

INFLUENCE OF DIFFERENT TYPES OF TRANSPORT ON CO₂ CONCENTRATION

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Transport is a large contributor to emissions of CO₂ and to mitigate its environmental impact is essential in strive for a sustainable future.

Carbon dioxide itself is not harmful to the environment. On the contrary, it is one of the main elements of the life process of plants. They absorb CO₂, recycle it and release oxygen into the atmosphere. But if carbon dioxide is present in the atmosphere in excess, it begins to act as thermal insulation for the planet. Radiation from the Sun freely passes through the atmosphere, at the same time, an increase in the amount of carbon dioxide creates an excess of greenhouse gases that trap additional heat. The surface of the planet begins to heat up. Retaining heat causes ice caps to melt and sea levels rise, what causes flooding, the climate and species composition of flora and fauna are changing.

The purpose of the research is to study the general impact of carbon dioxide on the environment and human health, to estimate the amount of CO₂ emissions in the atmosphere as a result of fuel combustion for different types of transport.

Carbon dioxide negatively affects the human body and is a carcinogen. Being in a room with a high concentration of CO₂ can cause weakness, drowsiness, headaches, problems concentrating, or even negative changes in the blood. Due to the constant influence of high concentrations of CO₂, the acidity of the blood increases, which leads to acidosis. At the same time, the human body poorly assimilates nutrients and minerals, such as magnesium, calcium, potassium, sodium. Acidosis can provoke diseases such as diabetes mellitus, problems with the musculoskeletal system, problems of the cardiovascular system, general weakness.

With the onset of the industrial revolution in the middle of the 19th century, there was a progressive increase in anthropogenic emissions of carbon dioxide into the atmosphere, which is believed to have led to an imbalance in the carbon cycle and an increase in CO₂ concentration. Natural sources of carbon dioxide in the atmosphere include volcanic eruptions, combustion organic matter in the air and breath representatives animal world (aerobic organisms).

Also, carbon dioxide is produced by some microorganisms as a result of the process fermentation, cellular respiration and in the process putrefaction organic residues in the air. Anthropogenic sources of CO₂ emissions into the atmosphere include: burning fossil and non-fossil energy carriers for heat generation, production electricity, transportation people and goods. Some industrial activities lead to significant CO₂ emissions, such as manufacturing cement and utilization of associated oil gases by burning them in torches.

The levels of toxicity of emissions from different types of transport are presented in table 1.

Table 1. Toxicity of emissions from different types of transport

Transport type	Coefficient (kg / person / km)
Light truck, passenger car	0.11
Middle truck	0.15
Heavy (diesel) vehicle	0.183
Bus	0.069
Moped	0.073
Motorcycle, snowmobile	0.094
Rickshaw	0.061
Electric car	0.043
Electric train, metro	0.065
Tram / trolleybus	0.042
Ferry	0.115
Boat	0.53

The percentage of CO₂ emissions for vehicles running on the combustion of fuel are shown in fig.1.

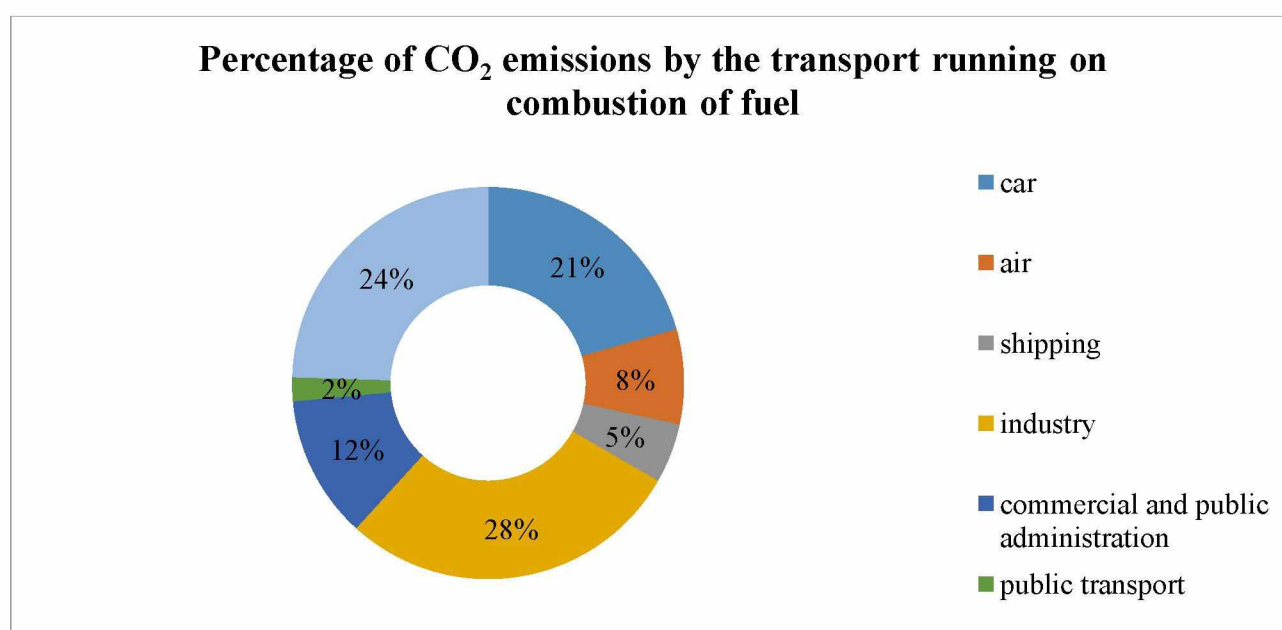


Figure 1. Percentage of CO₂ emissions by the transport running on combustion of fuel

In the transport sector in most countries, a great part of CO₂ emissions comes from private and commercial road transport. The largest share of emissions is associated with passenger traffic. Although the transport sector accounts for about a quarter of all CO₂ emissions from fuel combustion, the magnitude is not the main thing when choosing measures to reduce them in the economy. The most important factor is profitability. For now, it will be relevant to consider increasing the use of tax incentives for energy efficient

vehicles, supporting environmentally friendly driving and optimizing freight logistics. Carbon and fuel taxes are ideal measures to combat CO₂ emissions. They send clear signals and distort the economy less than any other approach [4].

Humanity has real opportunities to combat the greenhouse effect by reducing the concentration of carbon dioxide in the atmosphere. Firstly, this is an increase in the efficiency of fossil fuel use, energy saving, a multiple decrease in the losses of exergy in primary and secondary energy resources in the main energy-consuming sectors of the economy. Secondly, this is the development of various types of alternative energy with an emphasis on a wide the use of plant biomass for production liquid fuel [6].

The results of our research showed that while transport emissions account for over 15% of global emissions and are expected to grow at a fast rate, there are still a lot of opportunities to make transport cleaner. Countries should further specify clear pathways and mobilize both public and private sectors to decarbonizing transport, soon, if they are going to avoid these dangers and seize the opportunities provided by 21st-century means of getting around.

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