Factsheet 8: How to cut CO2 emissions – freight

Globally, most CO2 emissions from moving freight come from trucks. There are four main ways to cut freight CO2:

- Improve the efficiency of trucks.
- Shift freight from trucks to rail or inland navigation.
- Power railways with electricity from renewable energy.
- Reduce the amount of freight moved.

Improving trucks

Improving trucks can cut emissions in most countries by a third over the short term and more than half over the long term. Some changes so trucks use less fuel are:

Improved aerodynamics
Wide based tyres
Weight reduction
Low friction lubricants
Speed reduction
Ecodriver training
Full loads
Strict government fuel standards

These improvements can cut emissions from trucks in most countries by more than half over the long term.

The three changes that will make the most difference are speed reduction, full loads and strict government fuel standards. All these changes can be made quickly.

Speed limits can be changed immediately. They make a difference because much of the energy in moving a truck goes in pushing the air at the front out of the way. A truck at 110 kph uses twice as much energy to do that as a truck at 80 kph. The overall reduction in fuel use is less, but still substantial.

A 20 km cut in speed, from 115 kph to 95 kph, means a 17% cut in fuel to cover the same distance. And trucks that go slower can also be built lighter, with smaller engines.

Reducing speed limits means more jobs. Companies will still send the goods. But it will take longer for trucks to get there. That will mean more jobs for drivers. However, there is already a problem with fatigue in road transport, and many drivers are vulnerable because they are self-employed. Trucking needs regulation to avoid longer hours, more fatigue, more exploitation and more accidents.

We would also need more trucks. This would have a carbon cost in the factories. But that would also make jobs in the factories. And governments could insist on state of the art, low carbon new trucks. That would reduce the average emissions of all trucks quickly.

Running trucks with full loads requires careful control of inventory, shipping and planning, but it can make an enormous difference. A truck with full load on the flat uses 30% of its fuel to move the load, and 70% to move the truck.

That means a truck one-quarter full uses two and a half times more fuel per tonne of freight than a truck three-quarters full.

Stricter government regulations for energy efficiency will also make considerable difference. The key is regulations that insist that within three to five years all trucks are as efficient as the most efficient truck now. Once that is achieved, then the standards are tightened again.

In some poor countries, the trucks are particularly inefficient and polluting. This is often because old, dirty trucks are exported from the rich countries. In these places, strict government controls of imports and engines can deliver even larger cuts in emissions.

Taken together, these changes can reduce emissions by at least 50%. Very strict speed limits and careful loading could reduce them by even more.

Switch to trains

The second solution is a switch from trucks to rail freight and inland navigation.

A diesel railway engine uses about half the fuel per tonne of freight of a diesel truck. One reason is that a train is much longer, and has the same advantage as the Tour de France. Another is that freight trains move more slowly.

Inland navigation on rivers and canals uses less than half the fuel of a diesel truck, partly because it moves slowly.

Of course railway lines, rivers and canals don't go everywhere. Trains and boats have to take the freight to depots. There it can be unloaded into light vans and trucks to deliver it the last few kilometres. Crucially, however, vans that cover short distances can run on electricity.

The market, left to itself, will not deliver rail. For the last fifty years we have seen a steady shift from rail to road. This is not just driven by profits. It has been encouraged by governments – partly by railway closures, but mainly by building roads. Globally, the World Bank worked steadily to encourage road building and car buying all over the world.

We need these policies reversed. That requires government regulations to direct freight to rail, and money for new rail networks.

What about truck drivers' jobs?

A switch to rail will mean some jobs in trucking will be lost. On the other hand, a switch of passengers from cars to buses will mean that many more jobs driving than are lost in trucks. And there will be jobs driving electric vehicles the last few miles.

But truck drivers will also need government policies that guarantee them retraining and a good job in rail, buses or shipping. See the factsheet on Jobs Lost for more details.

Switch to electricity

Adding electric cables to a railway line is not difficult. But as with passenger rail, the really big saving comes when most of the electricity on the grid comes from renewable sources. Then it is possible to reduce emissions from rail to almost nothing. This is the big reason for switching from road freight in trucks to rail freight – the possibility of renewable electricity.

Reduce freight

We can also cut emissions by moving less freight. The solutions here involve difficult political and moral choices.

It is possible to say, for instance, that 'food miles' should be drastically reduced. It makes no sense for the UK to export hundreds of thousands of tonnes of pork every year, and to import hundreds of thousands of tonnes of pork as well.

But any moves to reduce global trade will also be moves to reduce exports, and therefore jobs, in the poorest countries in the world. They will also damage the economies of several rich exporting economies like Germany and Japan.

So reduction in trade is not a simple matter. But there is one thing transport workers can campaign for. Economists say that 'cheap transport' has been essential to the growth of global trade. That is true. But that transport is cheap because many port workers, seafarers and truckers have seen their unions undermined, their conditions worsen, and their real wages fall. If unions can win back those losses, transport will become more expensive. Then the growth in global trade can be restrained.

Timing

It makes sense to take these changes in a certain order. The first changes are almost immediate. Speed limits can be reduced in a week.

Driver training and strict emissions standards for new trucks could follow within a couple of years. Switching large amounts of freight to rail requires a few years to build the new lines. In many cases, though, new lines could be built for faster passenger trains. Then much of the old network could be turned over to slower freight trains. In some countries, particularly in South America, many railway lines have been closed. These could be reopened. Finally, a switch to renewable electricity on all lines would follow.

We are not proposing that all road freight switch to rail. Even at the end of 15 or 20 years, there would still be a mixture of road and rail freight.

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