



The Logistics Sector and Climate Change mitigation



Globalisation of the world economy, with the creation of free trade areas and strategies based on subcontracting various parts of the production process to countries that are very far apart has, among other aspects, led to an exponential growth of goods in the movement. In the large majority of cases, transport activities are based on the use of energy derived from fossil fuel and, therefore, the increase in logistics activities and greenhouse gas emissions have a direct relationship.

Another direct source of greenhouse gas emissions in the sector is refrigeration, as generally coolants based on fluorinated gases are used and these have a high potential for atmospheric warming.

Within the means of transport, railways and maritime transport are the most efficient as their CO₂ emissions per tonne and kilometre of load are lower than that of road or air transport. However, for all transport types there are technological, management or infrastructure alternatives for reducing impact on climate change.

Similarly, there are mitigation opportunities for the emissions produced in logistics centres and warehouses.

Mitigation alternatives

MEANS OF TRANSPORT

Emissions derived from means of transport have continued to increase over the past few decades. Maritime and railway transport are usually more efficient in reducing the generation of emissions than road or airborne transport.

- ROAD TRANSPORT:

This means of transport is widely used and is inefficient with regards to energy consumption. The fuels that are used most are diesel and gasoline.

- Alternatives:

- Measures in engines:
 - Use hybrid, electric or mixed power sources.
- Sustainable driving:
 - Optimise the load and the travel routes
 - Efficient driving measures, such as: the correct use of gears, avoiding sudden braking, making use of the vehicle's inertia, driving at a constant speed, etc.
- Design:
 - Aerodynamic design
 - The use of low-drag tyres

- RAILWAY TRANSPORT:

Generally operates with electric energy, and in this case the railway generates indirect emissions as the energy used was produced by burning fossil fuels at an earlier stage.

There are measures in infrastructure design and management that allow for improvement in energy efficiency, such as:

- Improvements in the existing track network,
- Control and management of the existing trains to avoid empty convoys travelling.
- Building infrastructure to avoid transferring goods from one train to another.

- MARITIME TRANSPORT:

The global emissions from maritime transport are constantly increasing.

It is an efficient means of transport, although it presents improvement alternatives.

- Alternatives:

- Efficiency in the engines: Use diesel engines, apply the measure of "slow steam", and optimise the use of fuel.
- Improve management and planning:
 - Fleet planning to reduce fuel costs
 - Trip planning to avoid waiting times that involve keeping an engine running unnecessarily
 - Optimise loading and anchoring times.
- Technological and design measures to improve the efficiency of new vessels: correct selection of the shape of the hull and propeller
- Technological and design measures to improve the efficiency of existing vessels: modification of the shape of the hull, good maintenance of the ship, substitution of marine diesel.
- Promote maritime lines: Sea highways and navigable waterways.

- AIRCRAFT:

- Alternatives:

- Use alternative fuels
- Improve the aerodynamic design of new aircraft

LOGISTICS CENTRES AND WAREHOUSES

Emissions derived from the electricity consumption of goods storage and warehouse management, as well as the use of fluorinated gases for refrigeration

- Alternatives:

- Improve the equipment efficiency
- Climatisation:
 - Install control and reduction measures for reducing electricity consumption
 - Practice proper management of fluorinated gases used for refrigeration.
- Lighting: use low-consumption bulbs, install presence sensors or detectors and time delay devices.

GENERIC ALTERNATIVES

- Equipment and installations maintenance of the equipment and installations
- Staff training on best environmental practices



Case study: Eroski Group (Spain)

(Source:Fenercom)

In implementing the Eroski Group Environmental Plan, it was determined that the most appropriate and effective way for the company to try to curb CO₂ emissions was in the transportation of its products from the production site to the Trades.

A group of experts in logistics designed environmental optimization plans for the transportation of products.

GENERAL MEASURES TO REDUCE EMISSIONS

To help reduce greenhouse gas emissions:

- Optimization of routes.
- Use less polluting means of transport.
- Use of fuel plant additive to reduce emissions by 2%.
- Use of biofuels.
- Driving more efficiently and environmentally friendly, reducing fuel use by 10%.

RESULTS

Due to the introduction of new platforms in the Eroski Group, data on fuel economy and CO₂ emissions are not comparable from one year to the next. The fuel consumption data for the years 2004 and 2005 are detailed below.

Fuel consumption according to sources in the logistics business			
	2004	*2005	*2006
Liters of fuel for the transport fleet	36.124.371,90 liters	47.988.410,97 liters	+32,8%

Direct CO ₂ emissions due to the logistics business (t equi. CO ₂ / EUR			
	2004	*2005	2006 Variation
** Direct emissions	0,032	0,039	+21,8%

* For 2005 data for the following platforms are provided: Pinto, Getafe, Elorrio, Zubieta, Zorroza, Agurain, Cenco, Azuqueca, Zaragoza, Malaga. A Coruña and Sigüeiro are not included. For 2006 data for the following platforms are provided: Getafe, Elorrio, Zubieta, Zorroza, Agurain, Cenco, Azuqueca, Zaragoza, Malaga, A Coruña and Sigüeiro, Pinto is not included.

** Method of calculation; litres of fuel conversion factor * / output euro