A-S-I approach, which stands for “Avoid, Shift, and Improve”. This strategy seeks to diminish the necessity for travel, reduce travel distances, elevate the modal share of more suitable modes of transport, and enhance the efficiency of the overall transport system. This approach is considered the most suitable for guiding the formulation and implementation of measures.
- Finally, **chapter 5** concludes the report by presenting a set of opportunities and challenges that decarbonisation of transport may bring.

