

EUROPEAN TRANSPORT REGULATION OBSERVER

Internalising the External Costs of Transport

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Highlights

Personal and goods transport entail a significant societal and economic cost in the form of environmental and human health impacts, accidents, congestion, as well as infrastructure wear and tear. These costs are, however, largely unaccounted for in the price that transport users pay today. In the absence of a dedicated fiscal and policy framework, transport users thus currently do not consider external costs as part of their travel decisions.

Back in 2011 the European Commission acknowledged in its [White Paper](#) the importance of implementing 'fair and efficient transport pricing'. Consequently, a number of ongoing legislative processes, most notably the revision of the [Eurovignette Directive](#) on road pricing, aim to enact the long standing 'user pays' and 'polluter pays' principles. Yet, while there is agreement over the general principles, the specific policy design is still to be determined. The French government's recent backing down on a tax proposal that would have seen fuel prices increase by just under 3% shows how difficult it is to impose any economic pain in the name of tackling climate change. This calls for careful design and implementation of fiscal policy measures in order to ensure public acceptance, equity and social inclusion.

Cost reflective price signals are key to incentivising more efficient transport, while enabling consumers and industry actors to make informed purchase and investment decisions. The adequate internalisation of transport's external and infrastructure costs offers important benefits in terms of promoting a more efficient use of the infrastructures, reducing the transport sector's contribution to CO₂ emissions, air and noise pollution, while securing fairness for transport users.



With this in mind, the [5th Florence Intermodal Forum](#) on the Internalisation of the External Costs of Transport brought together representatives from all transport modes, as well as regulators from national- and local-levels, to discuss the transport sector's infrastructure- and external costs as well as the necessary policy tools to internalise them. More specifically, the forum addressed the following critical questions:

1. Is the 'user pays principle' an appropriate tool to account for the infrastructure costs of transport? Can it be implemented in a socially just manner?
2. Can carbon- and pollution-based taxation be a means to implement the 'polluter pays principle'?
3. What policy measures need to be enacted at European-, national- and local-levels to achieve the user-pays and polluter pays-principles?

Pricing, regulation, and rethinking of our mobility needs is required if we want transport to fully account for its external costs

A comment by Matthias Finger and Teodora Serafimova, Florence School of Regulation – Transport Area

In its Long Term Decarbonisation Strategy ‘[A Clean Planet for All](#)’, the European Commission paints a clear picture of the vast transformations that will have to take place across all sectors of the economy for Europe to reach net-carbon neutrality by mid-century. For transport, which accounts for a quarter of the Union’s total greenhouse gas emissions and which is a major contributor to urban air- and noise-pollution, this will require a systems-based approach with significant changes across all transport modes. With this in mind, the [5th Florence Intermodal Forum](#) was suitably themed around the Internalisation of the External Costs of Transport: a topic that is poised to rank highly on the incoming European Commission’s list of priorities.

To kick-start the discussions, the Commission’s DG MOVE used the occasion of the Forum to share fresh findings from their soon-to-be-published report on ‘Sustainable Transport Infrastructure Charging and Internalisation of Transport Externalities’. A clear conclusion can already be drawn from the study, in that, in the EU, the principle ‘society pays’ prevails of the ‘the user pays’ and ‘the polluter pays’ principles. In fact, the study calculates the overall external costs of transport to be worth around €1 000 billion annually, the equivalent of as much as 7% of EU28 GDP, whereas users are only paying for roughly half of these directly generated transport costs.

This mismatch between external and infrastructure costs, on the one hand, and taxes and charges levied, on the other, is one of the main reasons for the inefficiency of the transport system. The ultimate aim of internalisation is therefore to get the users to pay for the true societal costs of transport. While there is long standing agreement over the importance of cost-reflective and efficient pricing in transport, translating this agreement into practice is far from being straightforward.

Breaking away from a socially unjust mobility system... in a socially just manner

As a matter of fact, already today transport and logistics account for a significant share of company costs and household expenditures. For the latter, transport is the second largest expenditure item, preceded only by housing costs. On average, every person spends €1,900 on transport per year, which represents 13% of their spending. The enactment of the ‘user pays’ and ‘polluter pays’ principles can therefore result in a disproportionate burden for the lower income segments of the population. This calls for careful planning and design of fiscal policies to ensure social justice and public acceptance of implementation measures.

Having said that, the current mobility system, largely dominated by private transport, is already inherently unjust, given that it does not allow those without access to cars to enjoy the same economic and social opportunities. In this respect, the challenge is to evolve in a socially just manner from unjust mobility practices to a low-carbon, multi-modal mobility system, that will be dominated by shared- and public-transport. In other words, the internalisation of the external costs of transport must be framed as a contribution of transport to social welfare.

We agree on the principles, but how do we get there?

We have a number of options at our disposal to help us get there, namely market-based instruments (or ‘pricing’ measures, such as charges, taxes and tradable permits), regulatory measures (e.g., land use planning regulations, parking fees, and vehicle access restrictions), as well as voluntary instruments. The transport sector is, however, not uniform in its contribution to societal and environmental costs, which means that there is no ‘one-solution-fits-all’ approach and the answer instead lies in a combination of all of the above measures.

Pricing mechanisms have a key role to play in rendering the environmentally and socially beneficial transport options more economically attractive for the users. In addition to rewarding clean and more efficient fuels and transport modes, pricing schemes can be used to influence transport users’ behaviour, by, for example, determining the time of the day that people travel, thereby alleviating congestion, reducing air- and noise-pollution, as well as traffic-related accidents.



What is more, distance-based charging for infrastructure use across all transport modes was one of the study's recommendations that received broad support. In fact, the currently reviewed [Eurovignette Directive](#) on road charging of heavy duty vehicles already seeks to implement this. This type of taxation can help to generate an important source of revenue for the public budget to be reinvested into clean mobility projects and infrastructure. In the case of this piece of legislation, adequately designed and implemented tolls will be key when it comes to stimulating improvements in logistic efficiency of freight transport, while encouraging the uptake of cleaner trucks and supporting the EU's modal-shift objectives.

Regulation, on the other hand, will have an important complementary function in enabling the shift to cleaner mobility. This, in turn, will come in the form of both stick and carrot elements enacted by different levels of government, from European-, to national- and local-levels. Examples include regulations about green public procurement of public service and municipal vehicles, the tightening of fuel-economy standards, as well as the introduction of low emission zones in urban centres.

Shifting away from the current mind-set that curbing mobility is not an option

While the uptake of more efficient and alternative powertrains will be central to greening the transport system, this alone will not suffice to address congestion. In parallel, therefore, demand-reducing measures will be needed in order to foster a modal- as well as behavioural shift towards shared-, public-, and soft-mobility. A more efficient organisation of the entire mobility system will in turn rely on digitalisation, data sharing and interoperable standards. These will be instrumental for enabling smart traffic management and increasingly automated mobility in all modes, reducing congestion and increasing occupancy rates.

A critical element, which was also partially touched upon during the Forum, was the need to break away from the current paradigm (as explicitly stated in [2011 White Paper](#)) which claims that a reduction in mobility volumes is not an option. As a matter of fact, curbing mobility should not only be an option, but rather must become a necessity. Last but not least, the Commission's

ongoing work on the development of a [taxonomy](#), or in other words, a unified classification system for the identification of ecologically more sustainable economic activities, will have a decisive role to play when it comes to ensuring that scarce public funds are channelled towards clean and future-proof transport solutions.



Main takeaways from the discussion

By Teodora Serafimova, Florence School of Regulation – Transport Area

The 5th Florence Intermodal Forum provided a timely platform for the presentation of the Commission’s (DG MOVE) soon-to-be-published study on “*Sustainable Transport Infrastructure Charging and Internalisation of Transport Externalities*”. This study will feed into ongoing debates, both on technical and policy levels, through an update of the handbook on external costs, of the infrastructure costs and of the existing internalisation measures.

Building on previous work, the study provides a comprehensive overview of the infrastructure- and external costs of transport and assesses the extent to which these are accounted for (or ‘internalised’) in currently imposed taxes and charges. While the final study is yet to be published, a clear message already now emerges, namely that transport charges and taxes today do not fully cover external and infrastructure costs, and, as a result, users are only paying for roughly half of the directly generated costs by transport¹.

As regards external costs, the study quantifies the costs arising from accidents, air pollution, climate change, noise, congestion, well-to-tank emissions, as well as habitat damage. The results show significant discrepancies across the different transport modes. In particular, road transport is found to pay back the biggest share of its total external and infrastructure-related costs. To illustrate this, the report points out that 95% of taxes and charges collected stem from road transport, and only 5% come from rail. 81% are generated from passenger transport; the remainder from freight transport. Road, however, was also found to be the mode causing the biggest total and average external costs, accounting for roughly 80%, making it the mode where society pays the most in absolute terms.

While the picture is certainly heterogeneous across the different transport modes when it comes to the contribution to external costs, the preliminary findings lead us to the idea that, so far, in the EU the principle ‘the society pays’ is more applicable than ‘the user pays’ or ‘the polluter pays’. To put things into perspective, the study

estimates the overall size of transport external costs to be worth around €1 000 billion annually, the equivalent of almost 7% of EU28 GDP. By comparison, the total sum of taxes and charges levied for road, rail and inland waterways adds up to roughly €370 billion, the equivalent of 2.5% of EU28 GDP, which covers less than half of the costs caused.

Similarly, infrastructure costs – namely those related to construction and maintenance works-vary from one mode to another, and may also be affected by external factors, such as population density and weather conditions as in the case of road maintenance for instance. The study shows that the average infrastructure costs of passenger transport are significantly higher for rail than for road, due to the higher associated fixed costs for construction as well as the lower rate of utilisation. In fact, rail was found to only pay back roughly 20% of its infrastructure and external costs. Excluding the fixed infrastructure costs, however, would translate in rail paying back the most, roughly 69%.

Another general trend that was pointed out is the overall drop in road transport infrastructure-related expenditures in the EU from 1.1% to 0.7% of GDP over the past 20 years. This has in part contributed to increasing the sector’s external costs related to congestion, accidents, noise and air pollution, thereby highlighting the interrelation between the infrastructure- and external costs of transport, and the need for a holistic response to addressing them.

Is the ‘user pays principle’ an appropriate tool to account for the infrastructure costs of transport? Can it be implemented in a socially just manner?

The enactment of the ‘user pays’ and ‘polluter pays’ principles is widely recognised as a key pre-condition for enabling fair competition between the different transport modes and for paving the way towards a more efficient and sustainable mobility system. At the same time, it is increasingly recognised that social aspects should be an integral consideration in the design and implementation of environmental policy and tax reform, so as to maximise fairness and political viability.

The ‘user pays’ principle calls upon the user of a natural resource to bear the costs of running down natural capital, or as in the current context – to pay for the use

1. Excluding fixed infrastructure costs



of infrastructure. Government tax reforms aiming to implement it, however, are difficult to enforce given that they oftentimes result in a disproportionate burden for the working and middle classes, as recently manifested in the case of the yellow vest movement in France.

While the optimal pricing strategy might vary from one country to another, dynamic- and means-based pricing models were highlighted as offering the least regressive and particularly effective design options for limiting congestion and maximising environmental benefits. These models rely on income-based discounts and/or exemptions for the lowest-income segments. In order to mitigate possible imbalances, the generated tolling revenue is directly returned to citizens through lump-sum rebates.

With this in mind, it was broadly agreed that the implementation of the ‘user pays’ principle in a socially just manner via tolling measures in both passenger and freight transport is feasible. Even in the case of Finland, a country marked by big land masses, widely spread transport networks and low population density, it was noted that the enactment of the user pays principle in a socially just manner is possible, though internalisation techniques need to be seen as part of a more comprehensive package of regulatory measures.

Stakeholders, furthermore, underlined the need for a participatory approach to the design and implementation of internalisation measures. This should include bringing awareness to the fact that the current transport system, dominated by private transport, is inherently socially unjust, given that it does not allow those without access to cars to enjoy the same economic and social opportunities. Conversely, a low-carbon multi-modal mobility system, marked by reliance on shared- and public-transport, can be viewed as a way of rectifying the current injustice.

Drawing on the newly presented figures, the European Commission’s study goes on to make mode-specific policy recommendations with a view of getting each sector to fully account for its external and infrastructure costs. The introduction of distance-based charging for infrastructure use is thus recommended across all transport modes.

The distance-based heavy duty vehicle fee (HVF) which has been in force in Switzerland since 2001, in particular,

was highlighted as a best practice having demonstrated its effectiveness in achieving three sets of goals, namely limiting the numbers of heavy duty vehicles on the roads, encouraging modal shift from road to rail, and, not the least, mitigating the sector’s environmental footprint. Roughly two-thirds of the revenue generated from the charge has been earmarked for investments in more sustainable transport modes, with one notable example being the country’s rail infrastructure fund.

The experience in member countries of the EU, however, has been less smooth. Participants quoted challenges related to the enactment at national-level of CO₂ taxation in the truck industry, given that an isolated increase in fuel tax in one country could result in its goods transport sector being undercut by competitors from neighbouring countries, where no such tax has been levied. Here the need for an overarching EU framework was stressed when internalising costs while securing a level playing field.

An important EU legislative opportunity in this regard is the ongoing revision of the [Eurovignette Directive](#) on road charging, which, if adequately designed, can enable the fair and efficient use of road transport infrastructures and help address problems related to the financing of transport infrastructure. The Commission’s legislative proposal for the reform takes us in the right direction by introducing distance-based charging (i.e., km travelled) on the basis of CO₂ emissions, with reduced charges granted to clean vehicles.

When it comes to rail, the study suggests the introduction of noise-differentiated rail access charges to promote cleaner and quieter rail. In order to cover the sector’s high fixed infrastructure costs, on the other hand, the possible introduction of mark-ups on rail access charges is put forward for consideration. Diverging opinions were expressed in relation to infrastructure costs coverage, in particular when it comes to clean modes with low climate and environmental externalities, such as rail. In other words, given the important societal and environmental benefits associated with rail generally, it was questioned whether full coverage of infrastructure costs should be obligatory and whether charging should instead be limited or removed altogether.



Can carbon- and pollution-based taxation be a means to implement the ‘polluter pays principle’?

The ‘polluter pays’ principle, enshrined in the 1992 Rio Declaration, is the commonly accepted idea that those who produce pollution should bear the costs of managing it so as to prevent damage to human health and the environment. When it comes to the transport sector, carbon- and pollution-based taxation are broadly seen as an effective instrument for implementing the polluter pays principle, with a view to internalising the sector’s externalities.

Zooming into the maritime sector, participants urged the need to consider a mix of internalisation techniques alongside other non-pricing measures. A number of pieces of legislation are pending enforcement in the course of the next few years, including the IMO sulphur cap which lowers allowable fuel sulphur content from 3.5% down to 0.5% in 2020, as well as the NOx Tier III standard for new ships in Nitrogen Emission Control Areas (NECAs) which kicks in as of 2021. While these measures are key to boosting both air quality as well as the uptake of more fuel efficient vessels, participants highlighted the importance of creating favourable conditions for electric vessels.

To this end, existing barriers to the deployment of shore power infrastructure should be eliminated through the upcoming revision of the [Electricity Taxation Directive](#), which in turn can enable electric and hybrid ferries and ships to plug into the electric grid when at berth, thereby shutting off their engines and reducing harmful air pollutants in coastal areas. Moreover, port dues were underlined as an essential source for port investments, including in green and innovative infrastructure.

Ports, in particular, were highlighted as priority areas for addressing the maritime sector’s environmental footprint, given that 90% of European ports are in or near urban centres. In recognition of the need to support investments in clean and zero emission propulsion technologies, 54% of European ports today reward early movers through green discounts.

Given the global character of the shipping industry, the need for a global approach to internalising its externalities was echoed among participants. Similarly, the European Commission study calls for global actions

in the framework of the IMO to reduce greenhouse gas emissions, with a view to attaining the global objective of halving the sector’s GHG emissions by mid-century from 2018 levels. The study, furthermore, recommends the introduction of environmentally differentiated port charges or fairway dues as an effective instrument to internalise air pollution, alongside IMO emission standards for new vessels.

Similarly, for aviation, another global industry, the study recommends the introduction of environmentally differentiated airport charges and aviation taxes. Participants largely agreed that, in order to create favourable conditions for sustainable low-carbon fuels to enter the market, an aviation tax on the basis of climate impact will have to be adopted. Currently, air passengers pay no tax on airline fuel or VAT on airline tickets. Taxation of jet fuel was justified as key to ensuring a level playing field and fairness vis-à-vis other transport modes.

What policy measures need to be enacted at European, national and local levels to achieve the user-pays and polluter pays-principles?

Participants agreed that the application of the user-pays and polluter-pays principles through internalisation techniques constitutes a powerful instrument for creating demand for clean technologies, and thus an important pre-condition for incentivising more efficient transport. It was, however, noted that the effectiveness of pricing mechanisms in achieving behavioural change may vary depending on the elasticity of demand, as well as on country-specific characteristics, such as population density.

The general agreement was that internalisation alone is not a ‘silver bullet’ and should be complemented by a broader set of regulatory measures, such as, for example, urban land use planning regulations, parking fees, as well as vehicle access restrictions. The shift towards a sustainable and multimodal transport system, it was agreed, will necessitate the enactment of a combination of push- and pull-factors at different levels of government ranging from the European, to the national- and even down to local levels.

The importance of a participatory approach to the design and implementation of fiscal and taxation policies



was furthermore highlighted, so as to ensure public acceptance and social justice. Not least, pricing *design* was pointed out as a key issue to prevent regressive effects. Dynamic- and means-based pricing models, relying on income-based discounts and/or exemptions for the lowest-income segments in particular were noted as promising for mitigating possible imbalances.

While there is an overarching consensus regarding the need to transition to a low carbon mobility system, the question of how the needed investments will be financed remains open. In this regard, internalisation was highlighted as a useful tool for financing infrastructure charges and as an enabler of sustainable financing. Moreover, interlinkages to another ongoing work of the European Commission were pointed out, namely its effort to develop a common EU methodology for the assessment and identification of ‘environmentally sustainable’ economic activities, also referred to as the ‘[taxonomy](#)’. This is seen as an important pre-condition for safeguarding investment security and putting an end to greenwashing practices. Participants were in agreement that the removal of environmentally harmful subsidies, together with the enactment of internalisation techniques, will be key to ensuring that scarce financial resources are channeled towards future proof technologies.

The final study is scheduled to be released in the course of the next weeks. In parallel, the European Commission is currently conducting an evaluation of its 2011 White Paper, which already then acknowledged the importance of implementing ‘fair and efficient transport pricing’. Participants welcomed the need to revisit outdated statements within the paper, most notably the reference to the statement that “*curbing mobility is not an option*”. In fact, forum stakeholders were in agreement that the wider penetration of low- and zero-emission mobility technologies will need to be accompanied by demand reducing measures, as by a greater reliance on shared- and public-transport.

In this respect, the potential of digitalisation was again underlined, especially when it comes to reducing transaction costs and enhancing the complementarity and even substitutability of the different transport modes. To illustrate this, studies have shown that thanks to shared, autonomous and electric mobility, coupled with the deployment of high capacity public transport, the city of Lisbon was able to reduce its vehicle fleet by

as much as 97%. In other words, only 3% of existing cars would be able to perform the same trips as before.

Evidently, the soon-to-be-published report and the ongoing evaluation of the 2011 White Paper are complimentary and will be decisive in shaping important policy decisions and legislative processes for the incoming Commission. Most notably, it is hoped that the study’s findings and policy recommendations will be instrumental for realising the European Commission’s objective of net carbon neutrality across all sectors of the European economy, including transport, by 2050.

Which Cost Concept for the External Effects of Climate Change?

A comment by Astrid Matthey, German Environment Agency

External costs contradict the polluter-pays principle. Individuals who do not benefit from an activity have to bear (part of) its costs. This is not only unfair. It also leads to market distortions and inefficient market outcomes. In spite of these negative consequences, external costs are widespread, especially those resulting from environmental effects.

The “Handbook External Costs of Transport” increases transparency on this market failure by making external costs of transport explicit. This is an important step towards their internalisation, the implementation of the polluter-pays principle, and efficient markets. Thus, the Handbook is a highly welcome contribution to the political discussions on the future of mobility.

The assessment of external costs is based on an estimation of the damage that transport inflicts on humans through its adverse effects on the environment. For most of the considered effects, the Handbook therefore aims at analysing this damage. For the climate effect of transport, however, it uses an abatement cost approach. Acknowledging that this is conceptually inappropriate, using abatement costs is justified with limitations in the existing damage cost models and superior characteristics of the abatement cost models. Since the choice of damage vs. abatement costs is a fundamental question when assessing climate costs, the main arguments made in the Handbook are discussed below.

The first argument made in the Handbook is that damage cost models cannot incorporate potentially catastrophic events like the melting of the polar ice caps. It is claimed that this problem can be avoided by using abatement cost models with a climate target of 2 degrees or GHG-concentrations around 450ppm. This argument leaves out an important point: Damage cost models are also based on emission scenarios, as they have to relate marginal emissions to GHG concentrations and global warming. For example, the model FUND 3.0 (Anthoff 2007), which is used in the Environmental

Cost Handbook “Methodological Convention 3.0” of the German Environment Agency, is based on the *EMF14 Standardised Scenario*, which is similar to a 2 degrees target. Now, it is true that even a 2 degrees scenario cannot rule out the occurrence of catastrophic events. But this applies to abatement cost models just as to damage cost models and does not justify a preference of the former over the latter.

Another argument made in the Handbook in favor of the abatement cost approach is simply that “countries have signed up to the Paris agreement”. For two reasons, this is a difficult argument. First, external effects are independent of their political interpretation. The damage that society suffers as a consequence of global warming is determined by physical effects, not by political targets. Second, it is argued that the Paris Agreement will be truly binding, and hence excess transport emissions will be offset by mitigation measures in other sectors. The climate costs caused by transport emissions would then be equal to the cost of additional mitigation measures in these sectors. Although this may happen, past and present political realities suggest otherwise: Climate targets are being missed, and both countries and sectors keep a jealous watch over other countries’ and sectors’ mitigation contributions to ensure that mitigation efforts are shared evenly.

A third argument made is that the variance in cost estimates is higher in damage cost models than in abatement cost models, and hence there is more certainty regarding the latter. This argument is based on a very broad interpretation of “uncertainty”. A large part of the variance in the results of damage cost models stems from the choice of different discount factors (based on different pure rates of time preference) and the use or non-use of equity weighting. But these choices do not imply “uncertainty” in the statistical sense. How to value the welfare of future vs. present generations, or of people in poorer vs. richer countries, is not a statistical, but a normative or political question. Once this question has been decided, the variance in the results of damage cost models shrinks dramatically, removing the presumed advantage of abatement cost models. EU policy principles provide the basis for such decisions, e.g., regarding intergenerational justice².

2. See, e.g., the report of the EU-Commission “[Employment and Social Developments in Europe 2017](#)” with a focus on intergenerational justice.



Finally, a closer look at the abatement cost models used in the Handbook is warranted. As acknowledged in the Handbook, the choice of the mitigation target is decisive for the resulting abatement costs. While there are several studies which consider a 2 degrees target, the 1.5° Special Report of the IPCC showed that there are very few studies for the Paris target of “well below 2 degrees” or 1.5 degrees. For the existing studies, the 1.5° Special Report notes that estimates vary considerably, ranging between US \$ 135 and US \$ 6050 per t CO₂ in 2030. None of these studies seems to have been included in the Handbook, however. Hence, countries having “signed up to Paris” is not reflected in the abatement cost literature used to derive the climate cost rate in the Handbook.

Beyond the mitigation target, assumptions on acceptable technologies and on the boundaries within which mitigation measures are optimised (global, national, sector-wise) strongly influence the resulting abatement cost estimates. In order to be useful, the assumptions made on these factors in the models used for the analysis in the Handbook have to be roughly in line with the actual situation in Europe. Unfortunately, that’s not the case. Most of the models are based on a *global* optimisation of mitigation measures, while political realities imply national or even sector-wise optimisation (and accordingly higher costs). In addition, some models focus primarily on the energy sector, while mitigation efforts leading to “well below 2 degrees” have to include the transport sector, buildings, agriculture etc. Finally, assumptions made in some of the (older) models on the feasibility of nuclear power, biomass and CCS do not reflect present political preferences and decisions in large parts of Europe.

In sum, the abatement cost models used in the Handbook may appear to deliver results with less uncertainty than available damage cost models. But they do so at the cost of using model parameters that do not reflect the realities of European mitigation efforts and hence have only limited validity. Rather than basing its climate cost estimate on these abatement cost models, the Handbook may have profited from basing it on damage cost models, using assumptions on intergenerational and global justice that reflect established EU policy aims.



Do the Social Costs of Transport Matter?

A comment by Claus Doll, Fraunhofer Institute for Systems and Innovation Research ISI

Social versus external costs

The recent study by CE Delft, Infras and Ricardo on “Sustainable Transport Infrastructure Charging and Internalisation of Transport Externalities” is the latest publication of a long series of reports on the external costs of transport. The first international comparison of this kind was commissioned by the International Union of Railways (UIC) in 1995 and was updated in 2000, 2004 and 2011. Transferring the 1995 figures into 2015 prices and comparing them to the recent CE Delft results we find costs per passenger kilometre have dropped by one third for car travel, and by 60 percent for aviation. This is partly attributable to better performance, but mostly due to lower greenhouse gas abatement costs applied. This is over 200 euros in current prices for the 1995 study, against 100 euros per ton of CO₂ equivalent in the CE Delft study. The level playing field between car, train and aviation, however, has remained remarkably stable over the past 24 years.

Most studies in the international environment use the expression “external costs” in a relatively loose way. External means that there is no market for an effect caused by an individual and thus there is over-use of the related resource. Instead, the German Methodology Convention for estimating environmental costs, currently available in Version 3.0, talks more precisely of “environmental costs”. If we include noise and other impacts on people, we can talk more broadly of social costs. Calculating real external costs would not only require the subtraction of all transport related taxes and charges as it was done by the CE Delft study and many works before, but to analyse the structure and the clarity of the connection of impacts to payments for the users. Detailed works in this area are still missing.

But what would the impacts of a fully extended pricing scheme be?

We look at the example of air travel. If we applied the current value of 180 euros per ton of CO₂ equivalent to low cost short distance airline tickets they may rise by 50

to 100 percent. This would surely prevent some people from flying in particular situations. The more critical market segment, frequent medium to long distance travellers with more expensive tickets, would, however, hardly be affected in their travel patterns. Estimates on the impact of a fully elaborated carbon pricing system in aviation assume demand reductions of around 10%. This does not solve the climate problem with air transport.

Examples like the French TGV links the Swiss Heavy Vehicle Fee and several urban congestion charging projects provide a strong message: pricing helps, but only if the revenues are spent for attractive and sustainable alternatives. Counter examples like the German motorway toll for trucks confirm: without powerful alternatives, users will pay for and continue travelling, despite all equity problems entailed by the pricing regime. Regulation and technology push for cleaner and more climate friendly solutions need to accompany pricing and incentives to send strong signals to users and decision-makers in which direction policy intends to evolve.

This “clear direction” of the several policy levels, in particular in the multi-layer setting of European, national and regional institutions is the biggest challenge of all. While the recipes for enhancing sustainability are well known, a multitude of demands and stakeholder interests aimed at forming certain policy lines, which are then often not consistent or even conflicting. However, the heterogeneous European environment has born great examples of innovative transport solutions from financing, charging and taxation to incentives, services and infrastructures. In the long run, Europe may be more resilient to economic threats and technology disruptions than the centralised China or the more shareholder-value addicted U.S. economy.

Turning the discussion back to the social costs of transport we conclude that a suite of instruments rather than just pricing appears to be a better way to increase transport sustainability and to achieve the badly needed cuts in the sector’s greenhouse gas emissions. Technological innovations play a major role in this toolbox, but need to be closely monitored with regard to their potential negative implications. The social and environmental impacts of the mining of lithium and rare earths for electric cars is just one prominent example, which may be even sharpened by simple carbon pricing policies.



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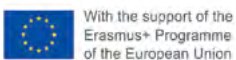
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FSR Transport

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The FSR-Transport Area's main activities are the European Transport Regulation Forums, which address policy and regulatory topics in different transport sectors. They bring relevant stakeholders together to analyse and reflect upon the latest developments and important regulatory issues in the European transport sector. These Forums inspire the comments gathered in this European Transport Regulation Observer. Complete information on our activities can be found online at: fsr.eui.eu



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