



COUPLED POLICY BRIEF

Rubber boom and the global and local impacts of personal car use in the European Union

Car use and car-dependent lifestyles in the European Union (EU) are contributing to the rubber boom in the tropics due to tyre use. By focusing the transition towards sustainable mobility patterns on the reduction of carbon emissions, the EU is missing opportunities to prevent other environmental impacts. This is particularly true for environmental impacts occurring at distant places where the impacts are actually felt, such as the degradation of tropical ecosystems. Progress toward sustainable mobility in the EU requires cross-cutting policies that enable Europeans to live car-free.

KEY MESSAGES

- Increasing natural rubber production cannot be done without additional ecological impacts
- Taking into account various impacts occurring at different levels in policy making will minimize trade-offs between global and local sustainability
- Protection of natural ecosystems must be carried out beyond the borders of the EU
- Cross-cutting policies are needed to mainstream car-free lifestyles in the EU



Car use in the EU

Passenger car is the main vehicle used for personal mobility in the EU, accounting for more than three quarter of the total aggregate distance travelled by people every year. Car use in the EU is strongly stimulated by car ownership¹, which has an influence on the number of trips taken, the distance travelled, and the average number of people per vehicle during travel. Car ownership rates in most countries of the EU are comparable to those in other Western countries, which is high by global standards². In Eastern Europe, car ownership lags behind, resulting in lower car use and a higher occupancy rate per trip. However, the strong link between car ownership and economic prosperity at the national level suggests that car use may increase as well in Eastern member states with economic development in the near future³.

CAR OWNERSHIP IN THE EU, COMPARED WITH WESTERN AND GLOBAL STANDARDS

Car ownership rates in most Western countries are high by global standards.

Twelve countries in the EU have a car ownership rate above 500 cars for 1000 inhabitants, mostly in Western Europe.

In Eastern Europe, car ownership rates are lower but expected to increase with economic development.

In North America, car ownership rates are closer to 700 cars for 1000 inhabitants.

In China, car ownership rates are rapidly increasing but currently do not exceed 200 cars for 1000 inhabitants.

Car-dependent lifestyles

In Western Europe, people value and desire the social status and opportunities that come with owning a car. This enthusiasm for private cars since the beginning of the automobile era, along with political and economic interests in increasing the automotive market, have greatly influenced land-use policies⁴. As a result, urban planning in Western Europe has not left much room for car-free lifestyles so far. Western lifestyles have developed around the convenience of private car use,

and now many Europeans depend on it to reconcile personal and professional responsibilities that are increasingly spatially dissociated (e.g. career opportunities abroad, long distance relationships)⁵. In addition, measures by private and public actors, such as the provision of a company car with fuel discounts or incentives for the purchase of an electric car, contribute to maintain the preference for private cars⁶.

Natural rubber consumption for car use

Natural rubber is mainly consumed through vehicle use. As a matter of fact, more than 70 percent of the World's natural rubber is used by the automotive industry to manufacture tyres⁷, and tyres worn out from use. The remaining 30 percent is used in a variety of rubber products such as clothing, sport balls, footwear, or condoms. The rubber compound used in tyres contains a blend of natural and synthetic rubbers. As the two types of rubber have different characteristics, their combination determines the resistance of a tyre to different conditions of use. Thus, the amount of natural rubber in a tyre varies between vehicle categories. Although car tyres contain the lowest proportion of natural rubber, compared to other vehicles, passenger cars are responsible for more than half of the natural rubber consumption related to mobility in the EU⁸.

Ecosystems at risks

Natural rubber is the most common plant-sourced polymer, almost entirely produced from the latex of the *Hevea Brasiliensis* tree. Native from the Amazon, this tropical tree was introduced by Europeans in some of their former colonies in Asia and Africa, during the first half of the 20th century⁹. Southeast Asia quickly became and remains the hotspot of natural rubber production, harvesting over 90 percent of the world's natural rubber. The remaining 10 percent is mainly harvested in sub-Saharan Africa, particularly in Côte d'Ivoire¹⁰. Over the last decade, the global area covered by natural rubber plantations has grown by more than 20 percent, causing major land conversion in the tropics¹¹. Monoculture rubber plantations have been established in place of forests, with various ecological consequences.

Natural rubber expansion in rubber growing countries

In Southeast Asia, at least 1.5 million ha of land have been turned into rubber plantations since 2010, especially in the Yunnan province of China¹⁵. In addition to the expansion, natural rubber plantations have relocated from the humid lowlands to the highlands to accommodate palm oil plantations, whose demand is also steadily increasing¹⁶. In the highlands, monocrop rubber plantations replaced agricultural fields as well as relatively undisturbed ecosystems, including patches of deciduous and evergreen forest¹⁵. In these non-traditional locations, natural rubber trees are increasingly exposed to extreme climatic events¹⁷. In sub-Saharan Africa, pressure on forests is largely due to population growth in rural areas where large plantations are located. Subsistence crops are being established near newly created rubber plantations to meet the needs of local workers¹⁸.

EU political actions

The EU has started a transition to sustainable mobility patterns. The EU mobility strategy is part of the Green Deal, which aims to make the European economy sustainable by reducing and offsetting the greenhouse gas emissions it produces. Under this scheme, carbon emissions from the transport of people and goods are expected to be reduced by 90 percent by

2050, while mobility is not curbed¹². Cars are responsible for almost two-thirds of the EU's transport-related carbon emissions, so reducing their use is part of the strategy. Urban planning and the development of certain services, such as bicycle lanes and high-speed trains, are proposed to trigger a modal shift for travel within and between major cities. However, the key measure for this transition is the large-scale replacement of gasoline-powered vehicles with electric vehicles, and the adaptation of road infrastructure to enable this substitution.

ECOLOGICAL CONSEQUENCES OF NATURAL RUBBER EXPANSION

Land conversion associated with increasing and relocated rubber cultivation has ecological consequences. Rubber trees consume large amount of water, causing the soil to dry out¹⁹. Poor soil quality and absence of understory vegetation in monoculture rubber plantations leave the soil more prone to erosion during heavy rainfalls¹⁷. In addition, the abundance and diversity of animal species at multiple trophic levels are significantly reduced in monoculture rubber plantations, due to the low quantity and quality of organic matter inputs²⁰ and high fertilizer inflows²¹. Pressure on animal species with high conservation value inevitably increases when natural forests are lost to industrial plantations²².

Recommendations for policy making

Address the impact of mobility beyond carbon emissions

Since the Paris Agreement was ratified in 2016, nations tend to focus their actions on cutting carbon emissions. While efforts to achieve this global environmental goal must be intensified, it is urgent to consider other environmental impacts that may occur on a more local level. For example, in addition to carbon emissions into the global atmosphere, car use is also accountable for natural rubber production or non-exhaust particulate emissions from tyres, which impact specific ecosystems¹³. Taking into account multiple consequences occurring at different levels in policy design will help limit trade-offs between global and local sustainability.

Deal with impacts beyond the EU's borders

The European Green Deal aims to leave no one and no place behind and thereby seeks to preserve the natural environment within the EU. The link between mobility in the EU and land conversion in the tropics calls for extending this ambition beyond the borders of the EU⁸. This is particularly urgent given the low or poor enforcement of environmental production standards in tropical countries¹⁴.

Mainstream car-free lifestyles

European transport policy alone cannot address the multiple and diverse drivers of car use in the EU. Car-dependent lifestyles are responsive to urban forms, housing and labour markets, and social norms. In some Western European countries, the younger generation is showing signs of disinterest in car ownership¹. This is an opportunity for the EU to encourage, mainstream, and support car-free lifestyles. In that respect, a systemic approach involving cross-cutting policies is needed⁴.



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Sources and other interesting links

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COUPLED Policy Briefs feature highlights and policy implications from research conducted under the project Operationalising Telecouplings for Solving Sustainability Challenges for Land Use (COUPLED). COUPLED is a European research and training network that works on topics such as land use processes that link distant places (telecouplings) and how to govern these processes towards sustainability in an interconnected world. This project receives funding from the European Union's Horizon 2020 research and innovation programme under Marie Skłodowska-Curie grant agreement No 765408. Responsibility for the content rests entirely with the authors. Neither the COUPLED network nor the European Union's Horizon 2020 Research Executive Agency (REA) necessarily share the expressed views.

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Selected publications from the COUPLED project that provide further information

Laroche, P., et al. Assessing the contribution of mobility in the European Union to natural rubber expansion. Ambio, 1-14.



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