European Federation for TRANSPORT and ENVIRONMENT

The impact of lower oil consumption on world oil prices
Briefing on the study for Transport and Environment by Enerdata
Funded by the Energy Foundation
April 2009

The impact of lower oil consumption in Europe on world oil prices

T&E commissioned the French institute Enerdata to study the impact of lower oil demand in Europe on global oil prices.

The study was inspired by our expectation that economic benefits of energy conservation policies in Europe are consistently underestimated. Nobody doubts that the boom in oil and commodity prices until mid-2008 was caused by a rapidly rising demand for those resources. Nobody doubts that the subsequent crisis and associated plummeting demand for oil and other commodities have sent their prices falling.

But until now very few have made the point that a policy-induced decline of demand for oil could also result in lower oil prices, and hence greater economic benefits, in particular for oil-importing regions such as the EU. This study aimed to fill that essential gap in knowledge.

We commissioned the study from Enerdata because the POLES model developed and run by this institute is the only public model available in Europe we know of that is capable of calculating oil prices as an output of supply and demand, rather than as an input.

Key results

The study indicates that a 1% reduction in global oil demand reduces oil prices by 1.6 to 1.8% over a 10 year timeframe, and by 1.2 to 1.3% over a 20-year timeframe[1].

This result has an important implication. It means that countries or regions large enough to influence global oil demand have the power to lower global oil prices by reducing their domestic demand.

Examples of such regions are the EU with 14 million barrels per day (17% of global oil demand), the US with 20 million barrels (24%), and China with 8 million barrels (9%).

The study therefore also shows that the economic benefits for Europe of cutting oil demand do not just come from lower import volumes, but also from lower oil prices. This has never been acknowledged in official impact assessments, and therefore these benefits have always been underestimated.

The study shows that in the case of the EU, ignoring the impact of the lower oil prices induced by lower European demand underestimates the true savings in energy costs for the EU by 10-17%.

Given the share of the US and China in global oil demand, this figure will likely be in the 15-25% range for the US, and in the 6-10% range for China (T&E estimates).

How robust are the results ?

Obviously, the oil market is not an example of a perfectly functioning market, governed only by economic considerations. Certainly in the short term, political considerations including decisions taken by OPEC are very important price drivers too.

Nevertheless, in the medium to long term, economics are critical in getting investments in oil supply off the ground. Pindyck (1999) found that the behaviour of oil prices has been broadly consistent with the economic theory of exhaustible natural resource pricing2.

The results of this study imply an elasticity of demand for oil of approximately -0.6 over a 10-year timeframe, to -0.8 over a 20-year timeframe.

It should be mentioned that EU environmental standards in the transport field tend to spill over to other regions. Most Asian countries (Japan and Korea being notable exceptions) follow 'Euro' air pollution standards for passenger cars and lorry engines, for example. That global impact would certainly increase the effect of EU decisions on global oil prices, but has not been taken into account in this study.

Policy implication 1: Economic benefits of energy efficiency should be revised upward

The first policy implication is that the EU should revise upwards its estimated economic benefits from energy efficiency measures in transport by 17% in a 10-year timeframe, and by 10% in a 20-year timeframe. For the US

1 The latter figure is lower because the lower prices in turn induce consumers to consume more, and producers to produce less, making the price difference smaller again This also implies an elasticity of demand for oil of approximately -0.6 over a 10-year timeframe, to -0.8 over a 20-year timeframe. This is well in line with existing international estimates.

2 Pindyck, R.S. (1999): 'The long-run evolution of energy prices', The Energy Journal, 20(2): 1-27

these figures should be in the range of 25 and 15 per cent respectively.

Examples of technical measures the EU is considering to reduce energy consumption in transport are:

- CO2 standards for light trucks (vans);
- CO2 standards for lorries;
- Energy efficiency standards for mobile air conditioning;

Examples of economic incentives to reduce energy consumption the EU is considering are:

- Introduction of shipping in the EU ETS;
- Review of the energy taxation directive.

We want to stress that these results should ONLY apply to assessments of energy conservation and efficiency measures. Fuel shift measures (e.g. a shift to biofuel) do not lead to lower resource pressures: they may lead to lower oil prices, but would in return also lead to higher prices for biofuel feedstock. Either both price changes, or none should be taken into account.[3]

Policy implication 2: Fuel taxes should be increased in response to agreed CO2 standards

The downside of lower oil prices is that they will induce new demand for oil, partly offsetting the initial environmental (CO2) gains from energy savings. In order to avoid such a 'rebound effect' and to fully capture the benefits from energy efficiency measures, governments should offset oil price decreases with fuel tax increases.

The EU could also play a constructive role here by revising the energy tax directive 2003/96. In particular the minimum levels for taxation of petrol and diesel should be increased, and a minimum level for taxation of kerosene should be introduced.

Increasing fuel taxes seems like a counter-intuitive strategy in these days of economic crisis.

But there are many economic advantages to raising fuel taxes in response to falling oil prices.

First, there is a solid body of scientific evidence that the economy and employment can get a boost through a 'green tax package' that simultaneously increases fuel taxes and reduces labour taxes with the proceeds.

Probably the most advanced quantitative European study in this field (one of the few studies taking technological adjustments after energy taxation into account) is a French study[4]. They showed that a modest energy tax – $10 per tonne of oil equivalent, or less than 1 cent per litre – implemented in six EU Member States and rechanneled into lower social security charges on labour would boost GDP by 0.27% and employment by 0.78% in the medium term.

Second, fuel taxes help to reduce fuel demand and hence the economic drag of oil import bills further. In summer 2008, the oil import bill of the EU exceeded €1bn per day. This means about 30% of total EU export revenue was used to buy oil. For many developing countries, with less valuable exports, this figure is much higher.

For developing countries therefore, the economic benefits of energy efficiency standards and fuel taxation policies will often even be higher than for developed ones.

Conclusion

The EU should revise upwards its estimated economic benefits from energy efficiency measures in transport by 17% in a 10-year timeframe, and by 10% in a 20-year timeframe and take these estimates into account when assessing new policy proposals aimed at reducing energy consumption in transport.

It also means that governments and the EU should offset oil price decreases with fuel tax increases. As these increases would have a positive effect on GDP and employment they would help to set us on track for a further greening of the economy. They would therefore be consistent with a green financial stimulus.

For further information, go to the T&E website:

www.transportenvironment.org

3 The study says: 'It should also be noted that this underestimation of energy cost benefits only applies to measure that improve energy efficiency. Measures that stimulate alternative fuel, i.e. reduce demand for oil but increase demand for an alternative fuel like biofuel, might reduce oil prices on the one hand, but it should equally be taken into account that the price of the alternative fuel could increase as a result of the measure.'

4 Lemiale and Zagamé 1998, Taxation de l'énergie, efficience énergétique et nouvelles technologies: les effets macroéconomiques pour six pays de l'Union européenne, Lionel Lemiale, and Paul Zagamé, in : L'environnement: une nouvelle dimension de l'analyse économique, Katherine Schubert and Paul Zagamé (eds.), p.353-70, Vuibert, Paris, June 1998)