6.1 The ASIF Approach

6.1.1 More on Method - The ASIF Approach

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In the transportation industry, public authorities have 4 levers to influence greenhouse gas emissions.

First, they can reduce the total activity of the transport industry. That is to say the total number of transported travelers each year or the average distance traveled by each and everyone. The transport volume is measured in passenger-kilometers. Two passengers who travel 1 kilometer each equal 2 passenger-kilometers. One passenger who travels 2 kilometers also equals 2 passenger-kilometers. If we reduce the total quantity of transports by 30 % for instance, greenhouse gas emissions are reduced in the same proportion. In the freight industry, activity is measured in tonne-kilometers.
Secondly, they can change the transportation structure that is to say the share of each transport mode or modal share. If mobility shifts from private cars to sustainable or more efficient mode in terms of energy, a well-crowded bus for instance, emissions will be reduced by the differential value of the emissions between the two modes in passenger-kilometers.
Thirdly, they can reduce the energy intensity of each mode. Intensity measures the quantity of energy required to travel over a given distance in liter per 100 km or kWh per 100 km for electric cars. For instance, a passenger traveling alone in an old car can use up to 12 liters per passenger-kilometer whereas if he travels in a new compact car, he can use less than 6 liters per passenger-kilometer. With two passengers in the same car, it goes down to 3 liters per passenger-kilometer.
Finally, the carbon intensity of the energy used can be reduced. This can be achieved through a fuel shift. For instance, LPG contains less carbon than petrol per quantity of energy. In the case of electric cars, it goes through a shift in the way electricity is produced.

This way of decomposing emissions is called the ASIF method which stands for Activity, Structure, Intensity and Fuel. This method is frequently used to analyze the historical evolution of greenhouse gas emissions in every sector, not only that of transports.