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Journal



EUROPEAN COURT
OF AUDITORS

THEME **Mobility &
Transport**



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activities and places together**



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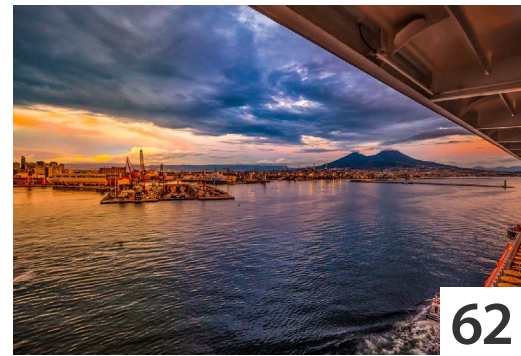


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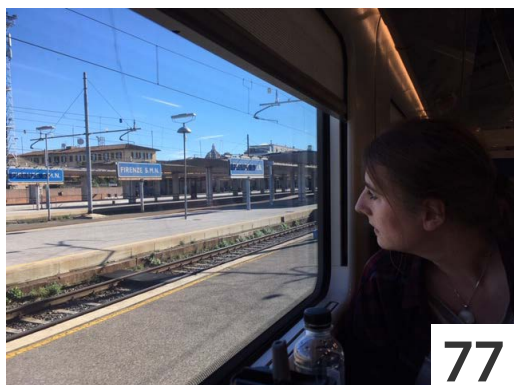
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Transport – freedom of movement, but not for free

Freedom of movement is a fundamental right. And — this may surprise you — it is not something specific to the European Union. It is right there in the first paragraph of Article 13 of the Universal Declaration of Human Rights adopted by the United Nations back in 1948. And, as paragraph 2 of the same article stipulates, this right is not limited to your country, but applies worldwide.

Having rights is one thing, being able to exercise them is another issue. And here the European Union's Single Market comes into play. Article 26 of the Treaty (TFEU) stipulates an internal market, without internal frontiers, in which the free movement of goods, persons, services and capital — also called the 'four freedoms' — is assured. The Treaty also devotes a whole section (Title VI) to transport. The setting up of the Single Market and the increasing involvement of the EU in legislating, financing and organising various aspects of transport and mobility are undoubtedly intertwined. But the economic success of the Single Market, the enlargement of the Union since 2004 and changes in citizen's lifestyle have also meant different traffic flows, more traffic and new problems to be addressed.

One of my favourite slogans is 'The EU works best if the citizen does not notice it.' And to a large extent this also applies to transport and mobility issues. Because traffic has increased substantially. This is not only my feeling: it is also pointed out in the ECA landscape review on transport published in December 2018, which motivated us to select transport as the theme for this Journal. From an economic point of view, as you can read in our Long Read, transport means bringing activities and places together, be it by road, rail, air or on water. Moreover, both the time and costs needed to move goods and persons around have decreased. In most, but not in all cases, and also depending on how you define costs. Looking at the significant changes that have taken place in the area of transport in Europe since the 1990s, many of them can be traced back to EU legislation or, at least for major infrastructure works, financing. In that sense transport is an area where citizens meet the EU almost on a daily basis. And not only when they are crossing borders.

However, my slogan also applies the other way around. When something does not work well, certainly when travelling between Member States, citizens will notice and would like to see action to address the problem. And as soon as this concerns cross-border transport or transnational issues, the EU comes into the picture: 'Do something!' And in today's global village, what is not cross-border? As the EU's external auditor, the ECA often reports on where the EU can do better. The objective is to get everything running so smoothly ... that the EU citizen does not even notice it. The ECA's reports might not always fully reflect the tremendous progress the EU and its Member States have achieved in providing better ways to put freedom of movement into practice. Sometimes only a major disruption, like for example 'Brexit', can make this progress really visible, because it is then that people realise what they will lose.

In this Journal on transport — offered in a new format to be more user-friendly for mobile devices — we try to cover a wide array of perspectives as far as transport and mobility is concerned. Quite often from an auditor's point of view, but also offering other perspectives: ranging from academics to decision-makers at the European Parliament, in a Member State government or at the European Commission. And also from a user's perspective, either taking that role as auditor when assessing a project or giving the floor to citizens using certain transport modes. In many contributions some concerns shine through: EU transport being a patchwork instead of a network; no level playing field between different transport modes; untransparent pricing and service practices; transport being far from meeting environmental targets; maintenance issues and safety concerns, to name just a few.

Reading all these contributions it becomes clear that everybody, without exception, seems to need some form of transport. We are more and more addicted to mobility. The questions are: which type of transport and who pays for it? In Luxembourg, citizens will enjoy free public transportation from 2020 onwards. But even here mobility does not come for free. There is certainly an environmental price to pay. Article 13 of the UN Declaration speaks about a right. But rights often come with duties. In this case environmental duties. As they are reflected in the UN's Sustainable Development Goals 7 and 13, to be met in 2030. That is only 11 years from now... ! So how environmentally friendly was your 'movement' today?

Reconciling transport and the environment - a dilemma that is here to stay

By Professor Yves Crozet, Transport Urban Planning Economics Laboratory
of the University of Lyon



Source: Pixabay

Electrification of the European car fleet

Transport is for many people a rather straightforward concept: getting people and/or goods from A to B. But looking a bit closer many things come into play, like technology, geography, safety, etc. And of course the means to realise transportation ambitions. On the latter, on the economic aspects, Professor Yves Crozet is a specialist. He has built up a research reputation in Europe, providing advice to decision-makers regarding societal impact of transport and mobility choices. In this Journal's Long Read article he focuses on the environmental costs of transport and whether EU objectives set for transportation and actions to counter climate change can still be reconciled.

Transport as a driver for growth... but at which cost?

Mobility of people and goods is at the heart of Europe's economic dynamic. For decades now, the growth of transport flows has gone hand in hand with economic growth. For this reason, annual public spending on mobility accounts for more than 1% of GDP; but transport also generates multiple external costs, such as insecurity, noise, pollution, climate change and energy dependency. As a result, public policies – in particular those that are implemented or promoted by the European Union – aim to reduce these negative externalities. However, they also seek to preserve the positive externalities of mobility for the economy and society that are linked to economic growth. Reconciling these two objectives is at the heart of the White Papers on Transport (2001 and 2011). As the European Parliament and the Commission will be renewed in 2019, it is now time to take stock of the situation. Is it not contradictory to encourage mobility while at the same time trying to reduce its external costs? If economic and ecological interests cannot be reconciled, we will be faced with a real dilemma.

Transport: striking a balance between profits and external costs

Transport has a positive macroeconomic impact. Jobs that are directly or indirectly linked to transport account for more than 10% of assets and GDP. The specific impact on individuals' daily lives is no less significant because, as a component of mobility, transport helps to bring places and activities together. Journeys by motorists who drive to work or by tourists who fly to their holiday destinations only make sense by bringing locations and activities together. When transport entails lower costs, faster travel or greater comfort, it encourages diversification and more intense activity. It is thus responsible for what economists call positive externalities or external benefits. This leads in all developed countries to an increase in the distances travelled each year by passengers and goods¹.

However, transport has a considerable negative impact not only on public health but also on biodiversity and climate change. Accidents, pollution, noise, severance effects and greenhouse gases – to name but a few – are part of a long list of the external costs of transport which account for tens of billions of euros at EU level. Reducing these external costs has therefore been a priority of European policies for several decades. They have a well-equipped toolbox to help them achieve this goal, as there are many ways of internalising external costs.

ECA Journal Short Read

Transport and economic development – transport brings economic activities and places together, encouraging economic growth. But it entails also external costs related to public health and climate.

Reducing external costs – decision makers have overall four means to internalise external costs: regulations, subvention, taxation and tradable permits, each of them applied with different success rates.

Reducing Green House Gas (GHG) emissions – for this main climate objective there are four key elements relevant: 1) reducing traffic; 2) lowering unit vehicle emissions; 3) increasing occupancy rates; 4) changing modes of transport used.

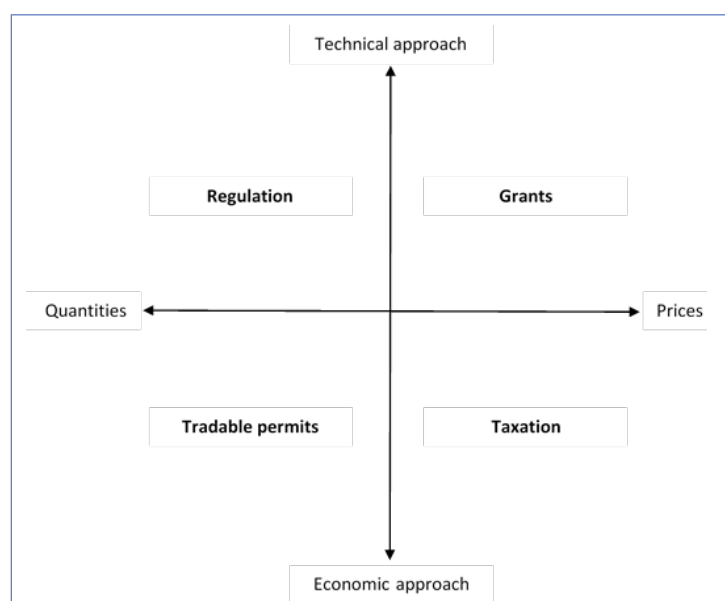
Income increase and substitution effects – these are the key elements that have offset most efforts in the EU to reduce GHG emissions.

Reducing unit emissions or activities, i.e. economic growth – these are the two variables that remain to achieve GHG emission goals. Considering the setbacks linked to each one of them – historically and politically – the EU faces a difficult dilemma.

Reducing external costs: the toolbox

Once an external cost is recognised, the means of internalising it vary. There are four such means, and, as Figure 1 shows, they combine technical or economic approaches on the one hand, and price or quantity measures on the other. These are presented clockwise, from the most basic to the most sophisticated.

Figure 1 - Means of internalisation



¹ Y. Crozet, 2016, *Hyper-mobilité et politiques publiques: changer d'époque?* Economica, 192 p.

The simplest and most obvious form of internalisation is **regulation**, which can go as far as prohibition, e.g. of dangerous goods, vehicles or behaviour. This means intervening upstream of economic stakeholders, e.g. by making seatbelts compulsory for manufacturers and drivers/passengers, or by introducing regular roadworthiness tests for vehicles. Transport is thus highly regulated in terms of driving licences, the Highway Code, vehicle weight and length, speed, drink-driving, parking, engine noise etc.

A second, widely endorsed, method is to **subsidise** an activity that is supposed to reduce the external costs of transport. This is the case of public transport in urban areas, which is regarded as more environmentally friendly than cars. However, the relevance of public transport is confined to densely populated areas: bus, tram or metro systems cannot be extended *ad infinitum*. Similarly, in order to replace the internal combustion engine with its electric equivalent, the price to pay in the form of grants for car buyers would be very high if sales were to become significant.

The third method – **taxation** – also affects prices, but aims to be profitable for society. However, although very effective, this method is less popular, as it entails environmental taxes (also known as Pigouvian taxes, after the English economist A.C. Pigou [1877-1959] who first proposed the idea almost 100 years ago). Although not explicitly included, fuel taxes can be classified under this category, as they are a major source of fiscal revenue and encourage motorists to reduce their fuel consumption and the resulting pollution.

The fourth form of internalisation – **tradable permits** – affects prices only indirectly because it mainly affects quantities. If it is possible accurately to measure and monitor the quantity of pollution emitted by a given source, why not assign a maximum emissions quota to each polluter? This ensures total emissions remain below a tolerable threshold, while allowing polluters to trade their emissions quotas on a market like the EU Emissions Trading System (EU ETS).

The European Union has used the four means available in the internalisation toolbox, but the first two have been more successful than the last two, which are more difficult for people to accept.

Regulation and grants: simple solutions

Regulation has been the most successful tool for implementing European and national policies. The best example of this is improved road safety. For example, France has seen a fivefold reduction in road deaths since 1972, even though traffic has increased fourfold over the same period. The risk of dying in a road accident has therefore fallen by a factor of 20. This is due to proactive policies regulating not only vehicles themselves but also the way they are used: maximum speeds have been reduced on all categories of road, and measures have been taken to combat drink-driving and various forms of road crime. However, the number of people killed and injured on Europe's roads remains high, and this explains why new regulations – such as points-based systems with stricter penalties – are being introduced on a regular basis.

In terms of pollution, regulation has also been effective in reducing unit emissions from new vehicles. Between the Euro 0 (1990) and Euro VI (2013) standards, unit engine pollutant emissions from heavy vehicles were drastically reduced: by factors of 36 for nitrogen monoxide (NO_x), 7.5 for carbon monoxide (CO), 18.5 for hydrocarbons (HC) and 36 for particulates (see Table 1). This led to a significant reduction in total pollutant emissions. In France, emissions from the transport sector fell between 1990 and 2015 by the following proportions: NO_x -60%, CO -90%; sulphur dioxide -88%, lead -99%, and particulates between -51% and -66%, depending on size². However, these results do not compensate for the so-called 'Dieselgate' scandal. The sophisticated software that car manufacturers used to approve vehicles enabled several of them to falsify their real engine emissions. And in many countries, including France, pollution in urban areas often remains above acceptable levels for the public health.

Thus, in February 2017 the European Commission sent a final warning – the last step before referral to the European Court of Justice – to several EU Member States including France, Germany, Spain, Italy and the United Kingdom. All were accused of exceeding maximum pollution thresholds too often in big cities, in particular for NO_x and particulate matter. The Commission drew attention to the fact that '400 000 citizens die prematurely each year in the EU because of poor air quality.'

² Source: CITEPA <https://www.citepa.org/fr/activites/inventaires-des-emissions/secten#Evolution>

In France, for instance, an estimated 48 000 premature deaths are attributed each year to fine particulate matter. The EU has singled out 19 urban areas in France – including Paris, Grenoble, Lyon and Marseille – that exceed authorised pollution levels. The cities concerned will be required to reduce traffic volumes, which they could do by means of road charges and urban tolls. However, they are more likely to resort to legislation to ban the vehicles that pollute the most. At the same time, governments have developed systems of grants for purchasing electric or hybrid vehicles, and have continued to subsidise public transport in the hope of promoting a shift towards cleaner modes of transport.

Table 1 - Changes in emission standards for heavy vehicles in the EU

Standard	Reference text (directives)	Data of application (all types)	NOx (g/kWh)	CO (g/kWh)	HC (g/kWh)	Particulate matter
Euro 0	88/77	01-10-1990	14,4	11,2	2,4	-
Euro I	91/542 (A)	01-10-1993	9	4,9	1,23	0,36
Euro II	91/542 (B)	01-10-1996	7	4	1,1	0,15
Euro III	1999/96	01-10-2001	5	2,1	0,66	0,13
Euro IV	1999/96	01-10-2006	3,5	1,5	0,46	0,02
Euro V	1999/96	01-10-2009	2	1,5	0,46	0,02
Euro VI	Regulation (EC) No 595/2009	31-12-2013	0,4	1,5	0,13	0,01

One question that arises is how effective regulatory measures and grants actually are. In order to achieve the desired results, would it be better to ban the oldest vehicles from the road, or to replace them more quickly with the aid of grants? Has the time not now come to combine taxation with the usual tools of regulation and grants?

The fact is that, as far as environmental pollution is concerned, public policies appear to be inconsistent. On the one hand, politicians talk in alarmist terms about the costs of pollution and climate change; on the other hand, however, the measures taken to deal with such issues are extremely conservative, being largely confined to technical aspects even though economic tools would be much more powerful. This is illustrated by the experience of Stockholm's urban toll: since urban road pricing was introduced there in 2006, the city of Stockholm has seen a 25% reduction in both traffic and pollutant emissions. Why has this system not been replicated in Europe more often?

The limited success of charging and tradable permits

Since the 1990s, the European Union has funded considerable research into mobility pricing with a view to internalising external costs. Urban tolls have thus been presented as a relevant solution (see Box 1), as have road-use charges for heavy goods vehicles (the *Eurovignette* Directive). Indeed, the European Parliament plans to amend the Directive so that such charges are no longer fixed, but depend on the distance travelled by vehicles and thus on the actual level of greenhouse gas emissions.

Charging tools do exist, then, but they are rarely used. Urban tolls apply only in London, Stockholm, Oslo and Valetta, and partially in cities such as Milan. Very few local politicians cite urban tolls as one of their objectives for the years to come.

Box 1 - Urban tolls

Urban tolls are economists' preferred tool for reducing the social costs of transport in dense areas. Today, there are dozens of urban charges around the world (especially in Europe and Asia) in a wide range of situations. Urban tolls differ by:

Purpose: the objective of urban tolls may be to finance new infrastructure, cut congestion or reduce environmental pollution. While the Rome or Milan tolls are examples of measures that prioritise the environment, most tolls (Singapore, London and Stockholm) seek to cut road congestion, with lower emissions as a joint objective.

Spatial coverage: tolls may apply either to specific infrastructure (Sydney) or to a specific geographical area (London), or be payable as soon as vehicles pass through certain locations (Oslo and Stockholm). However, the zones where urban tolls apply often occupy only a very small part of the surrounding metropolitan area.

Charging structure: some tolls are fixed (Dubai), while others depend on the distance travelled (Santiago); some tolls operate 24 hours a day, while others vary during the day and/or from one day to the next, depending on traffic speed (Singapore); some tolls are the same for all vehicles (Sydney), while others vary by size and/or engine type (Milan and Rome); and some systems offer exemptions (London), while in other places (Singapore) all road users have to pay.

Technology: the two main ways of collecting and monitoring compliance with tolls are based either on a card or a chip system in vehicles (Bergen and Tokyo), or on an optical recognition system for registration plates (London and Valletta). Progress on GPS-type satellite technologies is currently being incorporated into Singapore's urban charging system.

Tolls have a significant effect on traffic levels. Whether in London (-16%), Milan (around -15%), Singapore (-45%) or Tokyo (-10%), the introduction of tolls was followed by a significant drop in traffic (and sometimes a switch to cleaner engines, as in Stockholm). Urban tolls often have a beneficial effect on air quality (in Milan, NO_x emissions fell by 11% and PM₁₀ emissions by 14%). Most cities have seen similar increases in public transport use (+4.5% in Stockholm, +5% in Rome and +5% in London), while toll receipts (80 million euros/year in Singapore and 135 million euros/year in London) have made it possible to offer better modal alternatives. However, despite these genuine successes, urban toll investment and operating costs are often a major item of expenditure (46% of revenue in London, 55% in Milan and 100% or more in Valletta), with the choice of optical recognition technologies having a potentially detrimental effect on the socio-economic situation.

An increasingly frequent topic of discussion, not only in Luxembourg, but also in Brussels, Paris and Germany, is the possibility of free public transport. However, this type of measure has very little impact on the modal shift³. In those cities where public transport is free, neither road congestion nor pollutant emissions are falling. This type of measure therefore mainly shows public policymakers' aversion to road charges and their preference for awarding grants. Thus, in Rotterdam, a 'negative toll' is being tested in the form of grants for those who agree not to use their cars. The question which then arises is where the public funds allocated to this policy will originate.

As regards road and motorway charges for heavy goods vehicles, the results are also mixed. In 2014, France abandoned its eco-road tax project, which was modelled on Germany's. However, even in Germany, despite the 'toll collect' (LKW Maut) bringing in 5 billion euros a year, Heavy Goods Vehicle (HGV) traffic has not fallen. Charging policies are therefore subject to two types of limitation: not only are they rarely implemented, but when they are, their impact is limited because demand remains strong despite the higher charges. I explain why further below.

This type of remark also applies to air transport, which is growing very rapidly in all European countries. One explanation for this veritable boom is the downward trend in ticket prices. Lower fuel consumption and higher seat-occupancy ratios have made it possible to pass on major productivity gains to customers. The fact that aviation fuel is not taxed has, of course, facilitated this transfer. This is why the EU proposed that a global emissions trading system (ETS) be set up at a global level, although opposition from countries such as China, the United States and Russia has prevented this from happening. However, the fact remains that even an increase in the cost of aviation fuel would have had only a modest impact on air traffic. At current prices per tonne of CO₂, a carbon tax (about €30 per tonne) on air transport would entail only a slight increase (barely 10%) in ticket prices.

3 T. Mucanu, Ch. Winkler, T. Kuhnimhof, 2018, The travel demand impacts of fare-free regional transport in Germany, *International Transport* (70).

Can economic growth be reconciled with climate change?

Under the COP 21 UN Framework Convention on Climate Change, the European Union has committed itself to significantly reducing CO₂ emissions, in particular from transport. By 2030, transport, which accounted for 60% of the EU's emissions in 2014, is expected to reduce its emissions by 30% when compared with 2005 levels. However, this objective seems very ambitious in the light of recent developments. Although emissions fell in 2009-2011 due to the economic downturn, they subsequently picked up again as economic growth resumed. Thus, in 2017, France's transport emissions were only slightly lower than in 2000. This means that even if emissions growth can be avoided, any reduction is much more difficult. We will demonstrate this by highlighting the failure of the modal shift that has been a central objective of public policy for the last 20 years. As the limitations not only of the modal shift but also of pricing have become clear, what other options are available (see Box 2)? Will lower unit vehicle emissions and higher occupancy rates suffice? Or will mobility and thus economic growth also have to be curbed?

Box 2 - Four key ways to reduce greenhouse gas emissions

The overall objective of reducing greenhouse gas (GHG) emissions in the transport sector can be broken down into a few key variables. For each type of transport (passengers or goods) and for each mode of transport (road, rail, water, air, etc.), total emissions depend on a share of traffic – in passenger-kilometres (pkm) or tonne-kilometres (tkm) – multiplied by unit emissions per pkm or per tkm. These unit emissions are calculated by taking into account the unit emissions of the various vehicles and the occupancy rate. This gives the following formula:

$$GHG \text{ emissions} = \frac{\text{Traffic} \times \text{Unit vehicle emissions}}{\text{Occupancy rate}}$$

With the formula provided in **Box 2**, the reduction in total emissions is easy to calculate. For each mode of transport, the solution entails:

- 1) **reducing traffic** (passenger-kilometres or tonne-kilometres);
- 2) **lowering unit vehicle emissions; or**
- 3) **increasing occupancy rates;**
- 4) In terms of overall mobility one can also **organise a vast modal shift**, i.e. a progressive reduction in the traffic generated by modes of transport that structurally emit the most pollutants towards those that emit the fewest because they consume the smallest quantities of fossil fuels.

This fourth way – the modal shift – has been prioritised by the EU since the 1990.

The limitations of the modal shift

The modal shift was central to the EU's 2001 and 2011 White Papers on Transport. This was particularly the case for goods, which were supposed to switch from road to rail and water on a massive scale. To this end, the European Union identified corridors along which transport infrastructure – mainly rail – needed to be built or improved so as to create a genuine trans-European transport network (TEN-T). For passengers, high-speed rail projects had the same objective, i.e. to offer an alternative to intra-European air travel. With its emphasis on the development of public transport, the modal shift also concerned passengers in urban areas.

As the end of the decade approaches, the results of the modal shift are far removed from the original objectives, as a report recently submitted to the European Parliament makes clear⁴. The introduction to the report stresses that:

'the **modal share** of road, rail and inland waterway transport remained **substantially unchanged** between 1996 and 2016, both for passenger and freight transport, with road transport showing a slight increase. Looking at future projections, road transport is expected to keep its predominant position both for the passenger and freight sectors.'

⁴ Research for the TRAN Committee - Modal shift in European transport: a way forward, Study requested by the TRAN Committee, Policy Department for Structural and Cohesion Policies, Directorate-General for Internal Policies, PE 629.182 - November 2018, 174 p.

The results are not entirely negative, though. In city centres in particular, vehicle traffic and pollutant emissions have fallen, at the same time as public transport and soft mobility (walking and cycling) have developed. However, the further one moves away from densely populated areas, the more difficult it is for rail to compete with road or air. This is illustrated by two examples: road freight transport and long-distance passenger transport.

As far as the transport of goods is concerned, the star pupil in the European class is Germany. In the case of rail, the success of German freight operators (with a 40% increase in traffic between 2000 and 2017) is indeed impressive (at the same time in France, rail traffic fell by 40%). However, this performance is not all that it seems to be, as road transport's share of the market has not fallen. If a modal shift has taken place, it has not been from road to rail, but from water to rail, as the table below shows. This is worrying in view of the ambitions which the European Union set for itself in the 2011 White Paper. The fact is that roads seem likely to retain their dominance in the foreseeable future, for the simple reason that they are the only mode of transport that offers a door-to-door solution for goods – which cannot transport themselves – without the need for offloading. Furthermore, the road network provides access to the country's entire territory, which is not true of the railways.

Table 2 - Change in market share for freight transport in Germany

	2000	2005	2010	2015	2016
Water	15%	12%	10.8%	9.2%	8.8%
Rail	18%	18.1%	18.7%	19.5%	18.8%
Road	67%	69.9%	70.5%	71.3%	72.4%

Source: Eurostat

Another structural limitation of rail freight is the development of supply chains, where warehouses play a key role. The fact is that goods rarely travel directly from manufacturer to customer. Given the large volumes involved, they make several short trips of a few hundred kilometres from one warehouse to another before they reach their final destination. Rail transport is simply not competitive in such cases, not only because warehouses lack line connections but also because the distances covered are relatively small in relation to the scale at which rail is relevant (journeys of over 500 km).

All this means that the various modes of transport do not operate on a level playing field. Indeed, such are the advantages of road transport (i.e. speed, flexibility, reliability, adaptable volumes, and no offloading) that it has become the most obvious solution.

In its special report 19/2018, published in September 2018, the ECA has painted a critical picture of the state of high-speed rail. The European HSR network tripled in size between 2000 and 2016, from 2 708 km to 8 200 km. At the same time, however, traffic only doubled in size to 124 billion pkm. Given this situation, does the network really need to triple in size between 2010 and 2030, as the 2011 White Paper recommends? The question arises because the network has been extended since the beginning of the century at the same time as yields have been falling. After reaching a maximum of 21.9 million pkm per km of network in 2001, the rate of increase dropped by 50% in 2016⁵. This was the result of lines being brought into service with a potential that was lower than the HSL relevance threshold of 9 million pkm/year. The report singles out three new lines (Eje Atlántico, Madrid-León and Rhine-Rhône) whose traffic is well below this threshold. However, many planned HSLs also fall into this category.

Income and substitution effects in the area of transport

The limited progression of traffic on HSR lines contrasts with the success of air transport, where low-cost airlines have made high-speed rail less attractive, not because of direct point-to-point competition – which is relatively infrequent – but because of the incredibly wide range of destinations that customers are offered. These days, when Europeans are deciding where to spend their holidays, they no longer start by choosing their destination, but consult airline websites first to see what is on offer. Increasingly, they also choose a mode of transport before deciding on their destination. This trend is clear in France, where TGV traffic increased by 12% between 2008 and 2017, at the same time as passenger numbers between mainland France and

⁵ The figures for 2016 were 19.2 in France, 17.5 in Italy, 12.7 in Germany and 5 in Spain, a country which has over-invested in HSR.

Europe rose by 39%. The fact that more and more airports are connected to a high-speed rail line means that the TGV now serves as a complement to rather than as a substitute for air transport, as the 2011 White Paper stated.

In the area of air transport, EU policies run up against their own contradictions. For decades, transport policies in developed countries have been based on the idea that the external benefits of mobility should be extended to the entire population. Thus, road tolls disappeared in Britain and France at the beginning of the 19th century; indeed, roads are still mostly toll-free in the UK. In France, 99% of the national road network of more than one million kilometres is also still toll-free. Extending transport networks obviously acts as an incentive to increase the number and length of journeys.

At the same time, the EU is promoting the development of competition as a key factor in reducing costs and increasing demand, as was found to be the case for air transport. Deregulation of the sector has led to a significant drop in ticket prices. For intra-EU travel, passengers pay around 5 cents per kilometre, i.e. half as much as travelling by train (10 cents) and five times less than travelling by car (around 25 cents). It is therefore hardly surprising that the number of passengers in airports is increasing much faster than rail and road traffic.

There are two main reasons for greater passenger mobility:

- The first is the trend towards a general increase in purchasing power: on average, the cost of motorised mobility is falling. Thus, in France, recipients of the minimum wage in 1972 needed to work for one hour in order to purchase three litres of petrol. 47 years later, they can buy six litres, and as their cars consume almost half as much fuel, they can drive four times further per hour worked. As car prices have fallen, the 'economic speed'⁶ of passenger cars has quadrupled;
- As well as this income effect, there is also a substitution effect caused by the variation in relative prices. Cheaper plane tickets have stimulated demand for air travel, whose economic speed is now five times that of the automobile. For one hour of work, a recipient of the minimum wage can now travel 200 km by air, but only 40 km by car.

The same combination of income and substitution effects has impacted the transport of goods:

- As competition in road freight transport (RFT) began to develop in the 1970s, i.e. more than 20 years earlier than for rail transport, RFT achieved significant gains not only in terms of productivity – a factor in price reductions – but also in terms of quality and reliability. Thus, although road transport remains significantly more expensive than rail, it is rail – which was still dominant in the mid-20th century – that has seen its market share steadily decline because it is less adaptable.
- The substitution effect was amplified by the equivalent of an income effect because the per-tonne value of goods increased. As a consequence, the purchasing power of goods is increasing. The cost of transport represents a declining percentage of the value of goods. It is therefore not surprising that a more economical road-based service for goods has been preferred over rail and its attendant constraints.

Reduce unit emissions... or growth

It is not just travellers but also goods that are now covering ever greater distances, primarily due to economic growth. This means that purchasing power is increasing more than transport costs. Deregulation and competition are also factors here, as they have helped to lower the relative prices of the modes of transport that rely most on fossil fuels, i.e. road and air. The equation in Box 2 leaves only two means of reducing CO₂ emissions from transport: one is technical and the other is economic.

The technical solution entails reducing unit vehicle emissions while increasing their load factor. This is exactly what air transport has achieved over the last 20 years. However, as traffic has grown significantly, CO₂ emissions from aircraft – although they have barely increased – still account for 10% of transport emissions as jet engines still consume fossil fuels. In order to reduce unit vehicle emissions, their source of energy therefore needs to change, which is why the emphasis is now on electrifying cars and – to a certain extent – lorries. In order to achieve this, the European Union

6 Crozet Y., 2017, *Économie de la vitesse: Ivan Illich revisité*, in *L'économie politique* n°76, pp. 24-37.

is envisaging binding standards for car manufacturers so that all new vehicles sold emit less and less CO₂ per kilometre. Several countries, including France, are envisaging banning the sale of vehicles powered by internal combustion engines from 2040, the aim being that all cars should be electric by 2050.

However, what are the chances of such an objective being achieved and – even if it can be – what will the actual impact on CO₂ emissions be? These two questions are worth asking. First, because announcing the electrification of cars is reminiscent of the announcement of the modal shift 15 or 20 years ago; and second, because electric motors use electricity that may have been generated from fossil fuels. Battery production and recycling are also sources of CO₂ emissions. It is therefore highly likely that climate commitments in the transport sector will be difficult to achieve by purely technical means.

There remains the economic solution, but this entails calling into question the very principle of economic growth. This could take the form of regulations and fiscal disincentives that are explicitly designed to reduce economic activity – and thus the flow of people and goods – by curbing income growth. However, such a scenario is not currently on the public policy agenda as it has significant adverse effects, not least in terms of public revenue.

Dilemma likely to remain very pertinent

A lucid assessment of the transport sector suggests that it will be very difficult for EU Member States to achieve their commitments to reduce CO₂ emissions. The limited results achieved over the last 20 years suggest a need for prudence in the face of optimistic pronouncements. The emphasis has now switched from the modal shift to electrification. However, even if electrification develops, it will be no panacea.

It is therefore highly likely that in a few years we will be faced with a dilemma that will force us to clarify the current ambiguity: either we commit to negative economic growth in order to reduce passenger and freight traffic, or we acknowledge our inability to reduce our reliance on fossil fuels to the extent that we had hoped. Although such an alternative is now increasingly likely, it is difficult for policymakers to accept, particularly when they ponder the well-known aphorism by Cardinal de Retz (1613-1679): 'It is to one's own detriment that one ceases to be ambiguous.'

Connecting transport modes and policy areas – the ECA landscape review on transport

Interview with Ladislav Balko, ECA Member

By Gaston Moonen



Ladislav Balko, ECA Member

Having published 13 special reports assessing EU transport issues the ECA decided to bring together the key findings and recommendations from these reports, together with further analysis, to distil the key challenges the EU faces regarding transport and mobility issues. Food for thought for the next European Commission, and thereafter, since transport policy decisions often relate to the long term. The reporting ECA Member for the landscape review, has been coordinating several of the special reports underlying the 2018 landscape review and explains where the two types of product connect and both aim to help the EU provide better transport solutions for its citizens.

Building on many previous ECA reports

To reflect the teamwork that helped to put together the ECA landscape review on transport Ladislav Balko invited three team members to participate in the interview: the principal manager involved, Pietro Puricella, Svetoslav Hristov, the head of task for this review, and Branislav Urbanič, as head of his private office. All three were very much involved in all the work done.

Ladislav Balko stresses that, like the other landscape reviews the ECA published during the last few years, also this review is meant to be a synthesis document. 'It brings together our knowledge and experience from past audit work, in this case 13 special reports in the fields of transport, and other relevant information that is publicly available.' He then refers to EU policy documents, reports from supreme audit institutions (SAIs), evaluations and statistics. 'This was my first landscape review as reporting Member. In the ECA's audit chamber I work in – Investment for Cohesion, Growth and Inclusion – this landscape review was identified as a high priority task. Therefore I approached my role with particular care and respect. The main challenge was to help achieving the right balance between synthesis and analysis of our previous work and the many recommendations we made there, while adding relevant information from public sources and paying attention not to present truly new audit findings.' He adds that another difference with a normal audit relate to the clearing process with the European Commission who is consulted to ensure factual accuracy, but does not provide formal replies to this type of product.

In addition to the synthesis element, he points out that a landscape review stands out by the broad range of topics covered. 'From my perspective, the main particularity of this publication was the broad range of topics covered. What I mean is that, while the main topic is transport, the range of issues covered varied across the transport modes and was not limited to infrastructure questions. In view of this broad range and variety, I found it a major challenge to formulate the key challenges to be addressed, which we have formulated into six key challenges.' With clearly some pride he adds: 'In my view, the audit team, under the leadership of Pietro Puricella and Svetoslav Hristov, have done a great job here, but also in the rest of the review.'

For the ECA Member an important difference compared with special reports is that, besides not presenting new audit findings, landscape reviews can present cross-cutting issues from a broader policy perspective, while a special reports often focuses on specific topics within a policy area. 'I would say that a landscape review reiterates and deepens the impact of the earlier ECA products on the topic on which it is based. This was also my impression during the hearing in the European Parliament's Budget and Control Committee on 7 January this year, where the reactions of the contributing MEPs confirmed the pertinence of the topics we raise.' He adds that for the Commission this discussion offered the possibility to point at actions it has been undertaking to address those issues. 'By doing so they actually also emphasize the impact of our work!'

“... a landscape review reiterates and deepens the impact of the earlier ECA products on the topic on which it is based.”

Transforming ambitions into achievements

As the title of the landscape review – Towards a successful transport sector in the EU: challenges to be addressed – indicates the core of the landscape reviews are the six challenges identified. While the ECA has been critical in several special reports, pointing to empty airports and seaports and a patchwork of railway systems, Ladislav Balko believes that the EU has achieved a lot. 'EU has delivered on many transport projects as such. The problem lies often in the broader picture, i.e. how these projects fit with, and complement, each other, and whether the respective network as a whole can work smoothly thanks to those projects.' He then refers to the missing links and bottlenecks, to effective use of infrastructure projects built, to the ability of citizens to benefit from their rights or smoothly claim and obtain compensation, etc. 'And this is what we often point out in our reports.'

Giving a concrete example of impact: 'I am convinced that the new improved European Deployment Plan for the European Rail Traffic Management System (ERTMS) is also the result of our special report 13/2017 of which I was the reporting Member and our work leading to that report. More broadly, I believe that our audits led to robust and pertinent recommendations that help the Commission and the Member States to improve the transport policy implementation and the way they manage EU spending on transport.' He gives another example: 'I believe that our recommendations concerning the implementation of cross-border infrastructure projects have also contributed to the initiation of the Commission's proposal for regulation to streamline the TEN-T implementation, for instance by simplifying granting of permits and procurement procedures along borders. This proposal is now in the hands of the legislators.'

Ladislav Balko also underlines that there is only so much the EU can do. 'When we look at the numbers, for example in the Multiannual Financial Framework, for transport, and compare that with the overall sums of investments done in transport in and by the Member States, we have to be realistic. Funding from the EU often serves as a catalyst, the main responsibility for the funding lies in the Member States. The EU role is to coordinate the policy, and maybe this needs to be done better. But this also goes for many EU activities in other policy areas.' He then gives a concrete example where such coordination is needed. 'One of the problems we saw with ERTMS is that when crossing a border the driver of the train is changed, due to the different languages that are spoken in the country travelled through. While in air traffic the international language spoken is English, the is not the case in international rail traffic, and a train crossing the border from Slovakia to Austria needs to change drivers. With consequences for the efficiency of railway traffic.'

“Funding from the EU often serves as a catalyst, the main responsibility for the funding lies in the Member States.”

Realising a truly connected transport network is very important, according to Ladislav Balko, also for the functioning of the European Single Market. 'When I was working for a governmental agency in Slovakia we tried to attract big multinationals to the eastern part of Slovakia, for example to build a car plant. A key element for their decision-making was the quality of the

connections to move the goods. And, as we found out for some parts of Slovakia: if the connections are not there, investors are not interested to move into a specific area.' He adds that in several of its reports the ECA has pointed out for realistic planning by the EU, to match the needs with limited resources, while aiming for innovative and sustainable solutions.

“... if the connections are not there, investors are not interested to move into a specific area.

When it comes to implementing EU goals in and through the Member States Ladislav Balko believes that sometimes the EU can do more in communicating, coordinating, and convincing the Member States that the EU-level goals and ambitions are not in contrast, but in line with those at the national level. 'In the end, the EU is composed of its Member States, it is not something alien to them. The ultimate beneficiaries of EU actions in the field of transport are the citizens in the Member States, and this message must be communicated more clearly and convincingly to all relevant players at national, regional and local level.'

Impact assessments and cost/benefit analysis

An often returning remark in many ECA reports regarding transport concerns the use of impact assessments and cost/benefit analysis. Ladislav Balko points out: 'Transport infrastructure requires significant financial resources so it is crucial to analyse all major costs and benefits correctly in advance and use that in the decision-making process. Making unrealistic estimates can result in undeliverable targets, over-sized or under-used projects, costs increases and delays - in other words, less value for money.'

“Making unrealistic estimates can result in undeliverable targets, over-sized or under-used projects, costs increases and delays - in other words, less value for money.

Branislav Urbanič makes the link to another well-known concept: EU added value: 'If political and financing decisions are not based on serious and solid ex-ante impact assessments, including detailed market analysis of the potential demand and taking account of relevant experience and best practices, they result in limited EU added value, poor sustainability and deadweight.' He adds that the latter is an anomaly, which the ECA has consistently criticized at several occasions, and means that EU money finances actions that would have taken place anyway with other resources.

As to cost/benefit analysis, Svetoslav Hristov remarks that the ECA has consistently recommended its importance in almost all the 13 reports covered by the landscape review. 'If you open the 13 reports we produced we consistently have been recommending this kind of advance assessment of cost, benefits and impact. Such assessment should be made before and used in the political decision making process on a project. As ECA we have raised the issue, making clear recommendations to the Commission that something needs to be done to improve their use. But how the authorities in the Member States take this up is difficult to influence.'

Pietro Puricella underlines that the challenge is to convince the decision makers in the Member States that the ex-ante assessments are a real tool to help deciding on a project, and not just a technical requirement that needs to be covered. 'It needs to support the decision maker and the financing of the project. This is a different way of thinking and progressively we see that some Member States authorities are quicker to take this up than others.' He also points out that the level of involvement of a Member State depends very much on the financing of the project. 'For ERDF financing, the Member State needs to see whether the supporting technical justification is valid or not. Ideally the two levels – Commission and Member State – should work together.'

On this point, he gives an example where the cost/benefit approach used by the ECA was actually followed by a Member State. 'This Member State took the methodology for ex-ante impact assessment the ECA used for assessing maritime investments and applied it to rail. The outcome was that they stopped the idea of developing a completely new high speed rail line, before asking for EU financing. Instead, they decided to upgrade the existing line. The high speed rail line would have saved only a few minutes for travelling from point A to B, compared with upgrading the existing line. The latter saved probably close to € 1 billion of tax payers' money.'

Strategic outlook binding various policy areas

When it comes to the variety of topics covered in the landscape review Ladislav Balko is keen to point out that they range from findings linked to different transport modes to passenger rights. 'I think that the quality of transport service we get as passengers and the ease and speed

with which we can claim and receive compensation where our rights have been breached are very important things that affect citizens very directly and perceptibly. This is precisely why this report, but also a report such as the one on air quality, which we published in September 2018, raised so much interest.' In his view this confirms that the ECA made the right choices in selecting these audit tasks.' We are now in the process of establishing our annual work programme for 2020 and I am sure we will consider the concerns citizens have on relevant topics like this.'

When discussing the impact of demographic developments in the EU on transportation needs Ladislav Balko points out that, while populations might shrink in certain areas, the expectation is that big cities and their surroundings will become even more densely populated. 'This will require action by Member States and the transport sector to adapt to and anticipate these developments. In spite of a shrinking population, overall, the Commission is expecting an increase in transport activities. It projects an increase of 42% for passengers and 60% for inland freight activity between 2010 and 2050.' He adds that the ECA takes such developments into account in the selection of its performance tasks. 'I refer for example to our special report 1/2014 on urban transport projects and to the ongoing audit on urban mobility.'

Such audits may also trigger different approaches to assess the choices made and impact achieved. In this respect, Pietro Puricella refers to the use made of the survey tool for the special report on passenger rights. 'For our reports we may decide, on an ad hoc basis, to use surveys. For the passenger report, we had two surveys directly addressed to the public. One survey we did with the help of an external company, resulting in a statistically representative picture for the whole EU population, with over 10 000 people participating.' As for the second survey, he explains that it concerned reactions from respondents sent directly to the ECA regarding passenger rights relating to a specific transport mode. 'Considering the responses we received and the variety of information, both surveys were a big success. And we might use the tool for future audits, but this will be a case-by-case decision.'

Looking more at the strategic picture, Ladislav Balko raises a specific concern. 'I am concerned, and I think I am not the only one, that the Europe 2020 Strategy expires soon - at the end of next year. And there seems to be no successor strategy for the following period that would guide and coordinate the EU's various policies and initiatives between and within the different areas. For example, some of the key EU transport policy objectives, such as the completion of the two layers of the trans-European transport network, extend to 2030 and 2050.' When it comes to meeting the environmental challenges that the future poses, also regarding means of transport, he is hopeful. 'I believe that transport is precisely the one area that lends itself perfectly to pioneering and promoting new and environmentally friendly technologies on a large scale.'

“ ... the Europe 2020 Strategy expires soon - at the end of next year. And there seems to be no successor strategy for the following period...

When it comes down to what the EU needs to consider for its strategy beyond 2020, the reporting Member for the landscape review names some elements also raised in the review. 'The EU needs to coordinate Member State's actions and co-finance transport projects that add value and will be used effectively, based on careful ex-ante assessments, and with due regard to filling missing links, removing bottlenecks, and taking account of environmental and demographic concerns.' He underlines that in doing so the EU also needs to be realistic, matching relevant and achievable objectives and priorities with available resources. Ladislav Balko points out that through its reports the ECA is keen to provide input and feedback on how to achieve this. 'We have some very interesting ongoing audits on roads connecting European regions, on SESAR deployment, on cross-border transport flagship infrastructures and multimodality. And I am sure that in our annual work programme for 2020 we will come up with audit topics that will help the EU to improve further and have an impact.'

Moving from EU patchwork to EU network

Interview with Henrik Hololei, Director-General for Mobility and Transport, European Commission

By Derek Meijers and Gaston Moonen



Source: European Commission

Henrik Hololei in his office

When it comes to moving people or goods across the Union the Commission's Directorate-General (DG) for Mobility and Transport enters the picture. According to its Director-General, Henrik Hololei, the DG's slogan *Connecting Europe* says it all, identifying connectivity as a key element the EU project is all about. Henrik Hololei has headed the DG, since 2015, and is more than willing to share his views on how and where the EU can help in achieving greater EU connectivity for its citizens.

EU successes and transport – connectivity as a public good

It might not come as a surprise that Henrik Hololei considers transport as essential to the EU and its policy making. But the European Commission's Director-General for Mobility and Transport beefs up that claim with some clear arguments. 'Transport is something we tend to take for granted, but everything we do is usually related to transport, whether it is going to the office in the morning, moving goods around or having fresh products in the supermarkets. Transport is all about connecting people, connecting businesses.' He considers connectivity to be one of the greatest public goods provided by the EU: 'I can tell you this from my personal experience, I lived 21 years without the right to travel, when we were deprived of this connectivity. That is maybe why I value it so much.'

“ ... I lived 21 years without the right to travel, when we were deprived of this connectivity. That is maybe why I value it so much.

For Henrik Hololei many of the EU successes relate to this connectivity. 'When you ask people to mention one of the things the EU has brought to them, they will very often name the European Single Aviation market that brought cheap flights - and that is connectivity and the EU at its best.' For the Director-General the single European aviation area is an explicit example of an EU achievement in transport. 'And there is so much to do in the other transport modes to get down

the barriers and make sure that this connectivity is a reality in the whole territory of the EU.' Then laughing: 'One reason why I like the slogan of DG MOVE, which is *Connecting Europe*, so much.'

Henrik Hololei considers the EU single market as a sine qua non condition for this connectivity. 'For the future of transport the key words are seamless transport and multimodality.' However, when discussing some critical findings from ECA reports and from the Commission itself in its progress reports, he underlines that progress, or the lack of it on these issues, needs to be put in an appropriate timeframe. 'When we look at the Commission's White Paper of 2011, we are looking at a document that set goals for 2030 and 2050, and, in 2015, when assessing it we concluded that it was still fit for purpose and now we needed to concentrate on the implementation of its actions.'

Changing world, new demands, new concepts

In his view 10 years will be the right time to re-evaluate its goals, since the world around us and mobility and transport as a concept have changed. 'This change is firstly driven by the whole issue of sustainability of transport, decarbonisation, air quality, alternative fuels, alternative power trains and so on. And secondly, by digitalisation.' He believes that digitalisation will also transform transport significantly. In the next ten years, we will see a bigger change in transport than in the last 50 years. And it will be a change for the better!'

“ *This change is firstly driven by the whole issue of sustainability of transport, decarbonisation, air quality, alternative fuels, alternative power trains and so on.* ”

Henrik Hololei quickly comes up with some examples of the effects of digitalisation in transport: 'Drones. Once the market is open for the commercial use of drones, it will be a market with a value of tens of billions of euros, and this will happen in the not too distant future.' He also mentions automation as a driver in transport. 'Autonomous driving is going to change a lot; the logistics are going to be far more efficient. Imagine when cars are talking to each other, ships are talking to the ports, cars are talking to infrastructure, the whole infrastructure is talking to its parts! You can optimise efficiently and at the same time diminish the emissions and make mobility more sustainable.' Also for air transport, he sees modernisation of air traffic management with digital solutions. 'We can increase efficiency in the skies even further.'

Moving to a real network

When discussing how to go from a transport patchwork to a transport network, Henrik Hololei raises what he calls 'the third element' next to sustainability and digitalisation in the changes he foresees: the physical infrastructure. 'In our physical infrastructure of trans-European networks we have to concentrate on removing the bottlenecks and bridging the missing links, in particular cross-border connections. In the future even more than today. That is how we can actually *make* a patchwork into a network!' For him these missing links are the reason why there is still a patchwork. 'Because Member States only think locally, within their own borders, but we need to think European, to incentivise policies, together with financing, focusing on what is European by nature.'

“ *... Member States only think locally, within their own borders, but we need to think European, to incentivise policies, together with financing...* ”

In this context, he brings up two other elements for these trans-European networks. 'First, they must be smart, meaning embracing the digital opportunities and enhancing them. And second, they must be sustainable, meaning creating the necessary infrastructure for alternative fuels.' For him the EU is instrumental to achieving this around Europe, to making it real.

Interests, finances and impact

Discussing the possible differences between national and regional interests on the one hand and EU interests on the other, it is clear Henrik Hololei knows what he is talking about, drawing on his experience as a former Minister of Economic Affairs in Estonia. 'We indeed have had some very unfortunate examples in the past because the programme for Trans-European Networks and the Regional Policy funding instruments had different perspectives and objectives leading sometimes to separate interests. However, this has changed, thanks also to the deployment of the Connecting Europe Facility. This is a big change!' He first explains that the Connecting Europe Facility only funds those projects that are on the trans-European networks, which means they are only eligible for financing when adding European value to the network. 'Secondly, we helped

to achieve coordination between the Connecting Europe Facility and the European Structural Investment Funds.' And here the Director-General stresses his appreciation for the work done by the ECA. 'In the different audits done on these networks by the ECA, you constantly pointed to this coordination, the need for it and also the way to improve it, which helped us devise a more sustainable policy.'

These regional interests also appear in, for example, air transport. Henrik Hololei points out that on the one hand the single aviation market has contributed enormously to connectivity in Europe. 'But on the other hand there are EU failures among those airports which have hardly ever seen an airplane. Fortunately, that is not possible anymore. Over the last years we managed to change this to make sure that the money is spent on those projects that are on the trans-European networks and goes to those Member States which are strongly committed to complete such projects.' He adds that the Connecting Europe Facility 'relies on competitive calls for proposal, which allow the best quality projects to be selected. In addition, the Connecting Europe Facility applies the concept of *use it or lose it*: 'If you do not use the money for the purpose given you will have to pay it back and the money goes to the projects which really add EU value. This creates additional pressure and Member States have become much more conscious of this!'

“ ... there are EU failures among those airports which have hardly ever seen an airplane. Fortunately, that is not possible anymore.

When speaking about the Connecting Europe Facility Henrik Hololei puts things into perspective. 'The facility is a very good tool but we also see that investment needs are very big. So increasing the funding available in the form of grants under the Connecting Europe Facility can only help to a certain extent to meet these high investment needs. What is going to change is that grants will become a component of more blended financing models based on innovative financial instruments aimed at leveraging other financial sources. For that you can turn for instance to the European Investment Bank (EIB).' He adds that for those projects that have a revenue stream one can also involve the private sector and also use other financing models, and that commercially viable projects should not be financed entirely with public money. 'EU money and national funds should be put where you have the missing links and bottlenecks and where there is no or less commercial interest. That is how you build a network from the patchwork.'

Creating impact through EU legislation: examples of safety and passenger rights

Financing is one of the instruments available to the Commission, legislation is another. Henrik Hololei refers to an aspect that he considers it is essential to arrange at EU level, through legislation: safety. 'I always say that in transport and mobility safety comes first. Whenever passengers travel, they trust they are travelling in a safe system. We even have to do more to continue to guarantee the highest safety level possible. We can be proud that the European safety framework, in whatever transport mode, is the best in the world. We have to keep it like that, whether by legislative means, implementation, enforcement or financial support.'

“ We can be proud that the European safety framework, in whatever transport mode, is the best in the world.

However, safety as an objective throughout the Union is sometimes also used as an impediment to changing the patchwork into a real network. Henrik Hololei: 'The safety argument is sometimes used to erect barriers that cannot be justified. The rail sector is maybe the worst example of that, where a large number of different rules are designed to avoid competition in the market, which is blocking the creation of the single European rail area.' However, he underlines that the Commission is working to address this: 'Through the implementation of the '4th Railway Package' we are making progress by cancelling a huge number of national rules and inserting more European competence. This allows a smoother process for the certifications that we need and they will boost the opening of the market.'

“ The safety argument is sometimes used to erect barriers that cannot be justified. The rail sector is maybe the worst example of that...

Henrik Hololei relates the safety issue to another, yet related topic the ECA published about in November 2018: passenger rights. 'The ECA report on this topic is a very useful tool to develop this policy. I am quoting the reporting ECA Member, Mr Pufan, who said the EU's commitment to passenger rights is indisputable. I think in this area we have established a framework which is unique in the world and serves in many countries as an example of best practice.' However, he believes there is still a lot of work to do. 'In particular on the enforcement side, which is uneven and - definitely - the strength of the national enforcement authorities varies.'

Putting it in a historical perspective he underlines that 15 years ago passenger rights related really to only one mode of transport - aviation, while they are now valid for the four modes of public transport: air, rail, water/maritime and bus. 'Certain core rights are also common to all modes, while the specific features of each sector need of course to be taken into account. However, it is fundamental that these rights are known and used by all citizens of the EU. That is why we have been running information campaigns quite proactively, including using digital means to raise awareness of people's rights.'

For Henrik Hololei passenger rights is a good example of how the EU has added value: 'We would probably not be enjoying these rights across the EU if these proposals had not been made at European level.' But he makes it clear there is still a lot to achieve: 'For the air passenger rights the regulation is already quite old. Six years ago, we put forward a proposal to modernise it. And, unfortunately, the proposal is still in the debating phase in the Council six years later. This is not a great example of how Member States have been tackling this issue.'

Changes and challenges

In 2010, Henrik Hololei was already working on EU transport and mobility issues, then as the head of cabinet of Commissioner Sim Kallas. When discussing what in his view has been the biggest change since then he responds quickly. 'I think the biggest positive change has been the creation of the Connecting Europe Facility. This financial instrument has made a difference! An instrument that really helps to promote pan-European seamless networks, as it supports the whole trans-European network policy.' With a certain pride, he adds: 'It is also an instrument where, in the evaluation of the policy with the Member States, not a single Member State claimed not to have profited from the system. Even at a time when many funding programmes have been cancelled or reduced, at least in the Commission's proposal for a future long-term budget, the amounts for the Connecting Europe Facility have been increased.'

“ ... I think the biggest positive change has been the creation of the 'Connecting Europe Facility.

Speaking about the future, this is also what the ECA's landscape review on transport looks at, identifying six challenges the EU still faces. When asked which of these six challenges is the key one from his perspective Henrik Hololei hesitates: 'I think that the need to improve planning, implementation and monitoring of the EU funded projects more generally is the key challenge. The landscape report was also very useful for us and for our planning, because we also need to look at the future to be able to improve the situation in all areas.' He underlines that he finds these reports really valuable. 'Yes, you cannot implement all at the same time but such a review gives you a very helpful direction.'

EU transport policy compared

Sometimes new ideas come up when looking away from the beaten track, for example comparing the European transport and mobility situation with elsewhere, for example with the United States where the current government has put transport infrastructure high on the political agenda. The Director-General believes that, from a comparative perspective, Europe is doing pretty well. 'One of the big advantages we have is that we have the Multiannual Financial Framework - the long-term EU budget - which creates predictability for a longer period, which helps with planning projects and finding financing, also because it is predictable.' He mirrors this with budgetary discussions, for instance in the United States: 'There they can become extremely political and the financing of big projects is then subject to these disputes. That lowers the interest of potential private sector participants because they are not sure whether this project is going to be finished or not. So there we definitely have an advantage.'

Henrik Hololei continues that for the trans-European network policy as a whole people from all around the world ask how the EU did it. 'We work a lot with Asian countries, for example with the ten Southeast Asian countries who have borders with each other. Of course, there it is very difficult to do joint infrastructure projects. Nevertheless, they ask us how we did it and if we can share our experiences with them, which we are more than happy to do.' He adds that, just a few weeks ago, the trans-European transport core network was extended to the Eastern Partnership countries. This follows a common definition of the trans-European network with Switzerland, Norway, Iceland and the Western Balkans. 'So they already go beyond European borders and are very much welcomed by our immediate neighbours.'

Push for sustainable modes

One of the transport modes where the Director-General thinks that the Commission needs to keep pushing is rail – to create a single European rail area. 'We need to push the rail sector

and mostly the Member States to get rid of the technical and regulatory barriers. 17% of freight is carried by rail and, despite our efforts and financial support, this has not changed over the last years. That is simply not good enough! He underlines that rail - together with inland waterways - are the most environmentally sustainable means of transport. 'We really need to get more freight from the roads to the rails, which would be good for the environment but also help in enhancing road safety and easing congestion.' He makes it clear that the barriers that still exist in rail have a negative impact on the reliability of the sector. 'But things are improving and increasing rail freight is and continues to be a very important priority for us.'

“ *We really need to get more freight from the roads to the rails, which would be good for the environment but also help in enhancing road safety and easing congestion.* ”

As a positive example of where the potential for future development is being explored, Henrik Hololei refers to the inland waterways. 'I have great sympathy for inland waterways, for instance in the Netherlands, Germany and Belgium, where this positive entrepreneurial spirit is present in the sector, whereas it is not necessarily always present in other modes of transport in Europe. Though the sector faces many difficulties they are trying to realise their potential, and the Commission has always been a good partner to them. We provide a clear European policy framework and EU support.'

Sustainability is an essential focal point in many policy areas and this is no different in transport and mobility. Henrik Hololei makes it clear that this also affects the financial flows: 'First of all, for the future of the Connecting Europe Facility, we are talking about spending up to 60% on those projects that are environmentally sustainable. Secondly, the trans-European networks have to be smart and sustainable. And thirdly, digitalisation will increase efficiency and hopefully reduce congestion and in this way also contribute to enhancing sustainability in the mobility and transport sector.'

Henrik Hololei realises that often transport and environment may be depicted as opposite interests but he believes it is important to see them together. 'We have to realise that we are able to develop a more environmentally sustainable mobility and transport sector, decreasing the footprint on the environment. This will not happen overnight, but we have to be very committed to that. Europe is the leader in the world in pushing this agenda.'

“ *... we are able to develop a more environmentally sustainable mobility [...] Europe is the leader in the world in pushing this agenda.* ”

He points out that the Commission has put out proposals to advance this agenda, for example regarding the new emission standards for vehicles. 'For example the 'clean vehicles directive.' This helps manufacturers to embrace innovation and supply low-emission vehicles to the market.' Another proposal he refers to concerns alternative fuel infrastructures to encourage Member States to invest in alternative fuels and make them more available. 'We have already taken and will take further initiatives, but obviously, we can do more. And we will do more! I am quite positive that for the next Commission this will remain one of its cornerstone priorities.'

EU added value as key criteria

When it comes to how the ECA, through its audits, can help the Commission to achieve all these EU objectives in the transport and mobility field, including the sustainability conditions, Henrik Hololei believes that the Commission has already benefitted greatly from the many ECA reports published in the area during the last years. As far as the future is concerned he has some concrete thoughts. 'Firstly, our good mutually supportive relationship needs to continue. Secondly, at the Commission, we need to be able to extract a maximum out of the audits that will be done in the future.' As a third point, he underlines the need to promote a pan-European approach. 'We have the single European market, we must have a single European transport area, we must have the single European rail area, we must have the single European sky. And we must have common European principles, for example on passenger rights.'

He identifies a key criterion in all these activities: 'All this is promoting European added value, where you can discover many links to the transport and mobility sector.' He concludes that he is keen to work with the ECA: 'I am looking forward to use ECA findings, recommendations and suggestions to move the EU transport and mobility sector to a new level.'

Taking a broader view of transportation and the key challenges to be addressed: an auditor's landscape perspective

By Svetoslav Hristov, Investment for Cohesion, Growth and Inclusion Directorate



Transport is a strategic sector of the EU economy, which directly affects the everyday lives of all EU citizens. This makes good transport systems a cornerstone of European integration and a necessary condition for the functioning of the European single market. This is also why transport and mobility issues have featured in many ECA special reports. Svetoslav Hristov provides an overview of the ECA's work in the area of transportation and highlights the key crosscutting issues and challenges to be addressed by the EU. No coincidence that he is authoring this article since Svetoslav was the head of task for the ECA's 2018 landscape review on transport.

An abundance of audits

Transport and mobility policy aims to provide European citizens and businesses with secure, sustainable and competitive transport networks and services and mainly covers five key modes of transport: rail, road, air, maritime and inland waterways.

As part of its wide-ranging audit activities, the ECA has directed considerable audit efforts towards the field of transport and mobility. Since 2010, it has published 14 special reports and a landscape review, covering all the five main modes of transport. The selection of audit topics is based on a thorough analysis of the policy area, associated risks, materiality, past audit coverage, stakeholder interest, timing and the possible impact of our work. But the main question is always if the EU has delivered on its promises.

Our audits on rail, roads, air and water transport

Our audits in the field of transport are usually focussed on one of the individual transport modes. For some reports, our auditors looked at cross-cutting topics, or assessed subjects such as passenger rights. The graphs below shows which audits have been conducted per subject. It is followed by an overview of the most important challenges.

For **rail** the ECA reports focused on high-speed rail lines, European rail traffic management systems, rail freight, and the performance of Trans-European rail axes.

Special report 19/2018: A European high-speed rail network: not a reality but an ineffective patchwork

[Click here for our report](#)



Special report 13/2017: A single European rail traffic management system: will the political choice ever become reality?

[Click here for our report](#)



Taking a broader view of transportation and the key challenges to be addressed: an auditor's landscape perspective

<p>Special report 08/2016: Rail freight transport in the EU: still not on the right track</p> <p>Click here for our report</p>	
<p>Special report 8/2010: Improving transport performance on Trans-European rail axes: Have EU rail infrastructure investments been effective?</p> <p>Click here for our report</p>	

In its audits on **road** the ECA examined the cost-effectiveness of EU funds spent on roads and road projects implemented through public private partnerships, while an ongoing audit is focusing on the key road network connecting European regions.

<p>Special report 9/2018: Public Private Partnerships in the EU: Widespread shortcomings and limited benefits</p> <p>Click here for our report</p>	
<p>Special report 5/2013: Are EU Cohesion Policy funds well spent on roads?</p> <p>Click here for our report</p>	

For **air** transportation issues, the ECA turned its attention to airport infrastructures and the Single European Sky. In addition, an ongoing audit is focusing on SESAR, the technological pillar for air traffic management.

<p>Special report 18/2017: Single European Sky: a changed culture but not a single sky</p> <p>Click here for our report</p>	
<p>Special report 21/2014: EU-funded airport infrastructures: poor value for money</p> <p>Click here for our report</p>	

Regarding **water** transport, the ECA looked into maritime transport and seaports, as well as on inland waterway transport.

<p>Special report 23/2016: Maritime transport in the EU: in troubled waters — much ineffective and unsustainable investment</p> <p>Click here for our report</p> <p>Special report 4/2012: "Using Structural and Cohesion Funds to co-finance transport infrastructures in seaports: an effective investment?"</p> <p>Click here for our report</p>	
<p>Special report 1/2015: Inland Waterway Transport in Europe: No significant improvements in modal share and navigability conditions since 2001</p> <p>Click here for our report</p>	

In addition to the five key modes of transport, the ECA covered topics closely related to transportation, such as **passenger rights**, **urban transport** and **multimodality**. It is currently assessing the management of EU programmes by the Innovation and Networks Executive Agency, and the planning and cost efficiency of EU cross-border transport flagship infrastructure. Moreover, it is currently planning an audit on multi-modal freight transport.

Special report 30/2018: EU passenger rights are comprehensive but passengers still need to fight for them

[Click here for our report](#)



Special report 1/2014: Effectiveness of EU-supported public urban transport projects

[Click here for our report](#)



Special report 3/2013: Have the Marco Polo programmes been effective in shifting traffic off the road?

[Click here for our report](#)



Landscape review

Last year, we consolidated the key crosscutting issues and challenges identified in previous audits in a **landscape review**.

Towards a successful transport sector in the EU: challenges to be addressed

[Click here for our report](#)



In this report, we concluded that progress has been made over the past years, and identified **six key challenges** (see **Box 1**) the EU still needs to address.

Box 1 - Six key challenges the EU needs to address in the transport sector

1. Match relevant and achievable transport objectives and priorities with available resources

The long-term plan for building the remaining infrastructure, in particular for the TEN-T core network, needs to be reinforced, with precise milestones that are regularly monitored, reliable overall cost estimates matched by available financial resources, and a particular focus on cross-border sections. This would increase the likelihood of achieving the transport policy objectives on time and within budget.

2. Establish effective enforcement tools at EU level to ensure Member States' infrastructure decisions are aligned with EU priorities more closely, paying particular attention to cross-border sections

- Appropriate enforcement tools are needed so that the obligations imposed by the TEN-T Regulation can be met more swiftly, allowing the completion of key strategic infrastructure and providing for remedial action if priority projects do not begin on schedule or are subsequently delayed, or if coordination problems on cross-border sections seem likely to prevent infrastructure from entering into service as planned;
- All administrative and regulatory barriers to interoperability should be removed as a matter of priority.

3. Focus EU funding on priorities with the highest EU added value

- Better coordinating and targeting of EU funding, in both shared and direct management, to reflect the EU's transport policy priorities could help to maximise the effectiveness of investments and ensure a more coherent and strategic approach to developing the transport network.
- EU support should be prioritised for projects that are run in response to clearly established and properly assessed needs, are based on careful planning and offer demonstrable EU added value for the network (e.g. resolving major bottlenecks and missing links and establishing cross-border connections).

4. Improve the planning, implementation and monitoring of EU-funded projects

- Planning could be enhanced by conducting a thorough needs analysis and using realistic traffic forecasts and reliable parameters to assess project costs and benefits.

- Rules for implementing infrastructure projects, particularly cross-border, should be simplified as a matter of priority so as to remove all administrative and regulatory barriers. Doing so could help to reduce inefficiencies, shorten delays and keep cost increases under control.

- Regular monitoring of costs and benefits during project implementation is key to ensuring cost-efficient investments. Monitoring focused on results and impacts as well as outputs could provide a clearer picture of the extent to which EU-funded projects are delivering sustainable results and impacts and contributing to the EU's transport objectives.

5. Ensure that infrastructure is adequately maintained and sustainable

Stakeholders should pay attention not only to investments in new infrastructure, but also to ensuring the maintenance and renewal of existing infrastructure, which is currently unsatisfactory.

6. Enhance efforts to shift more goods off roads

Stakeholders should pursue the shift of freight from roads to other transport modes by strengthening intermodal competition and by setting out principles requiring the external costs of all transport modes to be adequately considered, and advocating their implementation.

The privileged role of being an EU auditor ... and what we want to achieve with our recommendations

Our work makes us see many infrastructure projects around the EU and from all different transport modes. We also look at whether regulation is fit for purpose and how EU and national transport strategies are implemented. This gives us a very privileged perspective from where we may see things from a different angle: as the EU's external auditor, we are an external and independent observer, and yet we are not distant since we go to audit these projects in the Member States and speak to the people implementing them.

When we make a recommendation, this is always meant to contribute to 'better legislation,' helping the Commission and the Member States to manage EU transport policy and spending better. And last but not least, we also have a role to play in informing the public about how public money is being used in a key area which affects the daily life of all of us.

Transport and climate: still a long journey

By Catherine Hayes and Olivier Prigent, Private Office of Phil Wynn Owen, ECA Member



Source: Nicolas Toulas

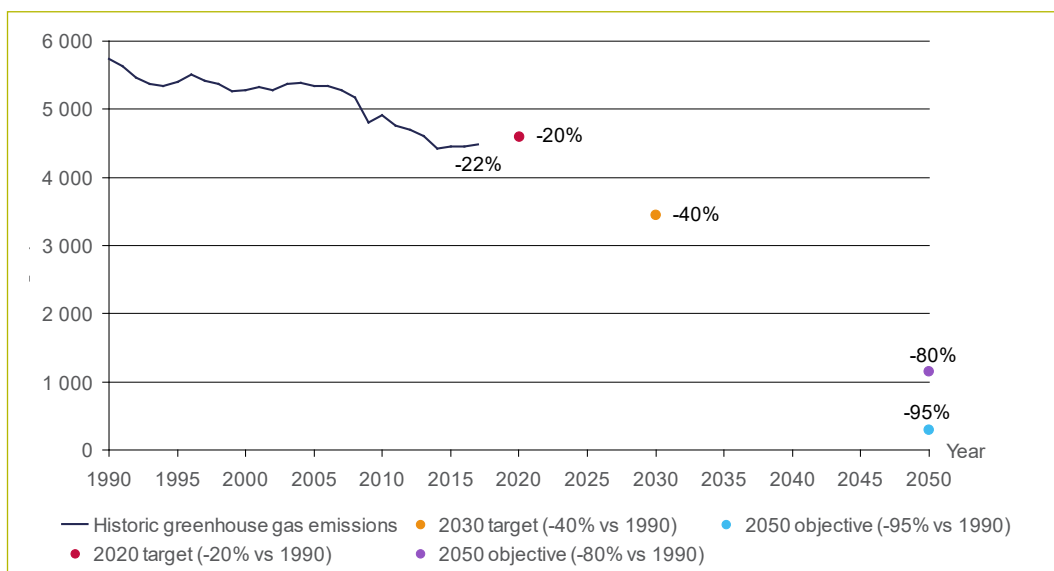
Luxembourg city

Decreasing greenhouse gas emissions from transport is a challenge. Unlike in other sectors, emissions from transport sector have increased the past three decades. The main ways to reduce emissions from transport include using cleaner modes of transport, switching to biofuels, electricity or hydrogen or...less transport. To fight climate change, 195 states have committed to the Paris Agreement and the EU has set its own targets.. Olivier Prigent was the head of task for the ECA landscape review on EU action on energy and Climate Change, published in September 2017 and currently works as attaché in the Private Office of Phil Wynn Owen, ECA Member, together with Catherine Hayes, who works as trainee. They take a closer look on the role transport plays in reaching EU climate targets.

Transport and climate change

In 2015, 195 states responsible for 99.75 % of global greenhouse gas emissions signed the Paris Agreement. They committed to keeping the rise in global average temperature this century to 'well below' 2°C above pre-industrial levels, aiming to limit it to 1.5°C. To do so, they agreed to rapidly reduce their greenhouse gas emissions, and to achieve a balance between the amount of greenhouse gases they emitted into and removed from the atmosphere in the second half of this century. The EU has set itself various targets and objectives to reduce its emissions (see **Figure 1**).

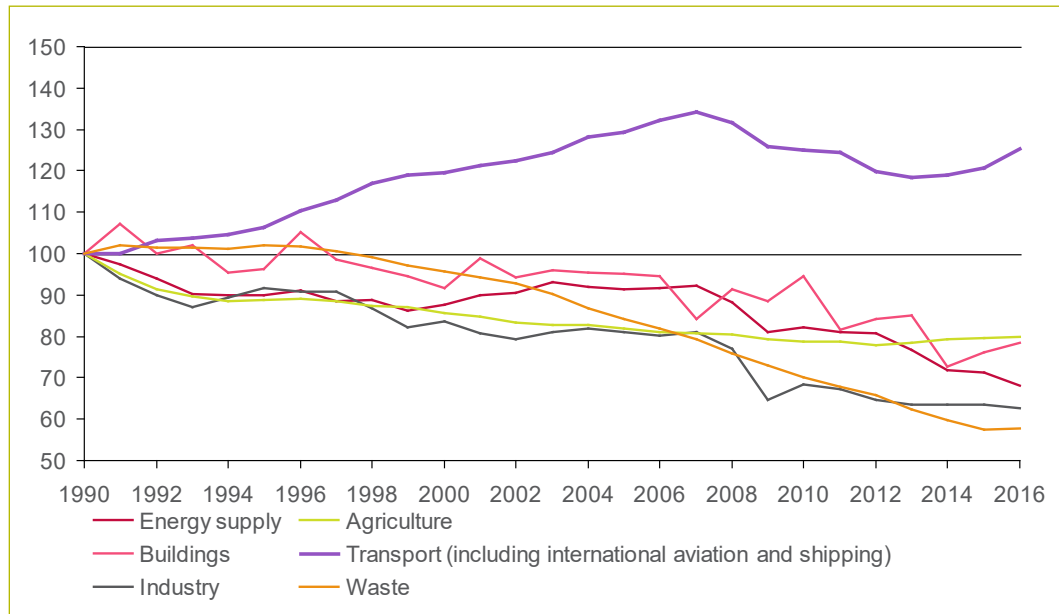
Figure 1 - Greenhouse gas emission trends and targets in the EU, 1990-2050



Source: [Trends and projections in Europe 2018](#), EEA, 2018

To achieve these targets, all sectors of the economy will have to contribute. Emissions from other sectors have generally fallen since 1990, but the transport sector has bucked the trend. In 2016, transport accounted for 27 % of the EU's greenhouse gas emissions. Following a decrease between 2007 and 2013, emissions rose again between 2014 and 2016 due to the economic recovery (see **Figure 2**).

Figure 2 – Trend in EU greenhouse gas emissions, by sector, 1990-2016



Source: European Environment Agency, [EEA greenhouse gas – data viewer](#), 2018; ECA analysis

Road transport

Around three-quarters of transport emissions come from road transport, especially from cars. Both water and rail transport emit significantly less greenhouse gases per passenger or per tonne of freight than road transport. Shifting passengers and freight from the roads to water and rail transport could reduce emissions. However, several EU Supreme Audit Institutions (SAIs) and the ECA have found that this necessary change in transport modes is not being achieved.

The use of renewable fuels could also reduce road transport emissions. Biofuels - produced from biomass or from domestic or industrial waste - account for about 70 % of renewable energy used in transport. The consumption of biofuels in transport has been growing steadily, but also slowly. Concerns around land-use change for biofuels cultivation has limited their development. Several EU SAIs have found that national biofuel targets had been missed.

Other renewable fuels for transport include electricity - provided that it is produced from renewable sources -, hydrogen and synthetic fuels made of hydrogen and carbon dioxide (CO₂). The EU also encourages the use of other forms of low-emission alternative fuels, such as liquefied petroleum gas (LPG). The expansion of the fleet of vehicles using these fuels is constrained by a lack of refuelling infrastructure, as well as technical limitations, such as the vehicles' range, weight and cost. Two changes are necessary for these vehicles to become widespread: further research and innovation in energy storage technologies, and the removal of the main market barriers to their use. The EU has also set common standards for alternative-fuels infrastructure, such as recharging and refuelling stations, and requires Member States to develop an infrastructure policy.

Air and maritime transport

Aviation accounted for 3.8 % of the EU's greenhouse gas emissions in 2016, but by 2020, global international aviation emissions are projected to be around 70 % higher than in 2005. According to the European Commission, by 2050, they could increase again by up to seven times.

Since 2012, emissions from flights within the European Economic Area (EEA, which consist of the EU, Iceland, Liechtenstein and Norway)) have been covered by the EU Emissions Trading System. The EU Emissions Trading System – the EU ETS – allows companies to trade allowances of greenhouse gas emissions from power plants, large energy-intensive industrial installations, and, since 2012, aviation emissions from intra-EEA flights. These sectors account for about 45% of the EU greenhouse gas emissions. Flights between EEA and non-EEA countries are covered by an agreement reached under the International Civil Aviation Organisation (ICAO) in October 2016, according to which large airline companies must compensate for part of their emissions by acquiring international carbon credits. Participation in this scheme will become mandatory in 2027. The ICAO has also introduced a standard to certify CO₂ emissions for aircraft.

Maritime and inland waterways transport accounted for around 4 % of the EU's greenhouse gas emissions in 2016. Most of these emissions come from international shipping, i.e. shipping between EU and non-EU ports. According to the [Third IMO Greenhouse Gas Study 2014](#) of the International Maritime Organisation, international maritime transport is projected to increase by up to 250 % between 2012 and 2050. These emissions are not accounted for in the EU's reduction targets and are not currently internationally regulated.

While the fuel consumption of ships is known, reporting and verification processes are still missing. To tackle this problem, the EU has introduced a system for the monitoring, reporting and verification of greenhouse gases emitted by ships. The system provides scope to introduce potential emission reduction measures at a later point. In parallel, the EU has also worked together with the International Maritime Organization (IMO), which reached a global agreement on a monitoring, reporting and verifying scheme for shipping greenhouse gases in 2016. In April 2018, the IMO agreed to an objective of reducing the emissions of international shipping by 50 % between 2008 and 2050 – less than the 70 % to 100 % reduction objective supported by the EU.

Upcoming challenges for the transport sector

The transport sector faces three main challenges related to climate change mitigation:

- **The energy transition:** the transport sector will have to undergo changes in energy use, switching to less carbon-intensive transport modes and using biofuels and alternative fuels, such as electricity;
- **Research and innovation:** achieving significant emissions reductions in transport will require the development of alternative fuels and better energy storage technologies; and
- **Involving EU citizens:** the integration of citizens in the energy transition is essential, both for understanding, endorsing and paying for necessary transitions to sustainable transport, and also to support active participation. Legislation will need to be conducive to the development of sustainable transport and acceptable to EU citizens.

By examining how we progress in meeting our ambitious objectives in reducing emissions, the ECA – as the EU's independent external auditor – can make its contribution to this common effort.

EU passenger rights – auditing a policy that really matters to citizens

By Erki Must, Investment for Cohesion, Growth and Inclusion Directorate



Source: European Parliament

Probably everybody travelling in Europe and beyond has experienced it at some point. For reasons beyond your control, you experienced significant delays, your luggage got lost, or the assistance promised was not delivered. What are your rights then? And how consistent can they be put into practice when travelling by air, rail, bus or boat? The ECA looked at this aspect of transport and mobility from the perspective of the citizen using public transport in its special report 30/2018. Erki Must was the head of task for this very special audit, dealing with an EU policy that directly matters to citizens. What is his take of the audit and why does it stand out compared with some other ECA audits done on transport and mobility issues.

EU passenger rights – a very special audit

I am honoured and happy with the fact that I had the experience to be the task leader of the ECA performance audit on passenger rights. This task was in several ways a performance audit out of the ordinary. We deliberately decided to use an innovative approach and also took care that our work resulted in a straightforward and reader-friendly report (special report 30/2018 published in November 2018). All of this would not have been possible without a highly motivated and dedicated team.

My three favourite findings

Our audit on passenger rights revealed several interesting findings. I will not list all them, as this may take away your appetite for reading the report itself, but I want to focus on those three that I am the most passionate about:

- The EU passenger rights have become all about **compensations**: There are altogether 10 rights that we as passengers enjoy. They span from the right to information to the right for snacks and accommodation in case our travel is disrupted. These rights are basically similar for air, rail, bus and waterborne travel. Sounds good, doesn't it? Well, in fact, some 95% of the attention in this field is focussed on air passenger rights, more precisely on the issue of compensations payable due to long delays or cancellations. This topic has all but paralysed the passenger rights framework;

- The system of **handling passenger claims** lacks transparency: Our survey of more than 10 000 people revealed that the right for compensation is the second most highly valued of the 10 passenger rights. Therefore, it was really surprising to find that no information whatsoever is available on this for passengers: there are for example no statistics available on the number of claims made by passengers or which departures are deemed to be subject for compensations. Nothing prevents an airline from paying compensation to one passenger with a well-written request and ignoring another passenger affected by the same travel disruption. No wonder this situation has created a brand new industry of passenger rights case handlers;
- There are in reality more than **100 different systems of passenger rights in the EU-28**. There are four EU regulations setting the passenger rights in four transport modes. Well, not one but four. Still bearable, although from a passenger perspective it would be beneficial if these rights were broadly similar and, as far as possible, aligned on each other. Moreover, the way these rights are implemented depend to a large extent on the arrangements set out by each Member State. In some cases, like bus or rail travel, within one country even regional authorities might come into play. Overall, we have more than 100 individual implementation arrangements all over Europe. This is creating unnecessary administrative complexity for both passengers and carriers.

All these findings were a result of significant research and fact-finding on the ground. We visited 10 Member States, had altogether 80 meetings with the national authorities, carriers, case handlers and consumer protection officers. The spirit of cooperation from our partners was amazing – everyone really wanted to share their view with the hope that something could eventually change in the current set-up.

A typical policy audit: it's all about regulation

We had access to these people despite the fact that the EU has spent less than 1 million euro on passenger rights in the current MFF. The socio-economic impact of this policy does not come from spending, but from regulation. This fact makes this audit a typical *policy audit*. An approach which is not yet very common in our work.

But we also saw the limits of our audit in terms of triggering actual change on the ground. In the end there are many stakeholders involved and many interests at stake, and the conclusions and recommendations in our reports, despite being well grounded, are just some among many.

Delivering criticism but also offering solutions

Another aspect that makes this audit report stands out from others are the recommendations. We went much further from the more commonly used recommendation 'the Commission should analyse and find best practices level' and aimed at proposing concrete solutions that would break the current impasse of the passenger rights legal framework. I would like to highlight three proposals in the report that would benefit everyone:

- There should be a **specific definition for the carriers' obligation to provide assistance and care**. The current passenger rights system sets no minimum conditions to the amount of care you are entitled to in a case of travel disruption. Getting a 3-euro food coupon in a case of 6 hours delay that can only be used in one cafeteria in the whole airport, where a coffee costs 5 euro is not adequate. The report proposes setting a 40 euro minimum threshold for air travel and 20 euro for other modes of transport so that people would be looked after when the pain is the most acute;
- In the current system compensations are only paid at a request of each and every passenger. At the same time, the system of claims handling is non-transparent both at the carrier side and also when government bodies step in to mediate. The audit proposes a **48 hour deadline for the carriers to self-declare the causes of the delay and cancellation**, thus making it known to all parties involved. These declarations could become the subjects of an assessment by the consumer protection authorities. And, if the carriers declare that the reason for delay was indeed under their control, we invited them to execute **automatic payments of compensation** for the affected passengers. This would significantly reduce the costs of case handling, court cases and the overall trouble for all parties;
- The amounts for the compensation to be paid currently vary between the mode of transport. In rail, bus and water transport, they are related to the cost of a ticket while in the air travel specific amounts were laid into the regulation. The regulation comes from 2004 and according to our calculations by now some 25% of the value of these compensation have inflated away.

We propose introducing a system that would ensure that the **purchasing value of the compensations** would remain stable over the years.

In short, these changes would make the system of passenger rights more transparent, less bureaucratic and fairer for all parties involved: passengers, carriers and public sector authorities. But also much more expansive. And this is probably why nothing of this kind will happen soon.

Not only recommendations but also tips for travellers...

Based on the contacts the ECA auditors had with carriers, public authorities and ordinary passengers, they put together 10 tips to make anyone's travel experience better if their journey is disrupted:

1. Personalise your travel as much as possible – when purchasing a ticket, identify yourself to the carrier, e.g. provide your contact details. Being informed about disruptions only works when carriers have your contact details. Also, if you need claim for compensation, a personalised ticket is the best way of demonstrating that you were actually on board and affected by disruption.
2. Take a photo of your luggage – when your journey involves checking in luggage, it is a good idea to have a photo of your suitcase and its contents. This will save time when filing a claim and will provide some proof of the value of lost items.
3. Don't arrive late at the check-in desk – it is important to remember that passenger rights only apply if you check in on time. If you miss your departure because the check-in desk was already closed when you arrived, you are not eligible for assistance.
4. Request information at the points of departure – you have a right to be updated if your departure is delayed, or if anything else goes wrong with your journey. If the carrier's representative is not present or does not provide meaningful information, make a note of it and include this observation in the claim you make to the carrier.
5. Always request assistance – if you experience a long delay or cancellation on any mode of transport, you have a right to assistance. This means access to water and a snack or a meal. If the carrier's representatives do not provide such amenities on their own initiative, request them. If you are refused, make a note of it and include this observation in the claim you make to the carrier.
6. Keep all receipts – if assistance is not provided at the point of departure (airport, bus or train station, harbour) or you are departing from a remote location (a bus stop) you can ask the carrier to compensate your additional costs. Carriers usually request proof of payment for drinks and snacks, and may refuse if the number of items is not in line with the length of delay, or if the costs are unreasonably high. Similar principles apply if you have to find your own accommodation to wait for another departure the following day.
7. Request proof of delay or cancellation – in all four modes of transport, passengers are entitled to compensation for long delays and cancellations. Although the rate of compensation and the minimum waiting times are different between the modes, the obligation to prove that you were affected is the same for all. If your ticket did not have your name on it, obtain proof at the station or on board that you were affected by the specific delay or cancellation.
8. Do not make your own arrangements without hearing first a proposal from the carrier – with travel disruption you usually want to continue travelling immediately using another carrier or by another means of transport. We recommend not to act rashly: buying a new ticket, without receiving alternative options proposed by the carrier, is tantamount to unilaterally cancelling your contract of carriage. This ends any obligation of the original carrier to offer you assistance or compensation.
9. Request for compensation – if you can demonstrate that you have been affected by a delayed or cancelled departure, and that the duration of the delay was above the threshold set out in the regulation, submit a compensation request to the carrier. Always refer to the specific departure and the Regulation applicable. If you do not receive a reply from the carrier or you are not satisfied with it, refer the case to the National Enforcement Body of the country of departure. The other organisations that can help you are Alternative Dispute Bodies (ADRs) and claim agencies. Bear in mind that you may be charged for these services.
10. Request compensation for additional expenditure – in some cases your loss due to a delay or cancellation is much greater than the amount due to you under EU passenger-rights compensation rules. In such cases, you can make a claim to the carriers pursuant to international conventions. You should be prepared to demonstrate the exact amount of your losses, and the extra expenditure incurred due to the travel disruption.

Report published...and now what?

As standard practice, at the ECA, we publish our audit reports together with a press release. In some cases, we also organise a press briefing or specific events where the report is presented to stakeholders. We also present our reports at the European Parliament, in its Budgetary Control Committee (CONT) and more and more often at a committee specialised on the topic. Normally there is also a presentation at the Council working group on the issue.

Our special report on passenger rights has gone through all these steps. We attracted quite some media coverage, presented the report at the European Parliament and had an interesting meeting at the Council. The report was praised for its quality and we were thanked for the interesting recommendations. But so far there seems to be no intention to modernise the EU passenger rights legal framework.

When we are aiming for *policy audits* the issue of recommendations is very important to clarify. Usually, all parties involved agree with our analysis of the situation. Our reports are recognised as a valuable source of information for the Commission and other auditees, if applicable, because we are seen to be independent and impartial. But this does not mean that someone would act upon our reports. I have sometimes felt in Brussels like a brave crusader returning from long trips to foreign lands, packed with information about how life is playing out over there.

In the case of an audit of a specific spending area, our recommendations most often focus on the systems, the extent to which EU and national rules have been complied with and specific choices made by those managing EU funds. Implementing these recommendations helps to avoid making similar mistakes again or to recoup funds wrongly spent. In a case of policy audits, we propose changes to the rules themselves and such recommendations are actually subject to a completely different decision making process, and a more long-term political horizon. And this is where our mandate ends.

More targeted communication efforts may be required to rally public support behind our suggestions

Policy audits, especially on topics that matter to people and could potentially improve the way the EU influences our everyday lives, are here to stay. Common sense tells us that topics such as EU passenger rights are important are in need for an independent external examination. And who would be better positioned than the ECA to do this? This idea of the ECA also being a 'regulatory watchdog' - as recently stated in the '*Politico*' - underlies the ECA strategy for the 2018-2020 period.

But how to get more punch from our recommendations? As external auditors, we need to understand that if we want our policy audits to make a difference, we need to get under the skin of the decision makers. And we probably need to advocate more convincingly and clearly that decision-makers need to take action if they really want to address the shortcomings that we have pointed at in our reports. This may also require more targeted communication efforts than we currently deploy, rallying public opinion behind our suggestions for improving EU policies. Only then will our policy audits have the impact they deserve.

Being ECA's Mr Transport

Interview with Luc T'Joen, Senior Administrator in the ECA

By Derek Meijers and Gaston Moonen



Luc T'Joen, Senior Administrator in the Investment for Cohesion, Growth and Inclusion Directorate, regarding the audits he has done in the Transport and Mobility area

For many years, Luc T'Joen has been the ECA's main expert in the field of Transport and Mobility. Leading audits covering all transport modes has given him a substantiated view on the topic. An interview about an auditor's perspective on different aspects of the EU's transportation policy and the impact audit reports can have in addressing shortcomings and making sure that lessons are learnt.

Setting up shop

After a 20-year career at the European Commission, Luc T'Joen joined the ECA at the start of 2008. He quickly got involved in auditing trans-European transport and mobility networks and the vast amounts of structural funding – well over €80 billion in the period 2007-2013. Luc: 'Transport is a fascinating policy area to work in as an auditor. Not least because transport infrastructure requires a long-term vision, planning, and enormous investments.' His main motivation to audit transport? 'The opportunity to make a positive contribution to something that impacts the lives of all EU citizens. Every day!'

“ ... make a positive contribution to something that impacts the lives of all EU citizens. Every day!”

Luc is one of the pioneers of modern transport audits at the ECA and took a leading role in developing the necessary expertise. Before doing his first audit on the Marco Polo programme he recalls: 'Our team managed to build up our knowledge in just a couple of months. In that period, we interviewed almost every expert we could find, for example from the different directorates-general of the Commission, to gain an insight into the sector.' He continues: 'The Commission was very helpful and this research provided us with a deep understanding of the area, the money flows, and the key risks and challenges.'

Impactful work

Since those days, Luc has contributed to producing several audit reports on transportation issues, covering all transport modes (road, rail, waterways, air) with topics ranging from urban transport, inland waterways, rail freight and modal shift to high-speed rail. When asked about what these audits and their impact have in common, Luc explains that the starting point is always to take a constructive approach. Luc: 'Although the transportation modes may differ from one audit to another, we usually find very similar issues, such as a lack of a needs assessment or insufficient supervisory powers on the Commission side. So after a while you know what to look for.'

“ ... we usually find very similar issues, such as a lack of a needs assessment or insufficient supervisory powers on the Commission side.

In his view, an audit is not only useful to uncover problems or to point out shortcomings, but it should also serve as a reliable source of information for decision makers. Luc: 'In the end, our work should help the EU to do a better job and to deliver on its promises – in this case improving the European transportation network. So we want the decision makers to engage with our findings and recommendations. To achieve that, we have to be as clear as possible.' He explains: 'Take for example our report on high-speed rail. There we included two options for the development of the railway line between Venice and Trieste, by which we clearly showed that it would be much cheaper to upgrade the conventional line instead of building a new high-speed line. Now that is adding value!'

The regional aspect

But there are also other success stories Luc recalls. Such as, for example, the obligation for airports to conduct a catchment-area-analysis (to determine the area from which people would actually use the airport's services), and to coordinate with neighbouring regional airports as a requirement to get EU co-funding. Luc: 'A recurrent factor is the predominance of a regional perspective when taking funding decisions. A good deal of the EU money is invested through regional funds, of which the distribution is decided by the regions themselves, while the European Commission only has limited powers to intervene.' He adds: 'Although the current policy does make additional efforts to address this, there will always be a tension between the regional and the cross-regional interests in shared management, or between cohesion and transport policy in particular.'

“ ... there will always be a tension between the regional and the cross-regional interests...

Luc quickly underlines that a similar difference in view can also be noted between the Commission's directorates-general, 'They have very different perspectives. Transport people always focus on what makes sense for transport and mobility and the broader network, while cohesion people tend to see transport investments mainly as a means of regional development.' Luc: 'But having said that, there have been some positive changes in recent years. For example the requirement to include a long-term strategic view or cross-border elements in project plans for infrastructural investments.' Laughing: 'I think that is because of our audits!'

For Luc, everything revolves around EU added value. Where the Member States and regions – obviously – consider their national or regional interests first, the Commission should ensure that the focus is on the broader, cross-border picture. Luc: 'Interestingly, border crossings remain a key problem. Whether we talk about rail freight, inland waterway connections, or high-speed rail, all too often the chain breaks at a border.' He then quickly adds there is obviously a link between the ambition to provide EU added value in transport and the need to develop regional structures to boost local economies. 'The trouble is that there is not always a common understanding of what this EU added value should look like from the point of view of the regions.'

“ Whether we talk about rail freight, inland waterway connections, or high-speed rail, all too often the chain breaks at a border.

Big shrewd business

Another challenge of planning transport investments while wearing regional blinkers is, as Luc explains, that companies eagerly take advantage of the competitive disadvantage that regions intentionally or unintentionally create for them.

He mentions a case where a lot of money was invested in the Spanish airports of Vigo, A Coruña and Santiago de Compostela, which are all located very close to each other. Luc: 'But on other side of the border, still very close but in Portugal, you also have the airport of Porto. So it should not have come as a surprise that a big budget airline spotted an opportunity to trade off the fact they were one of the few companies flying to the region. It then played off the airports against each other and negotiated with all of them at the same time to get the best deal. To cut a long story short, everybody was investing in infrastructure, the EU invested in all the Spanish airports but the company went to Porto, leading to very underused infrastructures built with a lot of EU money!'

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... a big budget airline[...] played off the airports against each other and negotiated with all of them at the same time to get the best deal. [...] leading to very underused infrastructures built with a lot of EU money!

Luc: 'Therefore, we need to have a global, long-term strategy to avoid being taken advantage of. And this also needs to be monitored closely, otherwise you are bound to run into trouble. This is not just happening with airports - on the contrary. If we look at container transshipment using maritime transport, we see new terminals being built everywhere, but the shipping companies will only take the best offer. So it is clear that we cannot have all the same facilities in all regions. The cake simply is not big enough.' Luc adds that this, again, shows the European Commission does not have enough punch to prevent such things from happening. 'If a Member State funds to one port, that port will be competing against a neighbouring port that in turn might also need additional funding to stay competitive. That just is not efficient and the Member States should see that as well.'

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... we cannot have all the same facilities in all regions. The cake simply is not big enough.'

One positive result of the recent ECA audits on air and seaports, Luc explains, is that the Commission decided to finance major projects through direct management via the new Connecting Europe Facility instrument (CEF), avoiding shared management, and will attempt to also link the funding to results, and not only to outputs. Luc: 'In my opinion, this was a good move which has helped to make the spending more efficient. It ensures all projects are subject to a long-term plan and a proper cost-benefit-analysis, and links the funding to results, rather than output. This is an important step towards the realisation of the core and comprehensive networks that are part of the EU's overall strategy.'

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... the new Connecting Europe Facility instrument [...] was a good move which has helped to make the spending more efficient.

What's next?

In the audit business, it is essential to keep looking ahead, and this is even truer for transport and mobility, an area where the lifecycle of investments spans out over several decades. When asked which topics he thinks could be interesting to look at in the coming years, Luc sees possibilities for many audit topics. Luc: 'Currently, we are looking into urban mobility and transport flagships. In the meantime, the Commission is further developing the TEN-T core and comprehensive networks by 2030 and 2050 respectively. So I expect our audits to follow in that direction.'

Adding to that, Luc says: 'Topics I would really like to audit are the effectiveness of investments for multimodal logistic chains and terminals.' He continues by saying that the ECA will soon start auditing more cross-cutting issues, such as transport research, and sustainable and low carbon transportation.'

Luc emphasizes that the latter is really important: 'The question of how to reduce the carbon footprint of transport is by far the most important nut to crack at the moment. For years now, we have implemented many projects and invested a lot of money for research and innovation, and things have gradually improved. Take for example electric cars, trucks or exhaust scrubbers for ships. But we still need a solution to stay within the environmental limits of our planet.'

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how to reduce the carbon footprint of transport is by far the most important nut to crack at the moment.

Considering the state of play in Europe, Luc is convinced that cross-sectoral and cross-cutting audits will be able to make a difference. He explains: 'To start with cross-sectoral audits. These

are, as I mentioned earlier, necessary to keep an eye on the global picture. Take tourism. This is an important economic sector where we see many investments that are directly linked with numerous other sectors, such as transport. As an example, cruise ship quays and marinas are built using EU money earmarked for transport but in reality, they primarily serve a tourism objective.

Another important area, which is stressed in several ECA reports, is the fact that most investments aim to create new infrastructure, but that very little money is reserved for maintenance. Luc: 'Maintenance should absolutely become a priority. Just look at what happened with the Genova Bridge. That says it all.' He continues: 'And this applies to all transportation modes.'

Top priorities and solutions

Luc is very clear when asked what should be the focus of future transport policies. 'The top three lessons I learned would be first, that in many sectors we are missing the long-term strategic view. When we did the audit on airports, we had five Member States and only one had a long-term plan, so a strategic view is number one.' He adds that these plans must be linked to similar plans in neighbouring regions and, most importantly, to the Commission's global "master plan" aimed at maximising EU added value. 'A project only makes sense if it fits into the framework of the core and comprehensive networks, and if it does not cannibalise neighbouring investments.'

“ ... in many sectors we are missing the long-term strategic view.

As the second focus area, Luc points at topics such as the quality of the decision-making, needs assessments beforehand, cost-benefit-analyses and ex-post evaluation, to learn from errors and experiences of the past, as well as the sustainability and maintenance of a project over several decades. 'All these kinds of elements should be considered before making any decision on future investments.'

Thirdly, and finally, Luc would call for uniform standards to facilitate cross-border transport. Luc: 'The transportation sector currently has to deal with thousands of different standards and regulations, each of them applicable to only a few elements.' He gives the example of rail: 'There we still have 11 000 barriers! Most of them are on the core network and these are national, technical and administrative barriers, including safety issues.'

“ ... [in cross-border rail transport] we still have 11 000 barriers!

He illustrates this with the international rail route from Germany, to Italy. 'If we have a train that is coming from Germany towards Italy, the German locomotive driver can pass without any troubles through Austria. However, he has to stop at the Italian border, because the German-speaking driver has to be replaced by two Italian speaking drivers.' He continues: 'Then the train's lights will have to be changed because the safety instructions in Italy are different from the ones in Austria and Germany. This shows how safety is sometimes misused as an argument to limit competition. And that is something that could easily be addressed by setting EU-wide standards,' says ECA's 'Mr Transport.'

Up in the sky – auditing Europe’s air traffic management systems, step by step...

By Afonso Malheiro, Investment for Cohesion, Growth and Inclusion Directorate



Source: Pixabay

Traffic congestion on the road is not very pleasant, and neither is congestion when travelling by rail. But probably traffic congestion in the air is the worst, because the safety element kicks in almost immediately: a close encounter can be catastrophic. Air Traffic Management (ATM) is the result of a quest for safety and efficiency in a context of growing traffic and limited space. Afonso Malheiro, head of task for two ECA audits in this area, sheds some light on why the ECA is examining this specific area of transport and mobility.

A myriad of abbreviations ... and regulations

Air traffic management refers to the systems that allow aircraft to go from origin to destination using the shortest path possible, without delays and remaining at a safe distance from each other. ACC, ANSP, ATFM, CNS, DUC, FAB, IFR, NSA, SES, SESAR - there is probably no other ECA report which has used more abbreviations than special report 18/2017: *Single European Sky: a changed culture but not a single sky*. Similarly, the report features an extensive glossary – which, however, is still just a very modest attempt to decode the immense amounts of jargon that populate the world of air traffic management. Both are indicators of the complex and technical nature of this specific sector of air transport.

Our first audit of the ‘Single European Sky’

Back in 2015, when we first started to look at this wonderful new world (new for us, certainly), the task seemed daunting. Initial reading material revealed not only the multiple abbreviations but also a highly complex interconnection between airports, airlines, air navigation service providers and other stakeholders. As postulated by the ‘butterfly effect,’ a flight delayed because of a missing passenger, a strike by air traffic controllers or a thunderstorm over an airport can have a cascade of consequences over the entire network.

In that multi-dimensional matrix of causes and consequences, how then to audit the performance of the system? Additionally, commercial aviation is extremely safety-oriented, since the overriding expectation of a fare-paying passenger is a safe landing. Consequently, there is a myriad of regulations to comb through.

To audit ATM means knowing ATM

Such challenges are not insurmountable. However, asking the right questions requires a transformation, partly at least, of the typical auditor into an expert in air traffic management.

Special report 18/2017: Single European Sky: a changed culture but not a single sky

In this audit, the ECA reviewed selected key components of the Single European Sky (SES) initiative, the aim of which is to improve the overall performance of Air Traffic Management (ATM).

We concluded that the initiative addressed a clear need and has led to a greater emphasis on efficiency in ATM. However, European airspace management remains fragmented and we have not achieved an SES yet. EU funding for the technological elements of the SES has so far reached €730 million and is due to grow to €3.8 billion by 2020.

Our auditors visited government departments, air navigation providers and national supervisors in five Member States, as well as key policy, operational and industrial stakeholders. They found that the concept of an SES was justified, because European air traffic management was hindered by national monopolies and fragmentation.

There have been no substantial reductions in navigation charges and ATM-related delays have started to increase again. The SES’s technological pillar, the SESAR project, has promoted coordination and is gradually releasing technological improvements, but has fallen behind its initial schedule and has become significantly more costly than anticipated.

The ECA made several recommendations to the European Commission and the Member States to help improve the effectiveness of the SES. They concern, among other things, reducing fragmentation, ensuring that national supervisory authorities are fully independent, reviewing some key performance indicators in the scheme and reinforcing the accountability of the SESAR Joint Undertaking.

And apart from the usual ingredients – motivation, audit methodology and a reasonable amount of work – such a transformation requires ... time. Herein lies the true challenge of conducting a performance audit on a technical area: how to ask the right questions, explore the right topics, go beneath the surface of facts and figures and finally report on relevant conclusions and recommendations within a reasonable time frame?

Managing the scope

From the beginning, when we started looking at how to audit the ‘Single European Sky,’ we considered that it would not be feasible to cover all the different policy components, even if several of them seemed closely intertwined. We therefore made a deliberate choice to focus the audit scope on the regulatory elements deemed most relevant and mature – the regulations on performance and charges, the functional airspace blocks. In addition, we decided to include, at least in part, the technological component of the policy, the SESAR project (Single European Sky Air Traffic Management Research), which is co-funded by the EU.

However, in this first audit, we made a split: we looked at the definition and development phases of SESAR (i.e. the master plan for modernisation and the R&D effort needed to accomplish it) but we excluded the actual deployment of such new technologies in a real operational environment. We had two good reasons for this: firstly, at that time – end of 2015 and early 2016 - deployment was only just starting and thus we would not have had much to say. Secondly, the audit scope was much more focused – and manageable. Any other option would have prolonged the audit, endangering its timely conclusion.

One particular feature of the aviation industry is that to operate an airline you need to be very competitive and tough. Just recall the famous quote attributed to Richard Branson, founder of the Virgin Group: “If you want to be a millionaire, start with a billion and launch a new airline”. In such a competitive environment, every euro and every minute counts. An aircraft on the ground does not generate any revenue. Having it orbit around a congested airport is worse – economically as well as environmentally. One result of the high costs of air traffic congestion is that researchers and consultants have been studying air traffic management for decades. There is therefore plenty of material: studies, reports, academic papers, even books on ATM performance going back to the 1980s. This reading material provided substantial help in identifying the problems, possible causes, performance indicators and a wide range of auditable aspects of EU intervention in this area. Without the help and support of the ECA librarians, this research would have been difficult.

Benchmarking overseas

The need to accommodate ever more traffic in a constant volume of airspace is not a specifically European problem. For this audit, we therefore also wanted to look beyond Europe. The United States and Canada, for example, face similar challenges. How do they handle them? In the United States, air traffic management is carried out directly by the government and funded by taxes. In Canada, different stakeholders have come together to form a company dedicated to air traffic management, which is financed through fees applied to airlines using Canadian airspace. Talking to key staff from these North American organisations helped us in our search for best practices that could potentially also be used in the European context.

Closing the cycle: auditing the deployment of SESAR

In 2019, the same audit team is closing the cycle on SESAR by looking at the component that we had excluded back in 2015: the deployment of new operational concepts and technologies in the day-to-day operational environment. As we assess the EU’s intervention in this modernisation effort, we are in fact doing a consecutive performance audit on different components of the same EU policy. But we do so with the comfort of now being, from the start, much more familiar with all the abbreviations, the causes and the consequences. I cannot stress enough how valuable I find this approach - a cycle of audits by a dedicated team - in actually delivering a relevant and timely contribution to assessing the impact of EU policies and programmes, and to the sound financial management of the EU budget. Hopefully, this will also contribute to less congestion and even more safety in Air Traffic Management in the years to come.

Transport and climate: the drive for clean air

By Colm Friel, Sustainable Use of Natural Resources Directorate



Climate change is often associated with an incremental process that has long term effects. Colm Friel, principal manager at the ECA, has been involved in several ECA climate change audits. In this article, he recalls that transport is a major source of air pollution and thus also has consequences, even lethal sometimes, for the health of EU citizens...in the future, but also right now.

Emissions and health

It is not just the Americans who like cars. We in Europe like them too. There are about 250 million of them on the road in the EU. And in Europe, unlike the USA, we like to drive diesel cars: until recently, more than half of new cars sold in the EU were diesel.

Diesel cars are more fuel efficient, can last longer, and emit less nasty CO₂ than petrol cars. So for years we thought that we were saving both our money and the planet by choosing diesel over petrol. But it turns out, it is not so simple.

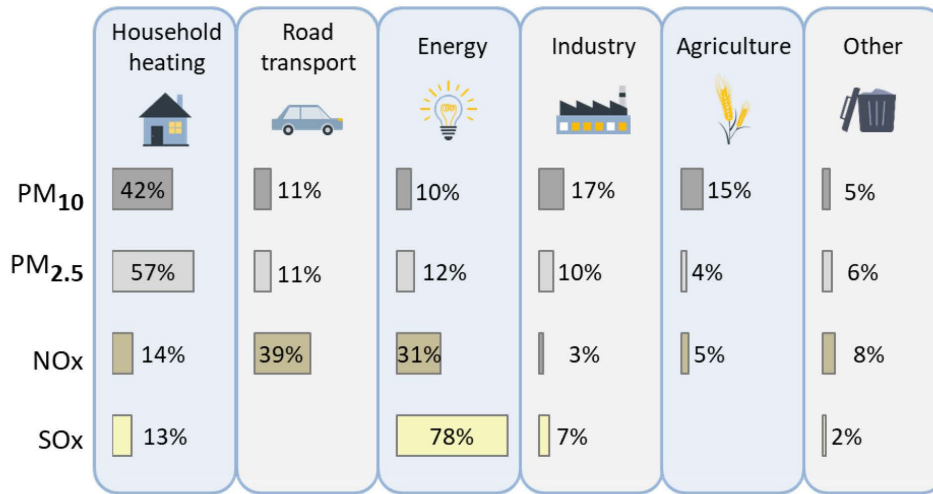
Cars do not just emit CO₂, they also emit other stuff which is considerably nastier - like nitrous oxides and particulate matter. And while CO₂ is a greenhouse gas which is bad for climate change, which may be detrimental for your future health - the other stuff pollutes the air, and is certainly bad for your health now, contributing to heart diseases and strokes. The problem is: diesel cars emit much more of these air pollutants than petrol cars.

Our recent [special report 23/2018 Air pollution: our health still insufficiently protected](#) states that around 400 000 people in the EU die prematurely each year due to air pollution. In fact, air pollution is the biggest environmental risk to public health in the EU. Most urban dwellers are exposed to levels of air pollution considered as dangerous by the WHO. And the Commission estimated this is costing hundreds of billions of euros per year. Despite EU policies for clean air which have been around for a long time - and which have indeed been instrumental in reducing emissions - air pollution is still far too high in many of our urban areas.

Transport and emissions

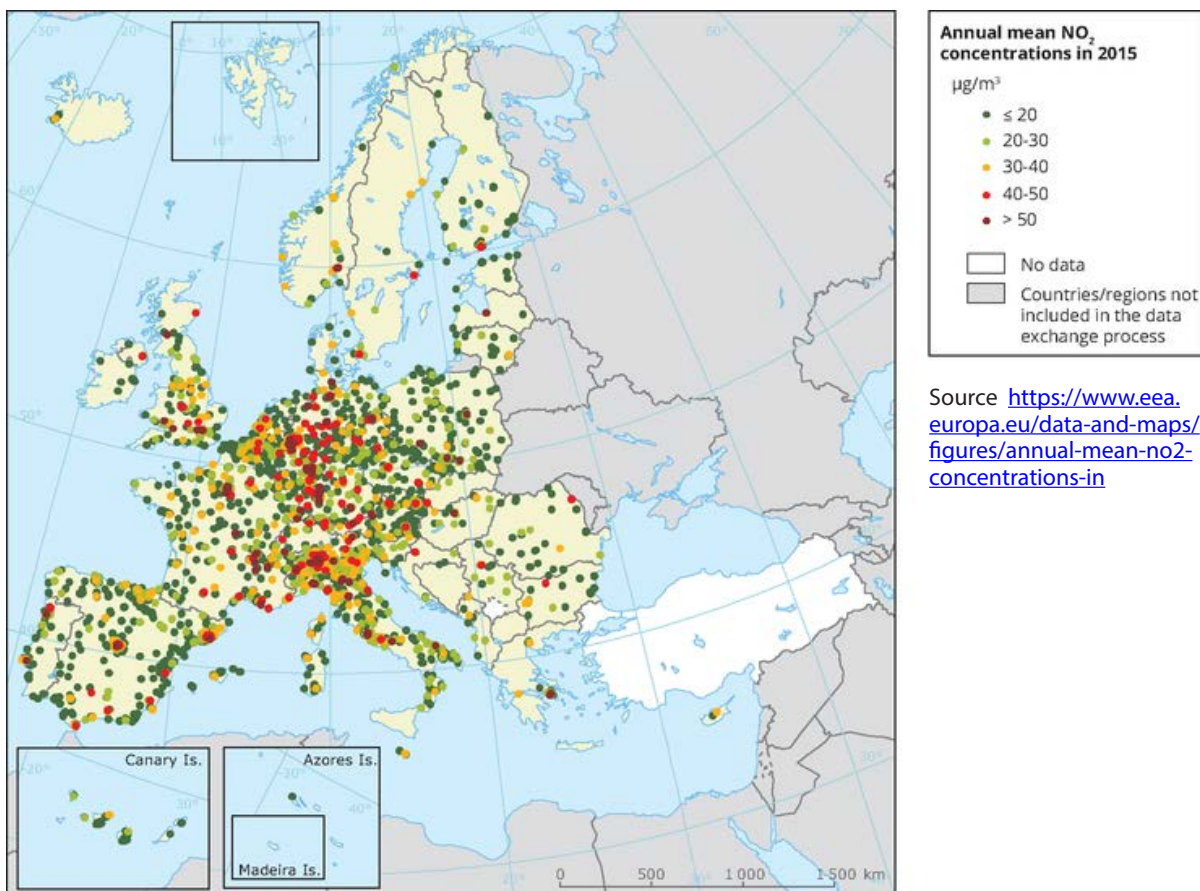
As **Figure 1** below shows transport is the main source of nitrous oxide emissions (NO_x) in the EU, and a significant source of particulate matter emissions. Diesel engines account for a large part of this.

Figure 1 - Sources of air pollutants in the EU¹



Thanks to actions taken by the EU, emissions (of nitrous oxides) are now less than half what they were 20 years ago. This is clearly a success of the EU's environmental policy. However, at the same time, most Member States still do not comply with the limit values (maximum average exposure of 40 micro grams per cubic metre) set for NO₂ in the Ambient Air Quality Directive to protect human health (see **Figure 2**). The European Environment Agency recently identified that exposure to NO₂ is causing 75 000 premature deaths per year in the EU

Figure 2 - NO₂ concentrations in 2015



Source <https://www.eea.europa.eu/data-and-maps/figures/annual-mean-no2-concentrations-in>

1. Source: EEA, 'Air quality in Europe – 2017 report', p. 22
 Note: emission of air pollutants are quantified in terms of NO_x and SO_x while air pollutants concentrations focus on NO₂ and SO₂, the most harmful of these oxides.

Some of the reasons encouraging us to drive diesel cars represent policy failures for clean air.

First, diesel vehicles were a key element for car manufacturers in the EU to comply with their CO₂ reduction obligations set in EU law. In order to reach an average of 130 g of CO₂ per km by 2015, and 95 g per km by 2020, car manufacturers had a very strong incentive to ramp up production of diesel cars: since diesel cars produce less nasty CO₂ emissions than petrol cars.

Second, in most Member States diesel is taxed more lightly than petrol.

This encouragement of diesel may make sense from the point of view of climate change mitigation, but this is evidently not the case from the point of view of clean air. And all this is before dieselgate...

Dieselgate: the emission standards myth

The public debate on the pros and cons of different types of combustion engines has recently been fuelled by the Dieselgate scandal. Technological developments and EURO standards have been much less successful in reducing NO₂ emissions than CO₂ emissions. It has been known for years that real nitrous oxide emissions from diesel cars on the road were higher than those under test conditions. The Dieselgate scandal highlighted the scale and causes of these differences. Put bluntly, the EU's diesel emission standards were a myth. More politely, the EURO 6 standard of 80 mg NO_x emissions per km - decided by the EU legislators back in 2007 for implementation in 2014 - will not have to be met on the road for years to come.

But it is not all doom and gloom. The Commission has introduced a more realistic car testing regime. Moreover, during our air quality audit, we saw that cities around the EU were gradually taking concrete action to reduce air pollution by cars: for example, by encouraging clean public transport, or discouraging the use of older diesel cars. Finally, citizens and civil society are becoming more aware of the causes and consequences of air pollution, and are increasingly holding their governments and administrations to account.

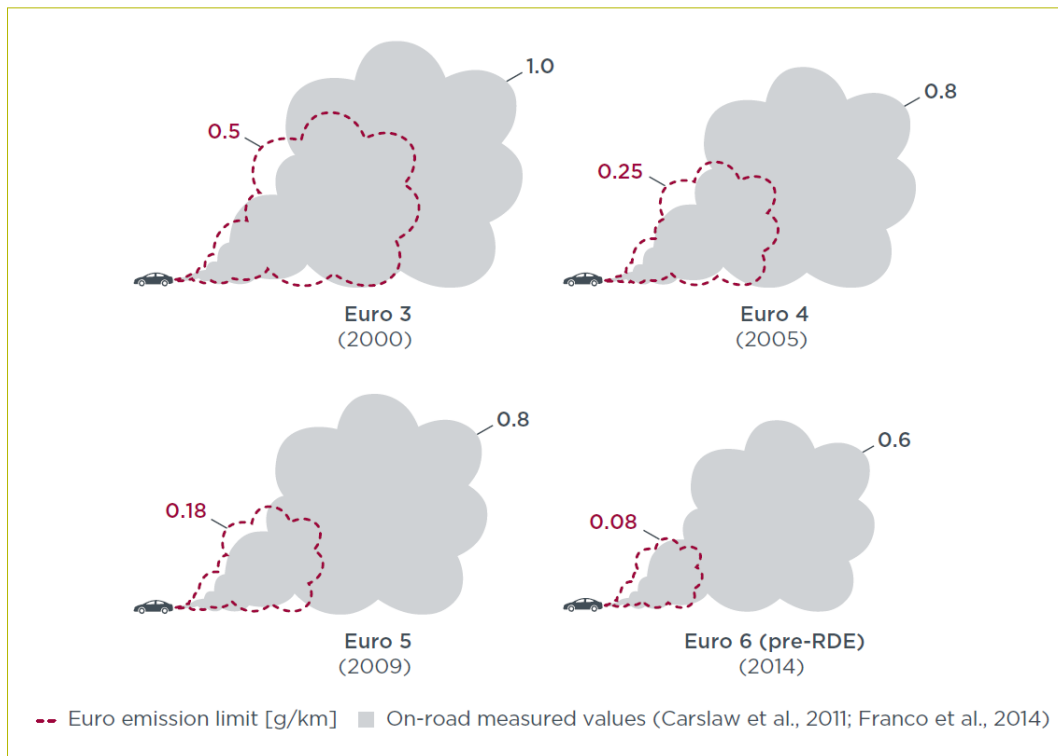
ECA reports connecting health to mobility

Since 2010, the ECA has published 13 special reports related to different transport and mobility modes. In at least half of these reports we highlight the policy aim of shifting to low-carbon transport. Low-carbon transport is also an issue examined by the ECA landscape review on transport and mobility published in December 2018 and the ECA landscape review on energy and climate change published in 2017.

Our [special report 23/2018 on air pollution](#) stands out in linking transportation to health concerns, making a number of recommendations to the Commission which should help driving forward improvements to the air we breathe. The report got considerable media attention. Another ECA report on serious cross border threats to health in the EU (special report 28/2016) also makes the link between health and mobility, but then in relation to pandemic diseases and health security.

Finally, on 7 February 2019, the ECA published a briefing paper on the EU's response to the 'dieselgate' scandal. In this review we also refer to the harmful effects to health of certain emissions and we set out the actions taken, at the level of the EU and Member States, and describe changes made to the system for measuring vehicle emissions after September 2015.

Figure 3 - NO₂ emissions on the road (in g/km) from European diesel passenger cars compared with regulated emission limits



Source: ICCT, Impact of improved regulation of real world NO_x emissions from diesel passenger cars in the EU, 2015-2030, p. 1

In particular, our review draws the attention to the slow impact of improved standards on actual NO_x emissions by diesel cars (see **Figure 3**) and highlights lessons to be learnt. It also points out some impediments related to measures undertaken or proposed, and challenges that may impact the changes to be introduced in road transport to decrease health casualties and risks EU citizens are exposed to. Whether they are on the road...or, for many of them, off the road .

Are the EU's flagship projects on course? – Auditing EU infrastructure investments in core transport networks

By Emmanuel Rauch, Investment for Cohesion, Growth and Inclusion Directorate



Source: Shutterstock

Railway bridge over Daugava river in Riga, Latvia, part of the Rail Baltica

The ECA is currently undertaking an audit of EU Transport Flagship infrastructure investments. Emmanuel Rauch, principal manager at the ECA, has been closely involved in the planning of this audit and provides some details about it and how audit information is being gathered, for example through organising a meeting of high-level experts in Luxembourg later this year.

Common transport policy - as old as the road to Rome...and its Treaty

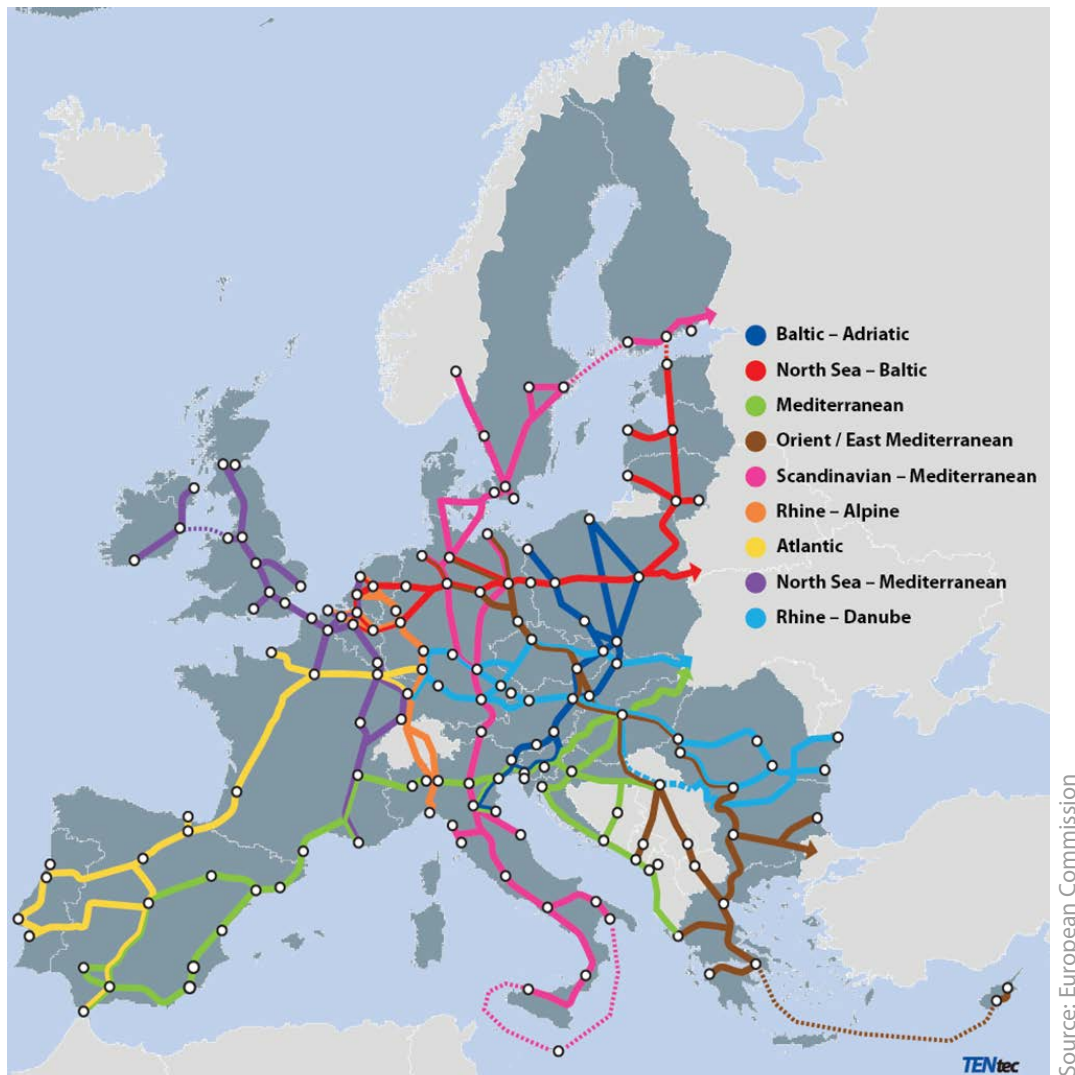
The importance of effective communication channels was already obvious to the Romans when they decided to build a network of *via romana* all across their empire. Two thousand years later, putting in place a modern and reliable transport infrastructure is still a precondition for getting the most out of freedom of movement for both people and goods, two fundamental pillars of the EU.

A common transport policy has existed since the beginnings of the EU: it was already in the Treaty of Rome signed in 1957. Over the years the EU budget has provided billions and billions (more than €210 billion in the 2000-2020 period) to build and improve communication routes and hubs (railways, roads, motorways, inland waterways, ports, airports, etc.).

Nine core corridors linking Europe

Today, one of the main priorities of EU transport policy is to complete the 'Trans-European Network for Transport'. It concerns all transport modes – air, road, rail, maritime and inland waterways. While the Comprehensive Network is due to be completed by 2050, the European Commission's first priority objective is to have the most critical elements of it, the Core Network, composed of nine corridors, completed by 2030, linking the main industrial and port regions in Europe.

Figure 1 - The Nine Ten-T Core Network Corridors



Note: the nine TEN-T core network corridors are based on the CEF and TEN-T Regulations (1316/2013 & 1315/2013); they have been created as a coordination instrument to facilitate the completion of major parts of the core network of strategic importance.

Source: European Commission, Directorate-General for Mobility and Transport, TENtec Information System

The ECA has audited transport infrastructure projects on a number of occasions, with the aim of contributing to the completion of the network. The most recent publication on the topic is special report 19/2018 *A European high-speed rail network: not a reality but an ineffective patchwork*.

Currently the ECA is carrying out an audit on the transport flagship infrastructures on the EU core transport network. In this context, we will assess eight 'mega' transport projects (each of them representing a total construction cost of much more than €1 billion). All are politically sensitive, have been under discussion for decades, and aim to address key missing links between national networks (e.g. the Lyon -Torino project aims to connect the French and Italian high speed railway networks) and/or important bottlenecks. Most of them are cross-border and for many of them the political decision to go forward with the project was already taken 25 years ago by the European Council of Essen in 1994.

The eight Transport Flagship Investments that the ECA has included in its ongoing audit are:

- Lyon – Torino high speed railway connection;
- Rail Baltica, linking Finland, Estonia, Latvia, Lithuania and Poland with a standard gauge rail line;
- Basque Y connection, linking three cities in the Basque region through high-speed rail;
- A1 motorway in Romania, connecting Bucharest with regions in the western part of the country;
- Seine –Escaut project, linking the Oise River with the Canal Dunkerque-Escaut, creating a better maritime connection between the Seine basin and North-Western Europe;
- Fehmarn Belt Fixed Link project is an immersed tunnel project to connect the Danish island of Lolland with the German island of Fehmarn;
- E59 Railway project in Poland, part of the Wroclaw-Poznoan railway;
- Brenner Base Tunnel project, a railway tunnel through the base of the Eastern Alps beneath the Brenner Pass.

Coordinator for each corridor

For each of the nine corridors composing the Core Network, the Commission has nominated a European Coordinator. These persons are chosen on the basis of their knowledge of issues relating to transport and financing, as well as on their experience with European institutions, and their functioning.

Their mandate includes:

- drawing up the relevant corridor work plan (together with the Member States concerned);
- supporting and monitoring the implementation of the work plan; as and when necessary, highlighting difficulties and looking for appropriate remedies;
- regularly consulting the corridor forum (a consultative body bringing together Member States and various stakeholders);
- making recommendations in areas such as transport development along corridors or access to financing / funding sources;
- annual reporting to the European Parliament, Council, Commission and the Member States concerned on the progress achieved.

The importance and the nature of their responsibilities make them key persons for the ongoing audit. That is why the audit team took the initiative of inviting them to come to Luxembourg to discuss together their views on the main issues relating to the process for planning, financing and deciding on the construction of such mega projects, as well as their understanding of their own responsibilities.

From patchwork to real corridors

As suggested in our recent high-speed performance audit, it is very likely that moving from patchwork to real corridors will require the Member States to pay more attention to EU priorities and the Commission to get real power to enforce implementation of earlier commitments. We are already looking forward to our discussions with these high-level experts, which is planned to take place at the ECA in April 2019.

The embedded translator – interpreting for auditors during on-the-spot audit visits of transport infrastructure

By Richard Moore, Translation, Language Services and Publication Directorate

You can spend as many hours as you like in ministries and meeting rooms, discussing transport infrastructure projects and trying to understand them through the numbers. But if you want to really understand these projects, the challenges involved in building them, and the demands placed on them, nothing beats seeing them with your own eyes. Richard Moore, a translator in the ECA's English language service, shares his experiences providing linguistic assistance to our auditors during their on-the-spot visits.



The explosives drilling truck

Journeying deep into the Earth

That is what we are doing here in Bolzano. It is early autumn, and the morning is bright and clear: some last rays of autumn sun. For the team and me, that is too bad. However bright the morning, we will not be seeing much of it. We are going to be spending most of the day far underground, where something big is being drilled and blasted out of the Dolomite mountain range, one slow metre at a time. Bolzano is surrounded by rock. Hundreds of metres under it are the beginnings of the Brenner Base Tunnel, a tunnel which will allow high-speed trains to run directly under the Alps between Innsbruck and Bolzano, avoiding the steep and slow existing route over the Brenner Pass.

We have spent most of the last few days in an office in Bolzano, holding meetings with the company which has been coordinating the work on the tunnel. As a result, we have learned that the Brenner Base Tunnel will be fifty-five kilometres long when it is finished. It will carry around four hundred trains per day, at speeds of up to two hundred and fifty kilometres per hour, sixteen hundred metres under the Alps, on an upwards gradient of up to zero point seven four per cent.

Scary? A bit, maybe...

Now we're about to find out what those numbers mean. We've been driven to a building site near the Austrian/Italian border, at a place called Mules. A tall man in overalls has just handed us hard hats, hi-vis jackets and waterproof boots with steel toecaps, and told us to put them on. He is a senior engineer for this section of the tunnel; we do as we are told. 'I don't think they're detonating any explosives in this section today,' he tells us. 'But I'd better just check before we go in.'

The embedded translator – interpreting for auditors during on-the-spot audit visits of transport infrastructure

To build a tunnel, you could start at one end and work in one direction. Or you could halve the construction time by starting digging at both ends, making them meet in the middle. The people behind this tunnel, though, are aiming for speed. They're tunnelling at four sites at once: from both ends, and also from two intermediate sites dug directly into the mountain range. The Mules site is one of the ones in the middle.

Of course, tunnelling equipment does not just conveniently appear underneath a mountain range. Somebody has to put it there and assemble it, and the place where that's done is our first stop after we've descended in our four-wheel drive down an excavated service tunnel wide enough for two trucks to pass. We keep meeting these trucks speeding towards us in the opposite direction; the tunnel is steep and the ceilings are low, and the trucks seem unnervingly close when they pass us. After a ten-minute drive down, we end up in a massive chamber which has been excavated out of the rock. It feels like being in a massive cathedral hall, though its size is more akin to that of an aircraft hangar. This is the central operations base where the excavation work is coordinated, and where equipment is stored and made ready.

A non-typical day for a typical translator

This is not the sort of day's work you might expect a translator like me to be doing. But at the ECA, translators often support their auditor colleagues by providing linguistic support on the spot on audit visits. I have been lucky to play a supporting role in various infrastructure audits: on the way, I've seen EU support being used to its most tangible and impressive effect.

For a translator, these missions are interesting and useful: interesting, because they have allowed me to see how auditors work and think when they are working on the spot, and useful, because an in-depth understanding of the subject matter helps me to help the auditors further when it comes to drafting the report.



The cavern where the machinery is assembled

Seeing is believing

Back in the tunnel, we are driven further under the mountain, to the very front of the construction work. Huge drills are being used to drill holes for explosives into the end of the tunnel: the rock in this section is too hard for tunnel-boring machines, so the engineers have to blast their way through.

At the end of the visit, we drive back out of the tunnel back into the light of day: back into the sunlight, where we can breathe normally again. The team knew the data behind the tunnel before, but seeing the project 'in the flesh' has given them a better understanding of how EU funds are being spent to improve the continent's transport infrastructure.



Richard Moore on a partly completed bridge in Spain

EU transport policy needs a strategic heart

**Interview with
Gabriele Cipriani, Martin Weber and Gerhard Ross,
respectively the successive and current directors of the
'Investment for Cohesion, Growth and Inclusion' Directorate**

By Derek Meijers and Gaston Moonen



From left to right: Martin Weber, Gerhard Ross and Gabriele Cipriani

The ECA landscape review on transport and mobility issues, published in December 2018, builds, in particular, on 13 special reports published by the ECA since 2010. With that in mind, we invited the three ECA directors involved in producing these reports for an interview. Gabriele Cipriani led the Investment for Cohesion, Growth and Inclusion Directorate from 2002 until 2014, and retired from the ECA in December 2018. In 2014, Martin Weber took over, and left in 2017 to head the Directorate of the Presidency. Gerhard Ross, who has been director at the ECA since 2016, succeeded Martin in May 2017. Gerhard has thus been in charge of this directorate when the more recent special reports on passenger rights and high speed rail, as well as the landscape review itself, were finalised. The aim of bringing the three directors together was to obtain a more holistic view of this policy area over the last decade, but also to provide a preview of what audits under the new Multiannual Financial Framework could look like.

Some conclusions of the past ... still valid today

A comparison of current ECA reports on transport with those of about a decade ago can offer some interesting insights into developments in the ECA's approach to auditing transport policy and programmes. Gabriele Cipriani explains: 'When I became director in this area there was already the question was how the ECA itself could help improving the effectiveness of EU transport policies. Let us take for example special report 6/2005 on trans-European networks for transport. It has two conclusions, which, I am afraid, might still be valid today. Firstly, we concluded that the financial aid, disbursed under the so-called TEN-T programme, was allocated in an overly fragmented way and was not sufficiently focused on cross-border projects. As such, it would not achieve its European added value to the fullest.' The second conclusion, as Gabriele recalls, refers to coordination of transport infrastructures by different EU funding programmes, which the ECA recommended should be strengthened.

He emphasises that 10 to 15 years ago there was increasing awareness at the ECA that, besides the usual financial and compliance audit work, there was a need to further develop performance audits to deliver added value. 'But this was easier said than done. How to develop for example performance indicators in a context where the objectives were so wide and eligibility criteria not always that clear.' Referring to another special report, 08/2010 on improving transport performance on Trans-European rail axes, he says 'Here we clearly indicated that funding is not necessarily the most important element as regulatory measures matter more than money in many respects.'

“... regulatory measures matter more than money in many respects.”



Gabriele Cipriani



Martin Weber

Martin Weber agrees that the issue of eligibility is a concern. 'For these mega projects like the Brenner Base tunnel, fulfilling a key role in the major EU corridors, the eligibility criteria are decided at a political level. These projects are funded because there is a political will behind it. The question is then how would you assess this? Most often they are stand-alone projects. And, just to give an example, you cannot easily compare one mega tunnel with the other, particularly when looking at the economic rationale behind these projects.' He considers that one interesting feature of many of these EU-funded mega projects in transport is their cross-border character. 'These concern tunnels through the Alps or the Pyrenees, the Fehmarn belt bridge, the Euro tunnel. And that adds additional complexity to these projects because several actors from different Member States are involved.'

Gabriele adds that there is also a time dimension since most of these projects take a long time to be completed. 'And what was a priority in the nineties might not be a priority now - be it for advancing technological or other reasons - which explains some of the reluctance to invest in some corridors.' He gives the example related to the Lyon – Turin corridor. 'It was put forward within a national strategy, and then became part of the TEN-T corridors. Yet, now it risks to be called into question by the Italian government, while five years ago it was considered a priority.'

Using EU funding as catalyst for change

For Gabriele it is also clear that the EU budget for transport needs to be put into perspective. According to estimates drawn up by the Commission in 2011, the cost of EU infrastructure development to match the demand for transport has been estimated at over €1,5 trillion for 2010-20130. The completion of the TEN-T network requires about €550 billion until 2020, out of which some €215 billion can be referred to the removal of the main bottlenecks.. Obviously only a fraction of this can be supported through EU funding. This shows how important it is to concentrate the EU budget on where it can serve as catalyst.' Gerhard underlines this view by adding to this the budgetary perspective that for the 2007 to 2020 period the entire EU funding instruments in support of transport amounted to €193 billion.

Martin points to what he considered a major challenge for the EU at the time when the ECA started to produce its performance reports on transport. 'Before the 2004 enlargements the transport was mainly north –south. Most road and rail infrastructure was built that way. With enlargement, everything turned east - west and there was

“... With enlargement, everything turned east - west and there was no infrastructure[...] Perhaps not many people realise how successful the EU has been in creating this structure.”

no infrastructure, or what was in place was not adequate to cope with the rapidly increasing traffic flows. Perhaps not many people realise how successful the EU has been in creating this structure. It is clear that not all cohesion funds have been used in the best possible way. But I believe it has played a crucial role and without EU funding this success would clearly not have been possible.'

As second point Martin mentions is market liberalisation. 'The EU single market has had a tremendous effect. In the 1990s, you still had a rather controlled and regulated transport sector with mostly domestic companies running the business. Although there are still protected niches – for example in rail – the situation now is very different, with far more businesses operating EU-wide.' In addition, regarding technological change and innovation, he states that 'like the other two developments, this trend will continue and it is difficult to predict in what way this will impact traffic flows. It could mean more traffic, less traffic, difficult to tell.'

Facilitating competition between modes of transport

When discussing the diverse developments in the different modes of transport, Martin raises the issue of equal competition between types of transport. 'For example, in relation to our special reports on airports. That was intrinsically linked with taxation because without subsidising fuel for planes, for example, there would not have been this level of demand. Prices would be higher and fewer people would fly.'

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Our findings regarding underutilised sea ports and airports tell you [...] that they can fund things which are not needed.

Gerhard Ross ties this to a lesson that can be learnt: 'Our findings regarding underutilised sea ports and airports tell you there is a problem with cohesion funds, namely that they can fund things which are not needed. In that sense transport expenditure can be an obstacle for the EU to reach the goals it is committed to, since euros spent on such underutilised infrastructure are not available to be spent on something better.'



Gerhard Ross

This issue touches upon one of the key challenges identified in the 2018 ECA landscape review on transport: focusing EU funding on those priorities with the highest EU added value. Gerhard ties that to another challenge: 'We also identified as a key

challenge the enforcement by the EU of closer alignment of national infrastructure decisions with EU policy priorities. But the problem is if the lion's share of the funding is coming from Member States and not the EU budget, whether the EU level has the power to do so.'

Gabriele agrees with Gerhard. 'All the more since, as a result of the Multiannual Financial Framework agreement, for structural policies there is a funding – also called 'envelope' - for every country - which in many of them is further subdivided by regions. If, due to the absence of an overall intervention strategy, the regions can do what they want, then you arrive at the conclusions the ECA had to draw regarding empty seaports. The question here is also: Why does the Commission not take a firm stance, simply by making the commitment of EU funds conditional upon the existence of a certain number of guarantees (among others, an operation plan) to ensure the sound financial management of EU funds.'

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If [...] the regions can do what they want, then you arrive at the conclusions the ECA had to draw regarding empty seaports.

EU involvement when strategic decisions are prepared

Gabriele points out that sometimes interests are so divergent that it becomes difficult even to devise a strategy, giving the example of inland waterways. Martin agrees: 'The problem with inland waterways is that it is immensely expensive to maintain the infrastructure, to build the channels, etc. If you do not have a particular economic interest, then of course it brings back the issue of lack of funds. In a fully liberalised single market, it can be counterproductive to decide on transport infrastructure at a regional and national level. It simply does not make sense from an EU perspective.'

With that in mind, Gerhard remarks that it would make more sense to take out EU transport investments from the European Regional Development Fund (ERDF). 'But wherever you put it, the main share will still have to come from the Member States.' On that issue, Gabriele argues that EU funding decisions should aim at maximising European added- value. 'For transport in particular this implies taking account of the cross-border perspective ... I think you should go out of the purely national dimension.' Gerhard brings in the issue of will: 'To maximise their impact EU resources, which are limited, should focus on the highest priorities and EU added value. But what does that mean, exactly? That is also a question of political will!' Martin, with a laugh, suggests: 'Why not take inspiration from the Americans? They have federal highways. Creating a European infrastructure for the main corridors across the Union, fully funded and maintained by the EU, and also label it like that.'

“*Creating a European infrastructure for the main corridors across the Union, fully funded and maintained by the EU, and also label it like that.*”

All three directors agree that from a strategic point of view the Commission is not sufficiently involved in the approval of the biggest strategic projects. Martin: 'That is a major issue because the misallocation of money happens when the decision to launch the project is taken. For the major transport infrastructure projects, which have an impact which goes beyond the Member State in which the project is located, it is crucial to have this independent view from the outside, looking at the bigger picture.'

More audits on transport issues

Gerhard remarks that transport is the biggest area of expenditure in cohesion. 'Over 70% of this expenditure is spent on roads and rail. However, we also see an increased importance in 2014-2020 for multimodal transport and intelligent transport systems. Thus, it is not surprising that transport issues dominate the topics of the reports in our audit chamber. And they are appealing too, people can relate to it.' He adds that his directorate has now six ongoing audits on transport issues.

Martin points out that in 'his' period this was slightly different. 'We did not have the luxury to choose at the time. It was good if you got one audit on transport through. Do not forget that when I started we did three or four special reports per year in the directorate. Now you are doing 10 or 12, preceded by many more proposals.'

In addition, the focus in the transport area itself has changed. Martin: 'In the past, the EU budget in this area was mostly about building new infrastructure. But increasingly the question will be about maintaining or upgrading what we have. Actually, in the past it was not permitted to spend EU money on maintenance.' He thinks it needs to be changed now because the big issue is maintenance. 'Take the bridges in Italy, but also Germany and many other countries: a significant share of them are under close surveillance because the authorities are no longer sure that they will hold.' Regarding maintenance Gerhard adds another aspect: 'During the financial crisis, maintenance spending went down in the Member States. And the EU budget co-financed investment only.'

“*... increasingly the question will be about maintaining or upgrading what we have.*”

For Gabriele, maintenance relates closely to sustainability. 'We made similar remarks years ago in our audits on waste water treatment, noting in particular that over dimensioning of the project can only aggravate the maintenance issue.' Martin adds: 'Some countries have problems building an airport, let alone maintaining it. And as the EU's external auditor we have a nice competitive advantage: cross country comparison.' He then refers to special report 5/2013, where the ECA compared the cost of building comparable structures of motorway in four Member States (Poland, Greece, Germany and Spain). 'Germany came out as most cost effective, which was counter-intuitive. I am convinced that if we did more of these benchmarking audits, similar results would emerge.' He adds with a laugh: 'It is also interesting that in some countries, such as the Czech Republic, prices seemingly went down, following our report.'

But has an ECA audit actually resulted in stopping an EU programme? Gabriele refers to a report published when he was director, special report 03/2013 regarding the Marco Polo report for rail freight. 'We concluded that there was no real added value in the programme. In the end the Commission accepted this and the programme was discontinued.'

Taking a user's perspective

Turning to more intangible aspects of transport, like passenger rights, Gerhard finds that looking at the issue from the customer's angle in such audits is a good opportunity because 'It raises interest and we were rather successful with it in the media. We looked at the subject from the perspective of users, and used surveys to collect their views. One of the outcomes was a list of ten very hands-on tips on how to avoid problems with enforcing your rights as a passenger. It was quite a novelty in the house to put this in the press release, related to special report 30/2018.' Martin adds: 'Carrying out such an open survey where every EU citizen could participate was certainly a new element, and we should use it more often in our audits.'

Gerhard points out that besides the performance audits, his directorate also looks at the financial and compliance side of projects. 'You have public procurement, issues with eligibility rules, or non-compliance with state aid. It is the normal list of the main sources of error. Nothing specific.' Martin adds that there is often a public perception that there is a lot of mismanagement in EU-funded projects. 'But in reality the compliance issues are much fewer, and spending is probably much more regular than in comparable projects that are exclusively funded from national budgets. This is mainly so because national authorities are afraid of the Commission imposing financial corrections so extra care is taken that the files are correct and rules are complied with.' He thinks that it is not just the money. 'With errors the EU programmes come are interrupted or even suspended, there are further investigations and potential damage to the reputation of the implementing bodies. Nobody wants such trouble, and it may help that projects co-financed from the EU budget are often comparatively clean.'

Gabriele has a more cautious view of the effectiveness of financial corrections, at least in the time when he was leading the Investment for Cohesion, Growth and Inclusion Directorate. 'For many years projects with errors in them were simply substituted by other projects. As a result, there was no true financial impact while at the same time the focus on errors deflected the managers from content issues. Moreover, the Commission's approach, considering that the negative effect on the EU budget was neutralised simply by applying a financial correction whenever something was found, ignored the opportunity cost of this money not having been made available for other compliant projects. The rules applicable to financial corrections recently changed, but it is still too early to say whether this has made them more effective.'

Martin indicates that he visited nearly all the big tunnel projects in the Alps. 'I have also been to the 57 km Lyon – Turin tunnel currently under construction, for an estimated cost of €8 billion. This new tunnel will replace a much shorter, high-altitude tunnel on which construction started when Savoy was still part of Italy. But when the tunnel was finished in 1872, Savoy had been sold to France. And therefore it became a border tunnel.'

Transport is in the picture

Selecting the audit topic and assessing the programme is one thing, getting media attention for it is another. When discussing how the ECA nowadays draws attention to its reports Gabriele is, like the two others, very positive. 'I think this is the way to go, as I was all in favour of producing the predecessor of press releases – then called information notes – for our reports.'

Martin, speaking in his current role as Director of the Presidency in charge of communication, adds: 'From the 15 top special reports in 2018, three relate to transport; the ones on Public-Private Partnerships, high-speed rail and passenger rights.'

Gerhard adds: 'Our special report 23/2018 on high speed rail was the ECA report with the highest media coverage in 2018. Special Report 9/2018 on Public-Private-Partnerships was also taken up with great interest, and there were a large number of references made to it in specialised journals and the audit team got invited to speak at several conferences across Europe.' Martin remarks that Special Report 23/2016 on seaports even contributed to developing a new national seaport strategy in Italy. (see also page 62)

When it comes to assessing the use of intelligent systems and digitalisation in transport, there are and will be a number of reports covering this – a report on the European Rail Traffic Management System (ERTMS) is published and a report on air traffic management is published while a second one on its deployment is in the reporting phase. Gerhard: 'We will also be looking at urban congestion and mobility. Also negative aspects of transport – pollution, noise,

“... Also negative aspects of transport – pollution, noise, air quality - will continue to attract our audit interest.’

air quality - will continue to attract our audit interest.' An example of the latter is the briefing paper the ECA published in early February 2018 on vehicle emissions .

EU transport achievements most visible ... when it breaks down

Taking a wider perspective, Martin concludes: 'I think in the EU we have progressed a lot in terms of policy and legislation. But it is not always that visible to citizens. I think these massive changes are not perceived as such. People cannot grasp that ultimately many of the things that became better are related to European initiatives.' Gerhard adds: 'The looming departure of the UK from the EU will most likely show how important many of the EU achievements are, particularly in the transport area.'

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I think in the EU we have progressed a lot in terms of policy and legislation. But it is not always that visible to citizens.

The three directors agree that the advantages gained through EU actions, including those in transport, do not always stand out in the ECA reports. Gerhard: 'In our audits we also try to identify positive elements, but it is not always easy. If we have a positive finding it is often followed by a "however."' Martin adds: 'We are looking at things that have been done and we are looking for problems with these things. This sometimes leaves the things that go particularly well, or where additional EU involvement would add value, untouched because that is not our specific role in the EU accountability system, or currently not yet perceived to be our role in the house.'

Professional insights not necessarily having an impact on private transportation habits

When asked how all these audits on transport have influenced their own choice of methods of transport, the three directors have to think a bit longer. Martin says 'In fact, I am a convinced train user but this is being made more and more difficult. One example is that if you want to go to by train from Luxembourg to Milan, 20 years ago you could take a direct train. Now, you have to take a TGV to Mulhouse, get a local train to Basel, a Swiss train to Italy, or even changing again in Switzerland. And you cannot buy a single ticket. Not really a customer-friendly approach. In my view, this is an area where additional regulatory measures are needed. The operators need to be forced to provide these cross-border services all along the distance, otherwise you are lost as a customer.'

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I am a convinced train user but this is being made more and more difficult.

Gabriele replies: 'I cannot say I have been influenced by my official duties. But I have changed my habits – in recent years I have started to come to the office by bus rather than by car. This was, however, due to the fact that the ECA chose to offer the 'Jobkaarts' to its employees. I just made good use of them.'

Gerhard, laughing: 'In terms of my mobility, I would say that my work has rather reduced my mobility in the last year, at least over the weekends: because then I needed to read and comment on draft transport reports at home.'

Creating a level-playing field in the EU: fair opportunities for the different transport modes require regulatory action

Interview with Michael Cramer, Member of the European Parliament

By Gaston Moonen

As former Chair of the European Parliament's Committee on Transport and Tourism Michael Cramer has dealt with several ECA reports that examined EU investments in transport, like airports, seaports or getting freight from road to rail. How useful are such reports for a Member of the European Parliament (MEP), and particularly for him, being entrenched with transport issues both as a politician back in Germany and now at the EU level? Michael Cramer's experience in the area is not only rich and diverse, and he is known to be an adept user of public transport.



Michael Cramer, Member of the European Parliament

Energy as driving force ... towards transport

Speaking with Michael Cramer it quickly becomes clear that transport has been a red thread through his professional and political life. With a large impact on his personal life, trying to make use of public transport means as much as he can. At the roots of this interest in transport politics, and what later motivated him to join the Green party in Germany, was the energy dilemma. 'I was against nuclear power stations and I took part in the protests against the plans to build a plant in Wyl, in Baden Württemberg, in the early seventies. And, when thinking about it then, already then I considered that energy and transport belong together. My thinking then, and now, is that without a change of mobility, we cannot save the climate.'

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My thinking then, and now, is that without a change of mobility, we cannot save the climate.”

He quickly provides some figures for this reasoning, and throughout the interview it becomes clear that figures are important to his arguments. 'Currently, in the EU, the transport sector is responsible for 24% of all the CO₂ emissions. And within that more than 70% from road transport. For myself I decided, to be consistent with my political beliefs, to sell my car in 1979! He explains that being without a car does not necessarily mean to be less mobile. 'If you have a car you probably do not like too much taking a taxi. But if you have no car, instead of waiting twenty minutes in the winter for the next bus, you take a taxi, which I did. And then I gathered all my taxi receipts. And it turned out that using the taxi rather frequently during the entire year costed me not much more than driving my car for one month.' He summarises: 'So it was more comfortable, it was considerably cheaper, and ... better for the climate!'

On the question whether he missed the freedom that a car can give to go where you want he replies with a big laugh: 'No, the freedom is actually greater without a car than with a car. Suppose you are with a group of people and you drink two beers. If you are there by car you need to stop there. I was allowed to drink to a third beer, and even sometimes a fourth one.' Moreover 'In a city, with a car, you usually also need more time.' He acknowledges though that renouncing a car is much easier in the city than in the countryside where there are much fewer public transport connections.

Then back to some figures, making clear how important the link is between transport and climate. 'You must know that the transport sector in the EU is the only sector where you have an increase in CO₂ emissions since 1990. We have a decrease in the industry by nearly 40%. We

Creating a level-playing field in the EU: fair opportunities for the different transport modes require regulatory action

have a decrease in the energy sector by 25%. And we have a decrease in CO2 emissions by 25% in the housing sector.' He points out that the trend is totally opposite in transport, saying that since 1990, there was an increase in emissions by 25%. 'So the transport sector nullifies all the efforts we have done with billions of euros from our taxpayers in other sectors!'



... the efforts we have done with billions of euros from our taxpayers in other sectors!

Picking low hanging fruit in transport modes

Within the transport sector Michael Cramer clearly believes that there are still numerous possibilities to improve things through picking low-hanging fruit. Take for example automation in the different transport modes. Michael Cramer: 'We have nearly automation in the air sector by the pilots in the aircraft, up to 90% is done through automation. But what is happening in the other transport modes? I live in Berlin and 40 years ago we had a fully automated underground line in Berlin. But there was such a fear that the passengers would not like it that the operating authority put every time one person in the train to give the impression that he or she was driving the train. But it was all automated! But after two years they stopped the automated lines.' And he comes up with another current example, with automated lines in Lille.

He points out that now everybody is mainly thinking about automated driving on the road. 'But this is actually very complicated. For instance, if there is an accident, who is responsible? The one who produced the car, who bought the car or the one who sold the car?' In his view there are many possibilities for automation in other transport modes. 'And the same applies to electric mobility, with 95% thinking about electrification of road traffic.' Again he has figures to clarify his point. 'I can tell you, in the EU we have nearly 50% of the rail network which is electrified. But electrification takes a long time. . In Germany, the decision to electrify the whole rail network was taken in 1909. More than 100 years later, we are only at 60%.' In contrast, Switzerland has achieved 100% electrification, and Belgium stands at 70%.

But Michael Cramer is a fan of public transport not only for environmental reasons. 'I like very much to quote Hans Jochem Vogel, former minister and party leader in Germany. When he was a very young mayor, 47 years ago, in Munich in 1972, he said: "the car is murdering our city." He explains that, even if all becomes electric, one would still have too many cars, with all the downsides on safety, time loss, parking problems. 'We will continue to be for many thousands of hours in a traffic jam. I therefore say: we have to avoid, we have to reduce the use of cars!'



We will continue to be for many thousands of hours in a traffic jam. I therefore say: we have to avoid, we have to reduce the use of cars!

Michael Cramer emphasizes that not only the Greens are making this point. 'I now come with a figure from car-friendly minister, Peter Ramsauer from the Bavarian CSU. He said: "In German cities, 90% of all the distances made by car, is less than six kilometres. And six kilometres or less are ideal distances for going on foot, by bike, by tram or by bus." Then the MEP from the Green party gives another figure: 'If I would have told you, 30 years ago, that today more than half of people in Copenhagen will commute to work by bike, you would have said: 'Crazy guy, continue dreaming.' But this is now reality.' He sighs, saying: 'Because they had a plan and they got it realised.' And technology and innovation also takes away the argument of adverse topography. 'Twenty years ago we were told that is fine to cycle in the Netherlands or northern Germany, but not in mountainous Bavaria. But now, with electrical bikes, this argument is gone.'

Related to this Michael Cramer brings up the so-called 'Giesskannenprinzip' – freely translated, scattering the resources over many people. He is in favour of the electrification of bikes, and likewise of buses, taxis, etc. 'But not according to this 'Giesskannenprinzip', with a pot of €5 billion in Germany available to subsidize everybody who wants to buy an electric car, even when it is a very expensive car.' In his view, money should be provided for electrification of specific stretches, for example the Berlin –Brotslave rail line. 'In a stretch of 350 km there is a gap of 50 km which is not electrified. It would cost about €100 million to close this gap and you will save 2,5 hours travel time.' Then, with some agitation: 'Spending €410 billion, in 20 years, to reduce the time from Berlin to Munich by roughly two hours, that is not a problem. But with one percent of this sum you can save - in one or two years - two and a half hours. But that is too much money.' He gives this as example of a potential that, in his view, is often ignored: 'Only 5% of the passengers in the EU are travelling on high speed trains, 95% of the passengers are on distances that are less than 50 kilometres.'

Michael Cramer gives another example where he finds that just reasoning rationally, easy gains can be made by providing tailor made solutions. 'Take Berlin where you need most time to get

Creating a level-playing field in the EU: fair opportunities for the different transport modes require regulatory action

from your house to the bus station, or the underground station. But in Berlin you can take your bike in trams, underground and S-Bahn. With this combination I am a lot quicker than by car.' He recalls that, when he was in the State Parliament of Berlin, he would go by bike for nine kilometres. 'With public transport I would need 45 minutes, by bike only 30. So I did it at least four times a week, so I saved one hour a week. My car-driving friends, instead went four times a week to a fitness center, but it takes them 30 minutes to drive there, another half an hour to look for a parking place, half an hour jumping in the fitness center, and half an hour back. Six hours in the car for the same 30 minutes of physical activity!'

Bringing an explicitly green transport mode to the EU stage

Even outside politics cycling is clearly one of Michael Cramer favourite topics, so it comes at no surprise that he has also written a cycle guide on the routes along the former Iron Curtain. In his view, cycling is also a key factor in tourism. 'In the past people thought that bike tourists are students, people with no money. I think that has changed totally. There is a study from Switzerland that a bike tourist spends € 35 per day, without accommodation, compared to only € 10 by a car tourist. We know that cycling is environmentally friendly and healthy. But economically, the effects are not that well known. That must be changed. Building infrastructure for bicycles, such as bicycle paths and parking, is cheap, but the economic benefits can be very high.'



We know that cycling is environmentally friendly and healthy. [...] Building infrastructure for bicycles, such as bicycle paths and parking, is cheap, but the economic benefits can be very high.

He gives an example regarding the Danube trail, where in Serbia they counted 500 bike tourists in 2008. And after some signposting it increased in four years to 13 000. 'In the EU, the market for bike tourism is estimated at €44 billion.' For comparison he refers to the value of the cruise ship industry in the EU, good for €39 billion. 'But when the cruise shipping industry wants to have a new terminal for €500 million authorities think: that is good for jobs and business. But €5 million to support bicycle tourism is often considered too expensive. I always mention it to the representatives of the bike industry. You must come together and then there is potential to influence political decision making, also since you are an economic factor.'

EU funding concentrated on big infrastructure projects

Michael Cramer finds it positive that now, for about two years ago, the European Commission has said: 'OK, we will now, for the small missing links, make available €110 million.' He laughs: 'Then many wishes surfaced, and now the amount increased to €140 million euro, and they will continue working on this.' He believes that creating these smaller links will enable the EU to come together. 'Since decades we are investing billions of euros in the rail infrastructure, but if you look at the map, it remains a patchwork with weak cross-border links.' He gives another example of this problem. 'Take the link between Brussels and Valenciennes in France, where the European Railway Agency is located. Today you need two hours to go there from Brussels, by train. There is a gap of not more than 800 metres. If this gap were to be closed, you would only need one hour. But in the last 30 years this missing link has not been built.'

Michael Cramer points out that in principle he has nothing against big infrastructure projects, but that it is sometimes much more efficient to invest in smaller connections. 'For example, the Rail Baltica is very important to connect the Baltic States with the rest of Europe. But the Lyon – Turin corridor, and even the Fehmarnbelt tunnel project, they are not necessary. Moreover, these projects take up a lot of money. I always say: most of the big projects have nothing to do with transport, in my view they were rather created to support the building industry and perhaps even the banking industry.'



...most of the big projects have nothing to do with transport, in my view they were rather created to support the building industry...

When speaking about the role of the EU in funding all these major connections, Michael Cramer underlines that many Member States take EU funds to finance national projects. 'Take for example the transport corridor Stockholm – Palermo. Germany said: we want to have money for the stretch between Berlin and Erfurt. They took EU funding for that. But then, from Munich to the Brenner Base tunnel, they don't even have a design. They are building the Brenner Base tunnel but not doing anything for the connection.' Then he brings up the Gotthard tunnel in relation to which Switzerland, Netherlands, Italy and Germany signed a treaty 23 years ago to ease the traffic flows across the Alps. 'Switzerland built the Gotthard tunnel and now Germany did not do anything to upgrade the rail connections along the Rhine valley. From Basel to Karlsruhe, around €4 billion of investments are needed to build this stretch. And three years ago, the budget in

Creating a level-playing field in the EU: fair opportunities for the different transport modes require regulatory action

Germany earmarked for this project was €19 million euro. So it would take 200 years to build this missing infrastructure, absolutely crazy.' He also gives an example of the opposite, namely to create a tunnel that will enable to increase the number of high speed trains from Italy to France from five to seven per day. 'Not per hour, but per day. Italy wants to have this project built, for an estimated €12 billion. Already now, the French Cour des comptes said it would be €26 billion instead. Which is apparently not a problem for the French and Italian governments. For two trains per day more! But when small projects are discussed with cost overruns the conclusion often is: 'We have to stop it.'

ECA reports to trigger change toward an equal EU level playing field

From 2014 to 2016 Michael Cramer was the Chair in the European Parliament's Committee on Transport and Tourism (TRAN). In that capacity, he has studied several ECA special reports assessing EU performance on transport. He explains that for most transport projects with co-financing the project the decision to carry out the project is taken by a Member State. 'But, I would prefer the Commission to have a stronger mandate to look at where the EU money is actually going. With as main criteria not the national perspective, but how good it is for the EU and, as a result, to what extent it should be funded with EU money! Therefore I very much like the ECA reports. And when I was chairing TRAN Committee I invited the ECA to present the reports in our parliamentary committee.' He recalls a trip MEPs from his Committee made to Greece, where there was a new harbour. 'When construction was finished there was not a single ship. Because the winds were most often too strong. Why is this not taken into account before? Or the ECA report about regional airports, with findings which are absolutely astonishing.'

Michael Cramer is convinced that the EU needs to create a level playing field for transport and stresses how important it is that the ECA produces reports such as the one on airports. 'I know that some airlines were against. We have in Germany 23 airports offering at least some international connections and only six are making profits, all others are in deficit.' He compares it with the situation in rail: 'If a connection there is making deficits it must be closed. We have an unfair competition between the transport modes and we are supporting, with tax payer's money, those modes which are environmentally damaging, and not the ones which are environmentally friendly.'

“*We have an unfair competition between the transport modes and we are supporting, with tax payer's money, those modes which are environmentally damaging.*”

When we discuss the Connecting Europe Facility through which the Commission has a more direct say in transport projects, Michal Cramer is not convinced that this programme will work better in the long term. He gives the example of some big projects in Italy: the Gotthard tunnel, the Brenner Base tunnel, the Lyon-Turin connection. 'Not a single project is finalised. In my view, the Commission should insist that the most important links are finalised first, before other projects can be initiated. For example, as long as Italy is not able or willing to upgrade the rail connection towards the Gotthard tunnel, which is finished, to complete the corridor from Genoa to Rotterdam, they should not get EU money for other projects.' He also believes that the Commission should leverage more with the big projects to get smaller connections also done: 'As long as these small projects are not finalised, you will not get EU money.'

Despite all these shortcomings, Michael Cramer remains optimistic about the future for transport. 'I am convinced we can save mobility and the climate. I will give you an example. In the EU we have a law that requires that each locomotive for each km of track has to pay a toll. For roads, it is the decision of the Member State if they want to have a toll. And in Germany it is only on highways and some regional roads. If you look at the EU, 100% of the railway network is tolled. And only 3% of the road network is tolled.' A situation he considers unsustainable given that rail is environmentally friendly, whereas roads are clearly not.

“*I am convinced we can save mobility and the climate.*”

Looking at aviation the MEP presents points to the hidden subsidies for this industry: 'The airlines get every year €30 billion from EU taxpayers because these airlines do not pay kerosene tax and on international connections they do not pay value added tax. Passengers on rail have to pay this. So it is easy to go for 80 euro from Berlin to Paris by plane. If you take the train you have to pay 180 euro. That is simply not fair competition! And as a Green politician I say very modestly: give the same rights for everybody. Either everybody is paying a toll or nobody. Either everybody is paying an energy tax, or nobody. The same for value added tax. If I go from Berlin by train to Brussels. It takes three times longer, is three times more expensive, and the Member State takes 19% of VAT. If I take a flight for the same journey, there is no VAT, no fuel tax, etc.'

Creating a level-playing field in the EU: fair opportunities for the different transport modes require regulatory action

Michael Cramer does not believe that the EU would get into trouble if a fuel tax would be introduced. 'This competition argument is a fake argument. Of course I believe that a kerosene tax only for Germany is not good, it would not be fair. But we can do it in Europe. We are a strong continent, with many interesting destinations, and many people are coming here, and then they pay kerosene tax.' He believes that paying €15 more to go from Berlin to Lisbon will not make you change your mind to take the trip. But it would help to create an equal level playing field for the different transport modes. 'And then we have not even spoken about the fact that some airlines are prohibiting their staff to be a member of a trade union. Where do we live...?'

When it comes to business interests Michael Cramer provides a grim example. 'At the moment we are fighting for passenger rights for railways. We want to have establish that in all the trains, also the high speed trains, you can take your bike. The railway companies are against, thereby creating a red carpet for their biggest competitors. It is not a problem to take my bike in a flight or in a Flix bus. In the last 15 years, the number of passengers in busses who wanted to take their bike with them increased from 15 000 to 100 000. In Germany, the railway companies will not allow it. And we should have a EU wide information platform, accessible for customers. But railway refused, saying such information is confidential. But if it is not a problem for airlines to share such information, how can it be a problem for them?'

He also gives an example of non-transparent rail ticket price setting: 'Buying an online ticket in Germany, going from Cologne to Prague is cheaper than a ticket from Cologne to Passau, which is a shorter distance.' He sighs: 'Why is it not possible that we have one single app for the European rail network? It looks like the railway companies are among the last nationalistic bodies in the EU. I am even convinced that they would earn more money if they would work together, at a European scale.'

“ *Why is it not possible that we have one single app for the European rail network?* ”

Key challenges from an MEP perspective

Michael Cramer considers fair competition to be one of the key challenges in transport. 'Either everyone is paying VAT or no one, and the same goes for tolls and energy taxes. As a Green, I would say: those transport modes that are environmentally friendly, they have to be subsidised. But I am modest, I just ask for fair competition.' However, he acknowledges the constraints the EU is facing in the area of fiscal policy: 'You know, taxation is not up to the EU, taxation is still a decision of the Member States. And that must be changed. It cannot be that this continues. For creating an equal level playing field in transport, but also in view of companies like Google and Amazon not having to pay taxes or very little. Fair competition requires fairer taxation.'

As second challenge he thinks the EU should reconsider the focus of its investments. 'In 20 years we have built a high speed rail from Berlin to Munich. For €20 billion, saving two hours. But how long will it take to get this investment back? Or the return on investment for the Lyon – Turin connection. This condition of return on investments seems to be gone for the big projects and is only applied for small projects.' He makes the connection between the two points: 'For the rail connection between Berlin and Munich it takes now four hours. But because it is so expensive many people go by plane, from Berlin to Munich, although they do not save time. But they save money.'

The MEP thinks that several ECA reports regarding transport have helped to get some future challenges clearer. 'But I think it would help if the ECA would more often also look for, and present, good examples. Take the ECA special report on airports. Nearly all the examples were bad. Perhaps it was very difficult to find examples of good practice. But, for example if you say, this airport benefitted from improved railway connections, and this has helped them to have attract more passengers and better financial results.'

“ *it would help if the ECA would more often also look for, and present, good examples.* ”

Most importantly, Michael Cramer believes that the EU need to set different priorities for its transport policy. 'Funding is not necessarily the main problem. In my view, only if there is a different policy we can decide whether we need more money. If you do not change the attitude, more funding for transport would just mean that more money is lost!'

EU auditor's recommendations contributing to a reassessment of public spending on port infrastructure in Italy

By Graziano Delrio, Member of the Italian Parliament



Source: Pixabay

Port of Napels

Graziano Delrio was Minister of Infrastructure and Transport in Italy from April 2015 to June 2018. When he was about 18 months in office as Minister, the ECA special report on maritime transport was published, presenting a rather unfavourable assessment of investment in port infrastructure in Italy and other EU countries. Graziano Delrio explains how he, as Minister in Italy, used this report as guidance and inspiration for adjusting spending priorities on port infrastructures in Italy.

Port capacity as focal point...

In 2016, the ECA published its special report 23/2015 *Maritime transport in the EU: in troubled waters – much ineffective and unsustainable investment*. This report, which assessed the effectiveness of national and EU investment in seaports turned out to be an important benchmark for our work in this area in Italy.

When I was appointed to the Ministry of Infrastructure and Transport in April 2015, we set out to analyse why our logistics system was uncompetitive. The severe imbalance between national infrastructure supply and demand soon became apparent. Italy's quays could potentially handle over 18 million TEU – standing for Twenty foot Equivalent Unit, the unit of cargo often used to describe the capacity of container ships and terminals. This was, however, significantly above the 10-11 million TEU historically transported. Despite these existing imbalances, further coastal expansion measures were either planned or already underway to increase capacity by another 10 million TEU. None, or very few, of these measures were plans to invest in technological innovation or control systems, customs modernisation, 'last mile' connections between ports of national importance and the rail network or TEN-T corridors, 'last mile' road connections, or incentives to encourage a shift from all-road transport to road/rail or road/sea combinations.

Italian public expenditure on logistics was almost entirely focused on increasing port capacity. This was unnecessary, despite the large number of port and logistics operators. On the other hand, there was no provision for the factors needed for competitiveness, such as connections with inland terminals and networks, digitisation, simplification or support for multimodal transport.

... while interconnectivity was the key need

We then drew up the national strategic plan for ports and logistics, which the Italian government approved in August 2015. The plan set out the profound changes we had decided to make to the sector in ten strategic objectives and 50 specific actions covering standards, regulations, operation and administration.

One objective was a painstaking project review to reorient public resources from unnecessary infrastructure works to useful connections and innovations in the national logistics system. Some major projects, such as those in the ports of Ravenna, Augusta and Livorno, were reorganised and brought into line with traffic forecasts. We also put expansion works in places such as Civitavecchia and Venice on hold. Other projects, by contrast, were fast-tracked as they were strategic in making ports accessible by sea, starting with dredging the ports of Gioia Tauro and Naples. Many measures were completed, such as in Taranto, Cagliari and Messina.

We diverted the resources recovered from these complex project reviews to other types of intervention, in particular intangible infrastructure. We saw these as a priority in order to make Italian logistics more competitive. We recovered resources for one specific RFI programme, 'Rail/sea link – last mile', on which we spent more than €200 million. We invested a further €40 million in digitising services and operations within the Customs Agency and Harbourmaster's Office by introducing the PMIS and AIDA systems. Lastly, we used around €250 million to finance the *Ferrobonus* and *Marebonus* combined transport incentives.

... and EU – Member State cooperation part of the action

We invited Enrico Grassi, who had coordinated the ECA audits of seaports in Italy, to the second national ports and logistics forum held by our ministry in Livorno in 2017, to see for himself what a great inspiration the ECA special report was for our government. An excellent example of how EU auditors can make a helpful contribution to addressing key policy issues in a Member State!



Former Minister Graziano Delrio and ECA auditor Enrico Grassi, both speaking at the second national ports and logistics forum held in Livorno in 2017

Progress is slow on High-Speed Rail across the EU

By Oskar Herics, ECA Member



High speed train in Spain

Source: Pixabay

In June 2018 the ECA published special report 19/2018 in which it described the 10 000 km high-speed rail network in the EU as an 'ineffective patchwork of national lines without proper coordination across borders.' The EU auditors visited France, Spain, Italy, Germany, Portugal and Austria and examined around half of the current network. Oskar Herics, the ECA Member who coordinated the audit, explains in the article* below why the auditors came to the conclusion that the European high-speed rail network does not yet exist in reality. And how this affects the lives of Juan and Giulia, two student friends from Spain and Italy wishing to travel across Europe.

High-speed rail bring numerous benefits for passengers

In Europe, Japan and China in particular, but also in other parts of the world, high-speed rail is considered an innovative transport mode, with numerous benefits for passengers. Often, high-speed rail can compete with air travel on speed and is actually much faster, especially when measured from city centre to city centre. It is a comfortable, safe, flexible, and environmentally sustainable means of transport. Moreover, better connecting regions across the EU makes them more competitive and contributes to European integration by bringing people closer together.

But is high-speed rail also cost-efficient and effective, and well thought-out and planned?

During our audit, we examined the situation on the ground (or rather, on the tracks) in six Member States that have received over 80% of all EU funding allocated to high-speed lines since 2000: France, Portugal, Spain, Austria, Germany and Italy. Overall, we assessed 10 high-speed rail lines and four cross-border connections, covering some 5 000 km of high-speed lines, or half of the EU's current network. Seven of these lines were already operational at the time of our audit. We also analysed 30 projects, worth over €6 billion in EU co-financing, including the Brenner Base Tunnel on the planned Munich-Verona high-speed line, connecting Germany to Italy through Austria. We only analysed lines co-financed by the EU; however, most of the funding for these lines obviously still comes from national sources.

Our general conclusion was that a European high-speed rail network does not yet exist in reality. In its current state, it is rather an ineffective patchwork of poorly connected national lines. We also found that there is no realistic long-term plan to connect the different parts of the EU's

* This article was also published by Railway-News on 4 October 2018. See <https://railway-news.com/eca-high-speed-rail/>. It has been re-edited for this publication in the ECA Journal.

existing network. In particular, we found that building high-speed lines crossing national borders is not a priority for national governments, and that the European Commission has no power to force them to do so in order to ensure rapid progress towards completing the core network corridors previously agreed by all Member States. To us, this means that the added value the EU co-financing provided is low.

Practical implications of a patchwork high-speed rail network

Meet 'Juan,' a fictional character invented for the purpose of this article. He is Spanish, lives in Murcia and likes to travel across the EU. Since the turn of the millennium, his country has been investing heavily in high-speed rail infrastructure, making its network the world's second-largest after China's. With some €11 billion, Spain is also by far the largest recipient of EU contributions for high-speed rail, accounting for almost half of the EU total of €23.7 billion. Now Juan wishes to travel to Trieste, Italy, where his girlfriend Giulia lives. Juan and Giulia met during their Erasmus study exchange programme in Groningen, the Netherlands. But Juan cannot just get on a plane and fly to Trieste: there is no direct connection, so he would need to change planes at different airports, probably both in Spain and Italy. He would probably also have to fly with different airlines, which would also make it difficult for him to keep both travel time and costs down.

Our findings indicate that it would also be difficult for Juan to travel by high-speed rail seamlessly in combination with other transport modes. For example, even though high-speed lines pass near Spain's busiest airports, in Madrid and Barcelona, there are no plans to connect them to the high-speed rail network by high-speed services. So Juan is facing similar issues to many of his fellow Europeans as regards accessibility, interconnectivity and even ticketing. For example, rail ticketing compares poorly with that of the airline industry, and single e-ticketing solutions, such as those allowing passengers to book trips involving more than one operator or crossing borders, are much easier for air travel than for rail. Furthermore, there are virtually no search engines for combined air/high-speed rail travel.

Juan also has many friends abroad who, like him, wish to travel in a fast, safe, and environmentally friendly manner within Europe. Unfortunately, the possibility of doing so seamlessly via high-speed rail is still rather limited in Spain, just as it is across the rest of the EU. So, in practice, Juan will need to take a conventional train to Madrid, change there on to a high-speed train going through Barcelona and onwards to cross the border into France, where he will then have to change on to a conventional train towards Italy, and so on. This is a reality for many citizens, as there is no EU-wide network of high-speed lines. In fact, this 'network' can rather be described as a patchwork of national high-speed rail lines planned and built by the Member States in isolation, resulting in poor connections between them, especially along national borders.

High-speed trains running slower than design speeds

In many cases, we found that trains are running on very high-speed routes at far lower average speeds than these lines are designed to handle: on the lines we examined, they ran on average at less than 50% of the maximum design speed. We warned that this raises questions about sound financial management, as an upgraded conventional line would have been enough to achieve such speeds at a much lower cost.

Only two of the 10 lines examined were operating at an average speed of above 200 km/h, and none above 250 km/h. For example, Spain's high-speed network for the most part uses the standard gauge found in the rest of the EU. This is the case on the Barcelona-Madrid and Madrid-Seville lines in particular. However, three of the lines we examined still use the traditional wider gauge. On these lines, the maximum operating speed is limited to 250 km/h and the real average speed is far below the maximum operating speed of 300 km/h for high-speed operations in the country. What is more, the use of different gauges makes interconnectivity impossible.

Cost-benefit analyses should be used to support investment decisions

High-speed rail infrastructure is expensive. The lines we examined cost an average of €25 million per kilometre. In total, aggregate cost overruns for the projects and lines examined were 5.7 billion euros at project level and 25.1 billion euros at line level. Eight of the thirty projects we examined had been delayed for at least one year, and five out of ten lines had experienced delays of more than a decade.

A major factor in the cost of building a line is the specific geological conditions where it is built. Besides these external aspects, the cost of a line increases proportionally with its design speed, since infrastructure capable of handling very high-speed operations is more expensive. This implies that setting up a line running at 300 km/h or more, for example, is particularly costly. The

decision on whether a full very high-speed line is really necessary therefore needs to be made on a case-by-case basis.

Giving due consideration to the alternative solution of upgrading existing conventional lines could save billions of euros. For the planned Venice-Trieste line in Italy, for example, we found that building the high-speed line cost €5.7 billion more than an upgrade would have done and saved only 10 minutes in travel time by comparison. This translates into a cost of €570 million per minute of travel time saved. This is considerably higher than the average cost of €90 million per minute of travel time saved for all the lines we examined during our audit.

We also found significant differences in how the Member States assessed the need to build a high-speed line and how they organised the decision-making process. In particular, we found that decisions to build high-speed lines are often based on political considerations, and that these major public investments were not always founded on a sound cost-benefit analysis. In one case, in France, we found that the cost-benefit analysis had resulted in a negative benefit-to-cost ratio. This was also the case in Spain, where several lines were not considered to be viable from a socio-economic perspective. In Germany, cost-benefit analyses were carried out only after the decision had been taken.

Moreover, we observed that the cost-benefit analyses are generally not updated to take account of changing circumstances. For example, the cost-benefit analysis for the Brenner axis between Munich and Verona – which includes one of the longest railway tunnels currently under construction – has not been updated since 2007 despite already a delay by around eleven years and increased costs by 46 %. In the meantime, however, critical factors such as building costs, anticipated delays and traffic forecasts have changed considerably and further reduced the benefit-to-cost ratio.

Target of tripling the network unlikely to be met by 2030

Although the length of national high-speed rail networks is steadily growing, the EU target of tripling the length of high-speed rail lines from currently some 10 000 km to 30 000 km by 2030 is unlikely to be reached. A key factor is the long time it takes to plan and construct a high-speed rail line: overall, for the lines we examined, it took an average of 16 years for a line to become operational.

But there is also good news: the number of passengers using high-speed rail in Europe is growing steadily, from roughly 15 billion passenger-kilometres in 1990 to more than 124 billion in 2016. This growth, however, is not spread equally among the lines. Ideally, a high-speed line should carry nine million passengers per year to be successful. But for three of the seven completed lines we examined, the number of passengers carried was far lower. This poses a high risk to the sustainability of these lines. In addition, nine of the 14 audited lines and cross-border connections, including the three mentioned above, did not have a sufficiently high number of potential passengers living in their catchment areas to be successful. This carries a risk of having to deal with not less than €2.7 billion of ineffective EU co-funding.

Room for further development in high-speed rail...

We approached our audit very much from a passenger's point of view. For example, we analysed the different connections, travel times and prices for business and leisure passengers, and we found that high-speed rail can compete with other modes of transport. However, there is room for improvement in many practical aspects, in particular: better-integrated ticketing systems, better accessibility of train stations, more frequent connections and competitive ticket prices. These are all key factors that can help high-speed rail in acquiring a larger market share over time.

Rail transport in general suffers from the failure to fairly apply the user-pays and polluter-pays principles across the various transport modes. In addition, even though the European rail industry is operating as a single market with more than 500 million customers, there are still over 11 000 national rules to be complied with, and no common rules for cross-border rail transport. Furthermore, the liberalisation of the rail sector is progressing only very slowly. As far back as 2010, we recommended lifting all technical and administrative barriers in another special report, but our audit revealed that they still exist in 2018. This being the case, it is difficult to believe that true EU-wide competition can exist in the high-speed rail sector.



ECA auditors on a benchmarking visit in Japan.
From left to right: Pietro Puricella, Oskar Herics, Luc T'Joen, and Thomas Obermayr

...and a number of specific recommendations

In the light of our findings, we made a number of **recommendations** to the European Commission, including:

- carry out realistic long-term planning
- agree with Member States which key strategic sections to implement first, based on an assessment of the need for very high-speed lines, as well as close monitoring and enforceable powers
- link EU co-financing to earmarked strategic priority projects, effective on-track competition and the achievement of results
- simplify cross-border tendering procedures, use “one-stop-shops” for the various formalities, and lift all remaining administrative and regulatory barriers to interoperability improve seamless high-speed rail operations for passengers through, for example, e-ticketing and simplification of track access charges

Our report generated high media and public attention in some Member States and it was even covered several times outside Europe. However, publishing our findings, conclusions and recommendations is not the final step in the process. We have presented to and discussed them with the European Parliament and the Council of Ministers, the EU’s legislative and budgetary authorities and, most recently, had an exchange on the report with a Japanese delegation on behalf of the Ministry of Transport of Japan.

Many of the recommendations we make in our reports are put into practice: this high level of take-up underlines how much our work benefits EU citizens. And finally, going back to Juan and Giulia, the ECA published a report on the Erasmus+ study exchange programme in the EU in early September 2018.

The French *Cour des comptes's* rail transport audits: helping the rail system to adapt

By André Le Mer, Cour des comptes française



Source: French Cour des comptes

A TGV on the High-Speed Rail Nord

When it comes to high-speed rail many Europeans had their first *fast rail* experience in the TGV – the *Train Grande Vitesse*. Since the 1980's France has been the pioneer in this transport mode. And since a lot of public money, and particularly French public money is involved, so is the French Court of Audit, the *Cour des comptes française*, assessing also performance and impact of the French railway system in general and the TGV in particular. André Le Mer, conseiller maître in the *Cour des comptes*, has been in charge of many audits in this area. He explains below about the questions raised, the approach used and impact of the work he and his colleagues undertook in this area.

Various issues at stake

The French Court of Audit, the *Cour des comptes française*, is pursuing a multiannual audit strategy of reviewing the various components of rail transport in France. The report we published in 2014 on high-speed rail -*High-speed rail: a model extended beyond its relevance* - marked a turning point here, as it challenged an economic model that was too focused on large-scale projects to the detriment of 'ordinary trains.' We try to answer questions about rail-transport issues that are both simple and complex: how can the performance of the French railway system be improved while reducing the cost to taxpayers? Each of our audits enables us to deepen our methods of investigation and analysis through regular exchanges of experience with our colleagues at the ECA.

Rail transport is an important audit topic for the French *Cour des comptes* because the issues at stake are very varied: performance and service quality; economic, social and industrial aspects, and massive financial and budgetary commitments for taxpayers. Each year, France allocates almost € 14 billion to its railway system in the form of various contributions.

A multi-annual audit strategy

The French *Cour des comptes* pursues a multiannual strategy that is based on audits of France's major public transport companies (SNCF, the national rail carrier, and Paris's RATP urban network) and on thematic surveys covering entire sectors of the railway business. We have focused on rail passenger transport in particular, as this area will be opened up to competition in France at the end of 2019.

In 2013-2014, we therefore audited the high-speed transport (TGV) network and the network of conventional intercity trains. In 2016, we examined the rail-transport network of the Ile-de-France region and SNCF's freight business, and since 2018, we have been investigating the regional express transport (TER) network, as well as carrying out a performance audit of RATP's transport services in Paris.

Since 2011, we have also carried out several audits of the management of the French rail network and of companies responsible for major infrastructure projects. In 2017, we audited the *Société du Grand Paris*, which manages the *Grand Paris Express* automatic metro project, and in 2018-2019 we are auditing TELT, the company responsible for the Franco-Italian rail tunnel project between Lyon and Turin.

The 2014 high-speed rail audit: a two-year investigation

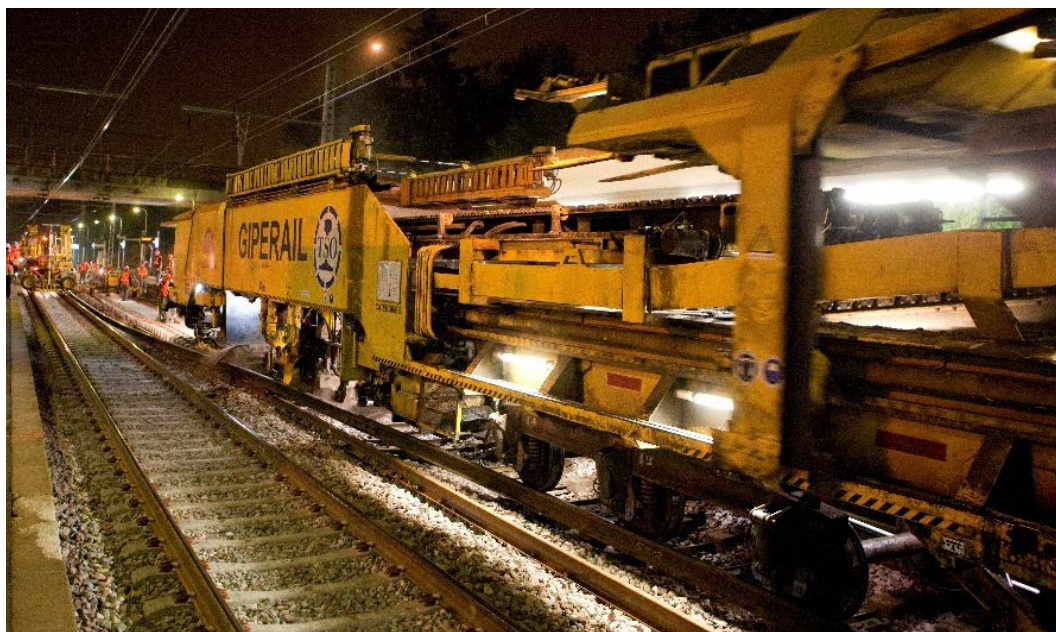
In 2013-2014, we examined one of France's *grands projets*: its high-speed rail network, which has developed very rapidly since the first high-speed rail (HSR) line was opened between Paris and Lyon in the early 1980s.

The audit consisted primarily of sending detailed questionnaires to stakeholders (the State, SNCF and RFF, the body responsible for managing the rail network), examining public and non-public documents (minutes of management board meetings and statements of inter-ministerial decisions), and field trips. Two HSR projects were given particular attention: the *Sud-Europe Atlantique* (Southern Europe Atlantic) project and the Poitiers-Limoges HSR project. We also interviewed a large number of managers from the companies concerned, as well as officials from French ministries and the European Commission (DG Move).

Our audit lasted two years. After a thorough feasibility and framework study, we created a major documentary database that included benchmarks, statistical data (from the Ministry of Transport, Eurostat, INSEE and SNCF, as well as raw national transport-survey data) and academic studies.

The audit findings: the economic limits of a major industrial success

Our report yielded three main findings. The first confirmed that the HSR network has been developed to the detriment of the conventional rail network. A previous audit from the *Cour des comptes* back in 2012 had already sounded the alarm about the lack of financial resources for maintaining the conventional network, and several technical audits carried out by Swiss experts had drawn attention to the worrying state of the French network.



Source: French Cour des comptes

Renovation of the French railway network through railway construction wagons

The second finding was that the decision-making process for creating new high-speed lines was almost always biased in favour of building them. The political decision to launch a project all too often preceded socio-economic impact studies, which were often unduly optimistic. The State's shortage of resources also meant that it had to seek funding from local authorities, and led it to make disproportionate commitments about a line's route or number of connections, thereby undermining the future profitability of the lines concerned.

The third finding was that the TGV network was progressively less cost-effective. The French rail model allows TGVs to leave the high-speed network in order to run at much lower speeds on the conventional network. 'Ordinary' trains, by contrast, cannot switch to the TGV network. To satisfy the requests from many towns for a high-speed service, TGV services were therefore extended far beyond the HSR network. The upshot was that the TGV network, with 230 destinations in France, was overstretched and became unprofitable. At the same time, the conventional intercity network, which was cheaper in principle, began to shrink and its rolling stock to decline.

In short, TGV services were becoming less profitable and the cost of the HSR system was in danger of no longer being publicly sustainable, while resources to renovate the conventional network were also lacking. The rail network manager RFF (which became *SNCF Réseau* in 2015) sought to resolve this conundrum by incurring ever greater debts (€ 45.2 billion at the end of 2017).

Our report elicited considerable public reaction in 2014, including sharp criticism from politicians and user associations, who regarded our findings as questioning one of France's major industrial achievements and its policy of guaranteeing equal access to the HSR network. Nevertheless, four years on, we now see that our findings are broadly shared. The French government has thus declared that no new high-speed lines will be launched and that the financial priority is now to renovate existing networks.

Progressively more sophisticated investigation methods

The development of our rail audits has meant that we have had to adapt our methods. Our audits have evolved from traditional audits of organisations to performance audits with a focus on analysing effectiveness and efficiency. Accordingly, we have just produced an analysis of the economic and financial model of *SNCF Réseau* and are currently carrying out a performance audit of Paris's RATP urban network.

First of all, we are striving to improve the preparation and planning of our audits and we are frequently also involving the regional chambers of the French *Cour des comptes*, responsible for auditing local and regional authorities. Our work also entails making international comparisons, which are very useful in the area of transport. For our ongoing audit of the TER network, we have visited Sweden, Germany and Switzerland to seek comparable data.

Our investigations now take place more often on the ground, and involve meeting staff where they are actually working, e.g. at night-time maintenance sites and signal boxes for our audit of *SNCF Réseau*. We also often work with samples, e.g. as part of our current RATP audit, where we have chosen to study certain bus and metro lines.

Lastly, we are aware of our limitations. So increasingly we call upon outside experts, e.g. to evaluate information systems.

A close relationship with our ECA colleagues and greater dialogue with other European SAIs

The publication of our HSR audit provided an opportunity to deepen our relationship with our colleagues at the ECA. We came to Luxembourg in October 2014 to present our report, and the resulting exchange of views was very much appreciated by all parties. Dialogue between our respective institutions is already frequent: our top managers meet once or twice a year, and our transport specialists also now meet on a regular basis to discuss planning, and their respective approaches and methods. An example was the recent meeting we had in Paris in January 2019.

This dialogue is all the more fruitful for being informal and very pragmatic. Auditors of the *Cour des comptes* and the ECA were therefore able to discuss HSR matters together in 2017 when the ECA launched a performance audit of Europe's HSR network, culminating in its special report

19/2018 report *A European high-speed rail, network: not a reality but an ineffective patchwork*. An auditor of the French *Cour des comptes* was particularly pleased to be able to take part in the ECA's related audit missions in France as an observer. The ECA's experience of performance audits in the area of transport also serves as an incentive for us to develop our own audits in the field.

Such exchanges are particularly useful in areas such as major cross-border projects that are implemented jointly by several Member States. Here, the ECA has a unique overview, by virtue of auditing EU financing and its impact. However, it is in this very area of major international projects - where the funding at stake is significant - that we have noted the constant danger of a 'blind spot' between national Supreme Audit Institutions (SAIs). The fact that, legally speaking, SAIs have only partial jurisdiction over transnational projects means that their audit work needs to be coordinated in order to obtain a comprehensive view of any given project. It is surely in this area that cooperation between national SAIs – and, if EU funding is involved, possibly also with the ECA - will have to progress in the future.

An ex-post evaluation of a Japanese high-speed rail project — Hachinohe to Shin-Aomori on the Tohoku Shinkansen

By Eiji Onaka, Japan Transport and Tourism Research Institute



Source: Pixabay

A Japanese bullet train – *Shinkansen*

For most Europeans the best-known high-speed rail project outside Europe are the high-speed trains in Japan. They go by the name of *Shinkansen*, but are known in English as 'bullet trains'. The first *Shinkansen* line opened in 1964. The network is famous not only for its speeds of up to 320 km/h (Japan holds the world record for trains at 603 km/h), but also for its efficiency and punctuality. Japan also leads the world when it comes to the key role played by rail in connecting the different parts of the country and its top-notch maintenance of trains and infrastructure. Good as this is, however, what really counts is the societal impact of high-speed lines: what do they mean for people's daily life? This was an important component of Eiji Onaka's research. As Senior Research Fellow in the consulting department of the Japan Transport and Tourism Research Institute, he recently examined an evaluation of the *Shinkansen* stretch between Hachinohe and Shin-Aomori, both in the north of Japan. In this article he shares the main objectives and results of the evaluation.

The Japan Transport and Tourism Research Institute

The Japan Transport and Tourism Research Institute (JTTRI) is an independent, non-profit organisation which was founded in 1968 through initiatives of the Japanese Ministry of Transport, academic institutions and business organisations. The JTTRI maintains close relations with the Japanese government, the academic community and the transport sector and conducts research and surveys on topical issues. It has served the government and the transport/tourism sector in this way for the last 50 years.

The JTTRI's research activities have included:

- Preparing the evaluation manual for a railway project;
- Evaluating the underlying assumptions and soundness of a proposed railway project so as to comment on the advisability of running the project;
- Conducting surveys on the effect/impact of Shinkansen operations.

A JTTRI delegation visited the ECA on 4 February 2019

On 4 February 2019, a delegation of the Japan Transport and Tourism Research Institute (including Eiji Onaka) met with ECA Member Oskar Herics and the audit team in charge of the audit on high-speed rail in the EU (special report 19/2018) for an exchange of views on the European and the Japanese high-speed rail systems and the main differences and similarities between the two. The topics discussed also included the regional development and environmental impacts of high-speed rail. During the audit, the ECA team had also visited Japan to benchmark high-speed rail in Japan with developments in the EU.

Evaluation of public projects in Japan

In Japan, the main purpose of a public project evaluation is to improve the efficiency of the project and ensure transparency. There are the usual three types of evaluation distinguished by their focus:

- Ex-ante evaluation, including a cost/benefit analysis, before a new project is approved;
- Mid-term evaluation;
- Ex-post evaluation after completion of the project. Here the aim is to conduct a follow-up assessment of the project's effectiveness and its impact on the environment, passenger choices, etc. Subsequently, corrective measures may be proposed and followed up, if necessary. Another aim is to use the evaluation results for planning and assessing similar projects and, last but not least, for reassessing the evaluation method itself.

In Japan, evaluations are considered important since they help citizens to understand a project's value. Evaluating a project may also enhance communication and improve understanding in and of local communities.

A simple outline of the ex-post evaluation of a Shinkansen project by the Japan Railway Construction, Transport and Technology Agency (JRRT) is presented below.

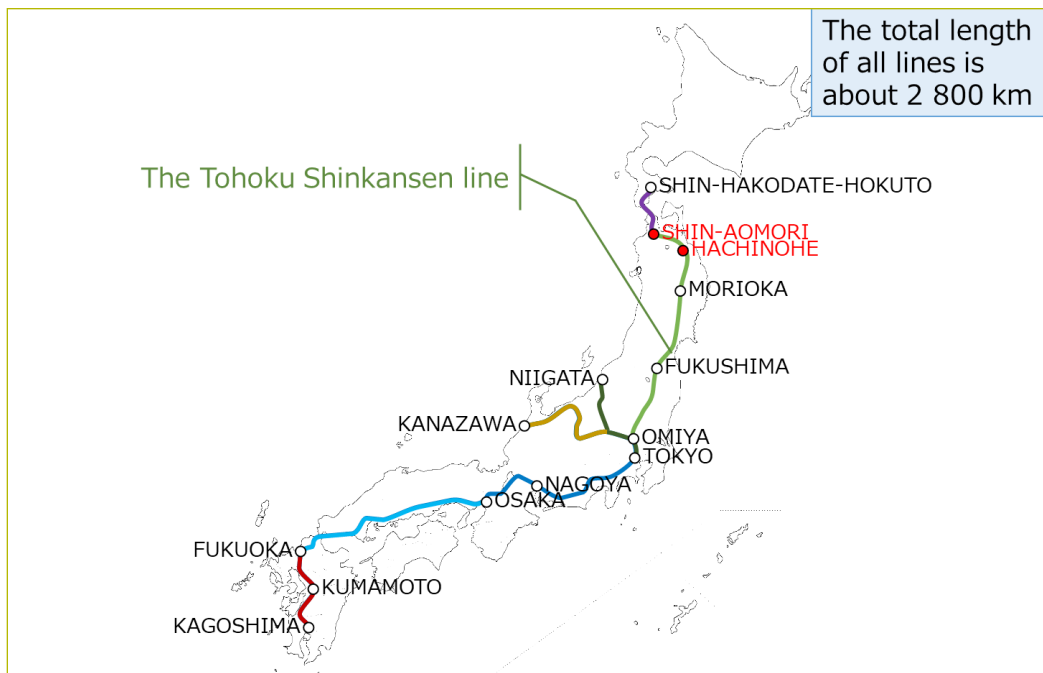
Outline of Tohoku Shinkansen between Hachinohe and Shin-Aomori

The aim of this project was to expand the national Shinkansen network in line with government legislation, thus improving and contributing to national economic development and local population growth and promoting the region. In particular, it was intended to contribute to:

- expansion of the settled area;
- the development of tourism and recreation;
- economic revitalisation along the Shinkansen corridor.

The Tohoku Shinkansen between Hachinohe and Shin-Aomori started to operate in December 2010. The line is 81 km long. When it opened, it shortened travel time between Tokyo and Shin-Aomori by 16% — from 3h 59 minutes to 3h 20 minutes. Now, about eight years later, Japan Railway East has further increased average speeds, slicing another hour from the journey.

Figure 1: Basic Shinkansen map

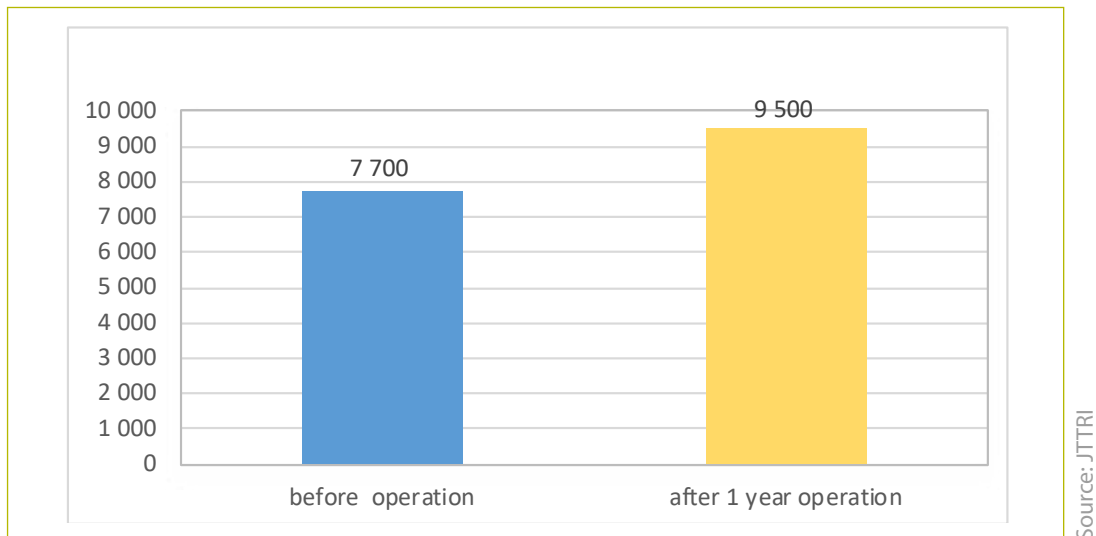


Different types of Shinkansen on display

Outcomes and impact of the project for passengers

We identified five outcomes with an impact for passengers using this part of the Shinkansen network. First, as Figure 2 shows, there was a considerable increase in the number of passengers carried between Hachinohe and Shin-Aomori stations: from 7 700 per day before operation to 9 500 per day after one year in operation.

Figure 2 - Average number of Shinkansen passengers between Hachinohe and Shin-Aomori



Second, comparing the situation in 2009 with that in 2013, there was a change in the modes of public transportation used for major routes. [The share of rail travel to Aomori region from nearby Miyagi region increased from 80% to 88%, while the share of expressway bus travel decreased from 20% to 12%. For travel from the vicinity of Tokyo to Aomori region, the share taken by rail increased from 68% to 73%, while that of air declined from 26% to 20% (see Table 1).] [Table 1 shows that there was a clear modal shift towards rail from expressway bus and air.]

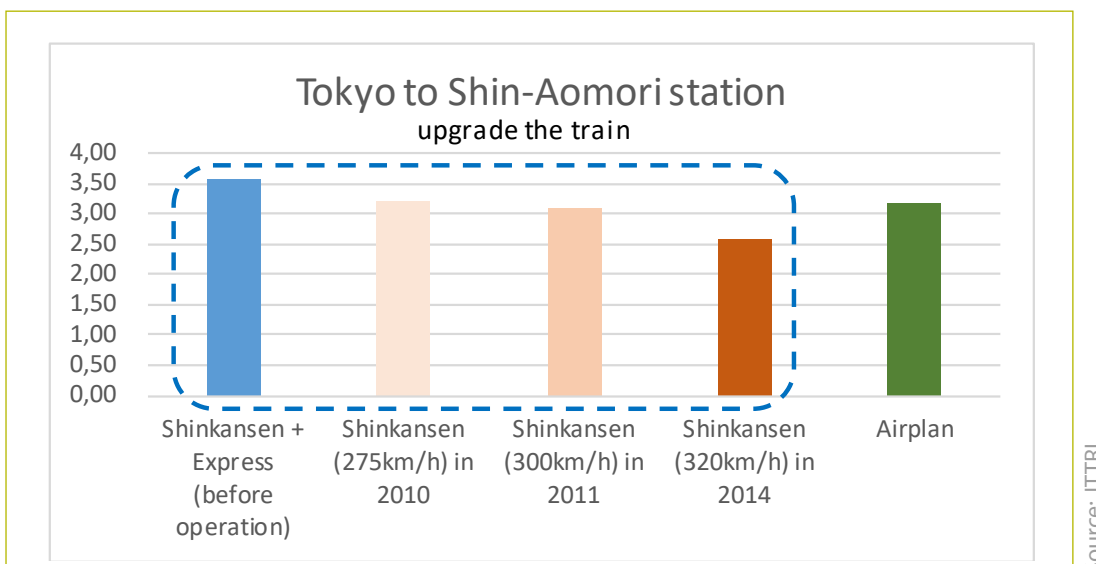
Table 1 - Changes in public transport modes 2009-2013

Route	Train	% shift	Bus	% shift	Air	% shift
Miyagi to Aomori region	from 80 to 88%	+ 8	from 20 to 12%	- 8		
Tokyo to Aomori region	from 68 to 73%	+ 5			From 26 to 20%	- 6

Source: JTTRI

A third outcome related to time savings. Journey times were cut by 52 minutes between Sendai and Shin-Aomori (2 h 19 minutes → 1 h 27 minutes) and by 60 minutes from Tokyo to Shin-Aomori (3 h 59 minutes → 2 h 59 minutes) (see also **Figure 3**).

Figure 3 - Travel time between Tokyo and Shin-Aomori for each mode of transport



A fourth outcome related to fare increases:

- The fare between Sendai and Shin-Aomori went up from 10 670 yen to 11 520 yen (+ 9.3%);
- The fare between Sendai and Shin-Aomori went up from 16 890 yen to 17 350 yen (+ 9.7%).

As the fifth and last outcome under this heading, we identified a substantial increase in the number of people able to reach a given destination within a given timeframe. The population of the catchment area within four hours of central Tokyo has risen from 500 000 to 1 110 000 people.

It can be concluded from the above that the Shinkansen project for this route could well stimulate and revitalise the response and interaction of local populations

Evaluating impacts and influence on society as a whole

Where the regional economy is concerned, the non-resident population — those moving to the region temporarily for work or study — increased by 30% for both Aomori and Miyagi regions. By contrast, there was a 10% increase in the number of people moving from Aomori region to the Tokyo metropolitan area (commuters).

We estimate the positive impact on the national economy to be worth 23.5 billion yen per year. Local governments along the Shinkansen line are making efforts to increase visitor numbers and tourist activities.

Lastly, we estimate the environmental impact, as far as CO₂ and NO_x emissions are concerned, to be 26 000 tonnes/year and 100 tonnes/year respectively.

Effects of disaster prevention measures - experience from the Great East Japan Earthquake

The Japanese archipelago is an earthquake-prone region. Thus, seismic design is a precondition for all railway infrastructure projects. At the time of the Great East Japan Earthquake (a 9.0-magnitude quake) on 11 March 2011, 27 trains were operating on the Tohoku Shinkansen. Fortunately, any catastrophe such as derailment or structural collapse was avoided, and no passengers were injured by the earthquake.

We found that, despite the huge magnitude of the earthquake, the existence of disaster prevention measures enabled operations to be promptly resumed in 49 days. Considering the difficulty of predicting natural disasters, disaster prevention in design needs to be well balanced between pursuing safety and increasing costs. On the basis of past experience and current knowledge, we believe that proper design and construction are indispensable.

Evaluations to identify impact and improve future choices

After completion of a project such as this Shinkansen route, an ex-post evaluation is carried out to examine whether the operations are appropriate and determine their multiple effects for passengers, the economy, society as a whole and security. Moreover, to improve future implementation and results, it is essential to leverage evaluation information in the form of feedback for similar projects planned and executed elsewhere.

Passing common-or-garden trees, on a run-of-the-mill train

By Lisette van Erp and Werner van Hoof, train travellers



Source: Lisette van Erp and Werner van Hoof

Arriving in Florence

Policy makers and project leaders may sometimes have a tendency to embellish the achievements of investments in the transport sector. But how do users of the different transport modes experience and value the possibilities offered. We asked two ardent users of the 'train mode,' Lisette van Erp and Werner van Hoof, EU citizens from the Netherlands and Belgium who are living in Antwerp, to share some of their experiences. It turns out that having a passion, stamina and financial means for and with trains are welcome features if you want to travel by rail.

Inspired by a poem

The poem 'Bericht aan de reizigers' (Message to travellers) by Jan van Nijlen, chiselled in the vaults of Antwerp Central Station, is the inspiration for a train trip to Rome. We would like to experience how 'passing common-or-garden trees, a run-of-the mill train takes us to the heart of Rome.'

We like to be on the move, but we also want to limit our CO2 emissions as much as possible. Within Europe, trains are therefore our preferred choice. But you need to put in some extra efforts if you want to travel by train, and it is also more costly.

On our way to Rome, we want to visit a number of places. We plan with an ample margin, setting aside two weeks for the trip. During our search for trains, we soon end up with Interrail. There are various formulas, of which the possibility to use the train during seven days within a time span of one month was the most attractive to us.

The price of a train journey

We decide to buy a first class ticket. We pay €425 per person for the Railpass (price in second class is €335). In some countries you are required to reserve a seat for some trains, such as high-speed trains. On the first day we want to travel from Antwerp via Paris to Turin. The reservation fees for first class appear to be €25 to Paris (€20 second class) and €89 per person (€62 second class) for the Paris-Turin section. In the end, we therefore opted for a cheaper ride to Milan via Germany and Switzerland.

Description	Reservation fee in €	Booking fee in €
1 01-Nov-2018 BRUXELLES-NORD (Belgium) - KOELN HBF (Germany) for 2 persons	12.00	8.00
2 01-Nov-2018 KOELN HBF (Germany) - BASEL SBB (Switzerland) for 2 persons	12.00	8.00
3 02-Nov-2018 BASEL SBB (Switzerland) - MILANO CENTRALE (Italy) for 2 persons	26.00	6.00
4 03-Nov-2018 MILANO ROGOREDO (Italy) - ROMA TERMINI (Italy) for 2 persons	20.00	6.00
5 09-Nov-2018 ROMA TERMINI (Italy) - VENEZIA MESTRE (Italy) for 2 persons	20.00	6.00
6 13-Nov-2018 VENEZIA MESTRE (Italy) - VERONA PORTA NUOVA (Italy) for 2 persons	20.00	6.00
7 13-Nov-2018 VERONA PORTA NUOVA (Italy) - BOLZANO BOZEN (Italy) for 2 persons	20.00	6.00
8 15-Nov-2018 BOLZANO BOZEN (Italy) - MUENCHEN HBF (Germany) for 2 persons	30.00	8.00
9 15-Nov-2018 MUENCHEN HBF (Germany) - FRANKFURT(MAIN)HBF (Germany) for 2 persons	12.00	8.00
10 16-Nov-2018 FRANKFURT(MAIN)HBF (Germany) - BRUXELLES-NORD (Belgium) for 2 persons	12.00	8.00
	Reservation fee in €	184.00
	Booking fee in €	70.00
	Total price in €	254.00

Source: Lisette van Erp and Werner van Hoof

Screenshot of some of the reservation fees

The reservation and booking fee for our entire trip eventually come to €127 per person. So you can take the train to Rome and back for €552 per person. In Italy and Germany booking and reservation fees are the same for first and second class. For second class the total amounts to €462.

During our search on the railway website, a pop-up of an advertisement for an airline ticket to Turin appears: €30 one way per person. With Ryanair you go back and forth to Rome for €48, with Alitalia for €197 and with Brussels Airlines for €218. Tempting, but we persist with the train option.

This situation applies however also to shorter distances. To travel to family and friends we often use the international train from Antwerp in Belgium to the Netherlands. This train has become considerably more expensive since the train authorities have decided that this journey needs to go via Breda. Only if you book more than a week in advance is the extra charge still manageable. If not, it is cheaper to rent a car via a shared car system. Not exactly ecologically responsible, so we usually still choose the more expensive train.

We are lucky to be able to pay the extra cost for travelling by train. We would like to continue to choose this option and try to keep our air and car journeys to a minimum. Yet it is true that many cannot make such a choice, simply because it is too expensive. They prefer to travel on a cheap plane ticket. Notwithstanding all the talk in favour of climate action in recent years, it is surprising that, considering the related taxes, air travel continues to be subsidised, while the costs for travelling by train are rising.

Taking the bike on the train

We like to take our bikes with us on our trips. We have often travelled with our bikes on the train, even across borders. More often than not, however, places for bicycles are limited, or travel takes an extra long time because a number of trains exclude bicycles.

This time we leave the bike at home. Setting up a train route in Europe, buying tickets for people and bicycles and making the corresponding reservations is so complicated that only a professional ticket office clerk in a large station can find his way around it. They usually have an hour's work with it. Sometimes it is just not possible to make a reservation (as on the Eurostar to

Passing common-or-garden trees, on a run-of-the-mill train

London: 'Come to Brussels-Midi and we will see if there is room for the bikes,' was the answer on the phone two months before departure).

On our next trip we want to cycle from Pau in southern France to Lisbon in Portugal. This time we do not choose for the combination of train plus bike to Pau and back from Lisbon. We opt for the bus. It is cheap, you can take bicycles along and the rules are the same in all countries. And, being true to the poem of Jan van Nijlen, the ride also will be 'passing common-or-garden trees.'



Source: Lisette van Erp and Werner van Hoof

Courtesy package received after the trip, if you have filled in the trip info



Identifying trends in transport audits in the EU

By Di Hai, Private Office of Alex Brenninkmeijer, ECA Member



ECA team setting up the database on performance audits in transport. From left to right: Nils Odins, Guido Fara, Di Hai and Marjeta Leskovar

What is the role for Supreme Audit Institutions (SAIs) in assessing their country's transport policies? Which is the most audited transport sector? What are these audits about? What does a typical transport audit look like? To answer these and other questions, a team of performance auditors at the ECA have taken the initiative to set up a database of transport audits carried out by SAIs from around the world. Di Hai, attaché in Alex Brenninkmeijer's Private Office and previously working as auditor in this area, explains what work has been going into this project, that aims to spot and analyse trends in auditing transport and mobility issues more quickly and to design new and innovative transport audits at the ECA.

Imagining the audit landscape – assembling knowledge

Over 350 performance audit reports in the field of transport have been identified by our auditors on the website of Supreme Audit Institutions (SAIs) of EU Member States ('the database') by the end of 2018. Our search was restricted to publicly available reports dated after 2005 only. The number may be incomplete due to the limited access to information and linguistic constraints. Nevertheless, the collection of these audit reports portrays a fair overview of the development of transport performance audits in the EU over the last 15 years.

The database that the ECA's auditors have collected exhibits the richness and popularity of audit topics and is currently organised according to the country where the report originates from, the year of publication, and the titles and/or the executive summaries of the report. The average number of reports published by a national SAI per year ranges from one to three in the database, with the United Kingdom, Czech Republic, France, and Poland being the most active Member States in publishing in the field of transport. On the other hand, some SAIs rarely publish any transport-related audit report due to - just to name a few factors - their relatively small size, outer geographical location, alternative sources of funding and selective audit strategy, even though these SAIs may have a significant impact on the functioning of the Trans-European Transport Network (TEN-T).

Overall, there is an increase in the total number of transport performance audits published per year and especially since the outbreak of the financial crisis in 2008 a surge is notable. Moreover, reports with similar audit topics may showcase different audit approach and criteria, whereas reports with different audit topics may still have very comparable audit methodology and components.

This also illustrates in what way our database differs from a similar EUROSAI project (see **Box 1**)

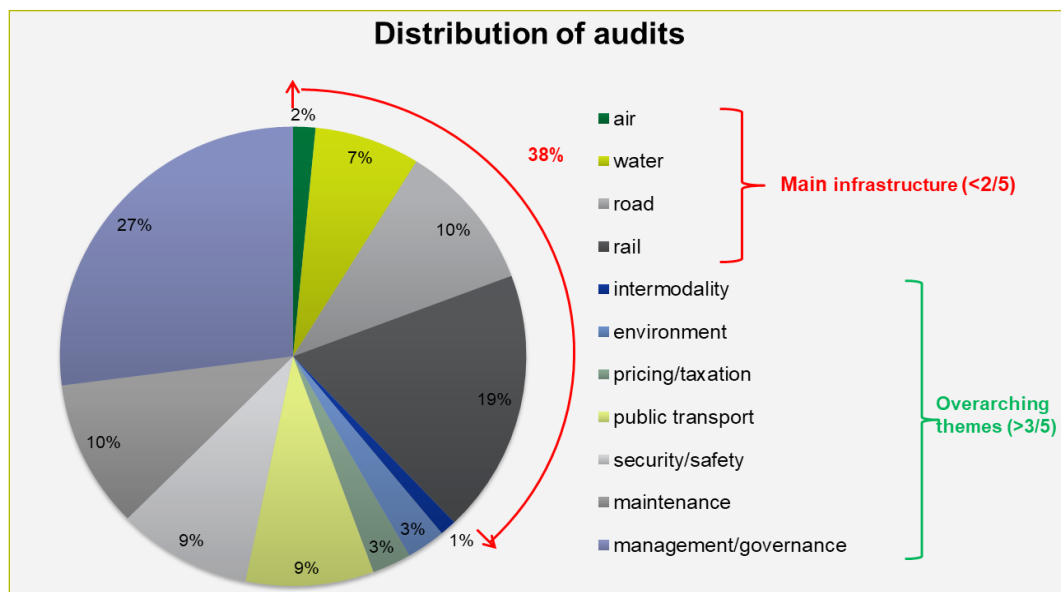
Box 1 - EUROSAI database

EUROSAI has made public a similar database of SAIs’ audit reports on its website since 2015. This database covers financial, compliance and performance reports in all sectors not limited to transport alone. However, its information is based on the voluntary notification of the reports by the SAIs themselves, and does not always include mixed forms of studies and evaluations that could not be easily classified by the SAIs as performance audits according to the INTOSAI standards and guidelines. Currently, there are around 54 reports available in the EUROSAI database that relate to audit work in the transport sector.

Analysing the trend and fashion – finding inspiration

Around 40% of the reports collected in the ECA’s database relate to the main transport infrastructure in the four transport modes described in the Commission’s policy papers, i.e. air, water, road and rail (see **Figure 1**). The remaining 60% of the collected reports relate to the overarching transport themes, i.e. intermodality, environment, pricing and taxation, public transport, security and safety, maintenance, and management and governance. It should be noted, however, that our classification of performance audit reports is based on the information contained in the titles, subtitles and/or executives summaries of the reports in the database, and that we did not undertake a more detailed analysis of the full content of the report.

Figure 1 – SAIs’ audits reports across various transport audit areas



Among the four transport modes, rail attracts the highest number of performance audit reports; around 49% of collected reports relate to rail, compared to 28% for road, 19% for water, and 4% for air. **Table 1** shows a list of audit topics within each audit area, and a check mark is added to the topic if it has been the main audit subject of a performance audit published by the ECA. For example, within the audit area of water, reports from SAIs have been found relating to waterways and ports. Both topics have been dealt with by the ECA’s special reports 1/2015 and 23/2016, respectively.

Table 1 – Main audit topics within the transport areas of Air, Water, Road, and Rail

Main Transport Infrastructure	Audit area √ = recently covered by an ECA audit
Air	<ul style="list-style-type: none"> airport infrastructure √
Water	<ul style="list-style-type: none"> IWW fund waterways √ docks ports √
Road	<ul style="list-style-type: none"> highway infrastructure √ intercity connection and bypass roads cycle path bridges on roads public roads √ cost control of road investments √
Rail	<ul style="list-style-type: none"> passenger and freight transport √ locomotives network investments √ high speed lines √

Among the overarching transport themes, management and governance attracts the highest number of performance audit reports, namely around 44% of collected reports, compared to 17% for maintenance, 15% for security and safety, 14% for public transport, and less than 5% for pricing and taxation, environment, and intermodality, respectively. **Table 2** shows a list of audit topics within the three most popular audit areas based on the information contained in the titles and/or executive summaries of the reports. Examples of reports in the area of management and governance include public private partnerships (PPPs), as well as one-stop-shops for environmental assessments and for fee collections. The latter topic has not yet been covered by an ECA's special report. Also the area of maintenance has not yet been subject to any exclusive performance audit by the ECA.

Table 2 – Main audit topics within the transport areas of Management, Maintenance and Security

Overarching Transport Themes	Audit area √ = recently covered by an ECA audit
Management & Governance	<ul style="list-style-type: none"> masterplans/country plans/regional plans for transport infrastructures management of public funds by transport authorities √ management of state property public enterprises and safety agencies authorization of transport infrastructures and rolling stock √ federal versus regional governance of transport network management contracts with infrastructure developers and traffic managers PPPs and public procurement √ one-stop-shops for environmental assessments and for fee collections restructuring and privatization in rail, public transport and aviation sectors renewing of concessions and relation between State and concessionaires
Maintenance	<ul style="list-style-type: none"> roads, motorways, express-ways, highways railways dredging works
Security & Safety	<ul style="list-style-type: none"> decreasing accidents increasing road safety using fines & income from number plates road safety for pedestrians and cyclists road rescue lanes road traffic control and signalisation air traffic control and aviation security √ dangerous traffic spots on roads security of tunnels railway speed restrictions √ control command and signalling of trains √ automatic train protection systems √ telecommunication systems

Designing new ECA audits – putting knowledge and inspiration into practice

Using the database as a source of knowledge and inspiration, a team of performance auditors at the ECA could test their ideas against the trends in the work of other SAIs. One may observe that, firstly, most SAIs have a strong favour for non-infrastructure related audits, or so-called policy audits. Secondly, some topics are examined repeatedly in different Member States and may require a closer look by the ECA at the EU level, whereas other topics are nationally bound for which the knowledge and expertise of the ECA's auditors would not add significant value and instead would be better invested in EU-prone or cross-border topics. Thirdly, the incorporation of some horizontal audit areas such as 'the environment' into transport audits deserves more attention. Examples would be audit ideas such as 'green transport' or 'implementing climate change targets through transport policy'.

The comparison of audit topics across the EU also shows differences in audit strategies. Some SAIs choose smaller scaled or focused audits, whereas other SAIs go for broader scaled or mixed audits. Some SAIs follow national priority such as ensuring oversight and safety in the field of transport, whereas other SAIs run systematic and balanced check-up of all government agencies or programmes in the field of transport. The database therefore also provides food for thought on the scale, the number, and the variety of performance audits in the field of transport that an audit institution may wish to undertake, sometimes in cooperation with its peers.

Completing the learning cycle – building audits that matter

In the EU, transport is a shared competence of the Union and its Member States. The majority of EU transport spending programmes is co-financed through the European Structural and Investment Funds (ESIF) and administered under shared management by both the European Commission and the national and regional authorities. This multilevel governance structure implies that an important part of the ECA's audit work on the programmes and policies takes place in the Member States, while the same programmes and policies may also be scrutinised by national or regional audit institutions.

Being the EU's independent external auditor requires the ECA to build audits that matter. This is so when the ECA could build on the work done by other SAIs in the Member States. Harnessing the latest audit trend and fashion in transport audits in the EU is a way to improve exchange and coordination between the work of the ECA and of the SAIs in the Member States. The learning cycle of assembling knowledge, finding inspiration, and developing practice helps to select relevant audit topics, to apply top-notch audit methods and to have maximum impact. And this is what matters the most.

Auditing motorway construction in the Czech Republic – from the perspective of a national SAI auditor

By Jiří Příkryl, Supreme Audit Office of the Czech Republic



Source: Pixabay

Motorway in the Czech Republic

In Europe travelling by car remains popular. This requires the construction and maintenance of an extensive road infrastructure, including motorways. Jiří Příkryl, who heads the Transport Audit Unit of the Supreme Audit Office of the Czech Republic, presents some key results of the audits done on road construction in his country, and the role of benchmarking to put progress into perspective.

Assessing motorway network development

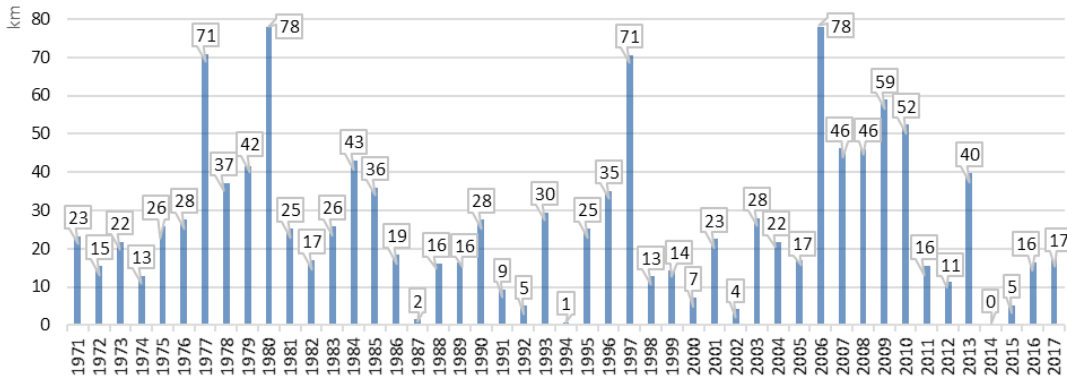
In 2017 the Supreme Audit Office of the Czech Republic (SAO) finalised a comprehensive audit of motorway network development in the Czech Republic. The main objectives of this audit were to evaluate the implementation of government plans, to assess how construction of motorways was prepared, to audit what the actual costs of construction have been, and whether six selected motorway investment projects achieved their objectives at reasonable cost. The audit report, 'Audit Conclusion 17/05', was published in January 2018.

Ambitious planning

Our audit report on the motorway network starts by stating – not to the liking of the Czech Ministry of Transport - that according to plans from the late 1990s the Czech motorway network should have been completed in 2010. That was the plan. Of course, government plans are often very ambitious and the economic situation and priorities can change, leading to extended completion dates and an increase in construction costs. This was certainly the case in this area.

According to current government plans, the Czech motorway network, consisting of 19 motorways, should be completed by 2050, with a total length of 2 073 kilometres. The following graph shows kilometres of motorways and expressways¹ put into operation each year. Construction of motorways started in 1967 and the first sections were finished in 1971.

Figure 1 – Number of kilometres of motorways newly built in the Czech Republic in the years 1971-2017



Source: Audit report No 17/05, Data: Road and Motorway Directorate of the Czech Republic

Figure 1 shows the number of kilometres of motorways newly built in the Czech Republic in the years 1971-2017. This simple graph, showing, for example, that in the 2013–2017 period covered by our audit only 16 kilometres of motorway on average were finished per year, caused some serious media reaction. In our audit report the SAO also expresses a concern that in the forthcoming years, 2018–2020, there is a strong possibility that this average will only rise to 17 kilometres per year. Under these circumstances, there is a risk that the remaining 833 kilometres of the desired network will not be finished by 2050. In January 2019 it became known that in 2018 only 3.8 kilometres of new motorway had been finished. This again led the media to question the ability of the government to implement its plan in this area as scheduled.

Preparatory phase causing major delays

The main reasons for such a slow pace of motorway construction were problems in the preparatory phase – obtaining zoning and building permits, the environmental impact assessment (EIA) and settlement of property rights (land expropriation). These issues – which may not be specific to the Czech Republic – had already been discussed in a report we published five years ago (Audit Conclusion 12/18). Between 2008 and 2012 the preparatory phase (from obtaining the EIA to issuing a building permit) took nine years on average. The Czech Ministry of Transport then adopted some measures to accelerate the preparation of motorways. However, five years later, when we followed-up on that audit, the same phase already took an average of 13 years, with extreme cases taking 20 years and more.

The slow progress in the preparatory phase was caused by repeated ‘attacks,’ appeals and protests by citizens in the EIA, zoning and building proceedings. Czech law allows the same arguments to be used in comments on the EIA and the permit documents. Nowadays the most effective way of obstructing preparation of such projects is to challenge the exceptions obtained to laws for the protection of specific plants and animal species (such as hamsters, frogs, crayfish, rare beetles, etc.) that live (or may live) in the motorway corridor.

Another important cause is the unfinished settlement of property rights. In every motorway construction project, issues with land or property owners were stalling construction. This was because the building permit could only be issued once all the land had been successfully appropriated from its previous owners. Problems arise when the owners are unknown, bankrupt, dead, or when they do not agree with the price offered. Expropriation legislation was not sufficiently effective and allowed the negotiations and court proceedings to take years. Much of the motorway construction we examined in our audit was awaiting property rights settlement, with 95–99 % of the land bought, but the missing 1 to 5% often taking years to solve.

1 Since 2016 most of the expressways were ‘re-marked’ as motorways

Construction of the Říkovice - Přerov section of the D1 motorway

The construction of the Říkovice - Přerov section of the D1 motorway, for which the EIA was issued in 2000, could serve as an example of the problems described above. Seventeen years after launch, the property settlement had still not been completed. In addition, due to the change in the shape of an extra-level junction, in 2017 the Road and Motorway Directorate requested a change in the zoning permit. However, this change required an exception to the laws on the protection of plants and animal species. One of the parties appealed against the exception, leading to repeated postponements of construction, which had been planned for 2018–2021. Another delay is most likely to occur, and work is now scheduled to start at the end of 2019.

Benchmarking costs of motorway construction

On the positive side, our audit also showed that the cost of motorway construction is decreasing. The construction of one kilometre of motorway cost an average of CZK 152 million (€6 million) between 2013 and 2017. This is about CZK 190 million (€7.5 million) less than what it was built for between 2008 and 2012, as can be read in our audit report published in 2013. This means a cost reduction of over 55% in less than ten years. This situation was mainly brought about by the participation of a higher number of bidders in the more recent public procurement process. It has also led to recent claims that prices are too low and the bidders' offers are on the edge of profitability.

This was also one of the reasons why we turned to benchmarking - the average price of 1m² of motorway construction was CZK 6 870 (€267), which was almost the same as the average price in Germany, Greece, Poland, and Spain (e.g. amounting to CZK 6 883 (€268), as was reported by the ECA in its special report 5/2013 *Are EU Cohesion Policy funds well spent on roads?*) This finding was rather reassuring: on the whole, construction prices had not been significantly over- or underestimated.

Benchmarking construction time

We did not only compare prices. In the past, Poland was often presented in the Czech media as an example of best practice with an admirable capacity to build, on average, 170 to 280 kilometres of motorways/expressways per year. In the Czech Republic the rate was at best 10% of this. So, in the context of cooperation between Supreme Audit Offices, the presidents of the SAO of the Czech Republic and the SAI of Poland, NIK, arranged a study visit to Poland to provide further insights for the Czech auditors.

The sheer numbers are truly impressive: in 2003, just before joining the EU, Poland had 631 kilometres of motorways/expressway, while the Czech Republic had 838. In 2017, 14 years later, Poland already had 3 486 kilometres, i.e. an increase of 2 855 kilometres. In 2017 the Czech Republic had 1 240 kilometres, i.e. an increase of 402 kilometres. Preparing a road investment in Poland takes around five years. The basis for such success is mainly appropriate legislation that integrates three separate administrative procedures (zoning permit, settlement of property rights/land expropriation and the building permit) into one, with only one single decision required to authorise the construction of a road.

Legislative impact of our audit

The presentation of our audit results has contributed to increased pressure for the adoption of another amendment to the *Act on Accelerating the Construction of Transport Infrastructure*, effective from July 2018 onwards. To some extent, this amendment creates administrative conditions for motorway construction that are quite similar to Poland's. However, only time will tell whether this change was sufficient to speed up the problematic preparatory phase and substantially increase the number of kilometres of motorway built in the Czech Republic. And this may require another audit by the SAO of the Czech Republic.

Making the implementation of EU transport and mobility policy happen – the role of INEA

By Dirk Beckers, Executive Director of the Innovation and Networks Executive Agency



Source: INEA

10 year anniversary celebration hosted by Dirk Beckers (second person from the right)

In 2018, the Innovation and Networks Executive Agency (INEA) celebrated 10 years of operations. It was an important moment for INEA to elaborate on its work and to reflect on how it contributed to executing and supporting many EU initiatives on mobility and transport. Dirk Beckers has not only been INEA's executive director since its official creation in January 2014, but has also been in charge of setting up INEA's predecessor, the TEN-T Executive Agency in 2008. So he is well placed to explain the role of INEA when it comes to connecting Europe in the different transport modes, the challenges that the EU needs to address in this area, and how INEA intends to contribute to do so successfully.

10 year anniversary to look back.... and forward

Putting things into an historical perspective can be very rewarding. In 2008 we set-up the TEN-T Executive Agency in 2008, managing the TEN-T programme (€8 billion for 2007-2013 period) with 44 staff, quickly rising to 99. Then, in 2014, we became responsible for the management of additional programmes, and our agencies became INEA. We employ now almost 300 staff who are managing a budget of €33.6 billion, implementing parts of the Connecting Europe Facility (CEF), Horizon 2020 (H2020), as well as the legacies of the TEN-T and Marco Polo II programmes .

Our 10 year anniversary was a great opportunity to take stock of the agency's achievements and I am proud to have led our organisation since 2008 to where we are now. Our anniversary was also a good moment to reflect on the challenges we face now and in the future. I think it is fair to say that INEA has a track record of focusing on the delivery of tangible results, while assuring the sound financial management of the delegated EU budget. This includes measuring the performance and impact of the projects, as well as finding ways to increase visibility of the programmes and encourage synergies.

The challenges faced by the Agency are linked to the implementation of the programmes. While the European Commission defines the policy, strategy, objectives and priorities, INEA is

responsible for managing the projects throughout the entire grant management cycle – from publishing the calls for proposals to the ex-post audits. In this process, our purpose is two-fold:

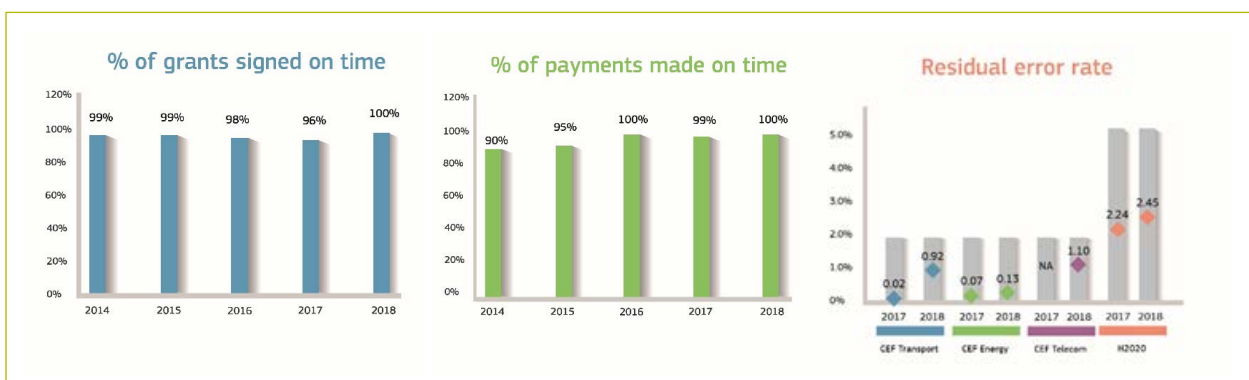
- making sure that the EU budget is well spent; and
- supporting both the European Commission and the participants in our programmes so that their projects are most effective in bringing added-value to EU citizens.

Our successes: projects improving citizen's life

Our most important objective is to guarantee that the projects supported by the programmes that we manage deliver on what they promised to achieve. This means supporting our participants in our programmes virtually every day: alerting them of new funding opportunities, informing them of the publicity obligations that they have to respect, advising them about which project cost can be co-financed from the EU budget (and which not), inviting them to present their projects at conferences and events organised by INEA or the European Commission and much more. Everyone in INEA, from the project managers through to the people in logistics and HR, are aware that it is only by working together and by developing and enacting strong procedures that we can effectively support our project beneficiaries and of course the European Commission.

Another important aspect is the quality of INEA's financial management, which is particularly relevant for the ECA (but not only). The projects would not be able to deliver without INEA properly managing the financial aspect of thousands of grant agreement. Our agency has demonstrated its capacity to provide a stable and robust environment which allows to strike a good balance between cost effective programme management and compliance with the financial rules. This results in low rates of irregular spending, adequate time-to-pay and low costs of controls. A good practice is the systematic presence of INEA's staff to the onsite meetings for project audits, including those undertaken by the ECA. This definitely contributes to a better understanding of the working methods in both directions, helping us to improve our work.

Figure 1 - Some key financial performance indicators



Source: INEA

The results of all our efforts are there to be seen. Many projects have come to conclusion during the last 10 years, and citizens and businesses are already enjoying the benefits of better infrastructure and innovative research, which delivers concrete results.

Our challenges: improving every day

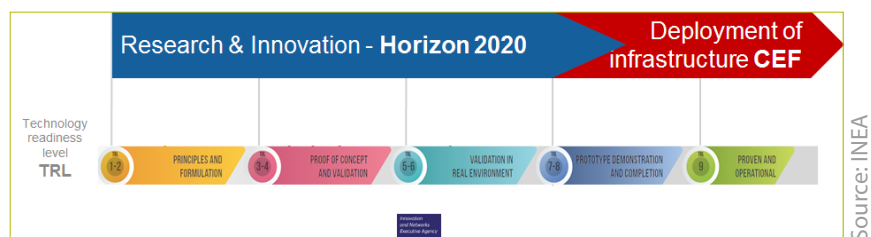
Since 1 January 2014, when INEA came into being, we have signed 1 845 grants, almost all within the prescribed time limit. We have recruited top talent from all over Europe to manage our programmes and projects. We have organised events throughout Europe. We have audited projects and, whenever necessary, recouped funds which were not properly justified to ensure the sound financial management of our budget.

Yet, many challenges remain, in particular for the CEF programme, which by nature is composed of large infrastructure projects. Such projects are usually long-term and their implementation depends on a series of procedures governed at national level, which also must comply with the applicable EU rules. These procedures (public procurements, expropriations, authorisations and permits, including environmental ones) are often lengthy and may create delays, which, together with cost overruns, result in serious deviations from the original planning. Despite the fact that most of these factors are outside of INEA's control, we are committed to providing advice to

programme participants and helping them to achieve an effective and efficient execution of the terms of the grant Agreement.

A key aspect is the establishment of a trust-based relationship with the participants, allowing a continuous and close monitoring of the project and a 'reality check.' A concrete example of this follow-up is the review halfway through the CEF Transport programme of a large portion of supported projects, which was conducted in 2018. Based on the results, we are currently in the process of agreeing with the participants the best way forward for the management of these projects. This may also result in the release of funds currently reserved for certain projects, which could then be used for the support of others, thus making a better use of the EU budget.

A further key challenge we are facing is the effective promotion of synergies between sectors and also between programmes (mainly CEF and H2020). We do this by promoting a better leveraging of EU funding and deployment of more effective use of previous research and innovation results.



With the support of the European Commission, we have been raising awareness of each programme and its respective calls to the different stakeholders. As a result, the 2019 and 2020 H2020 work programmes make a greater reference to the CEF programme and we are expecting to see an increasing number of technologies that have been developed in the EU research programme featuring in proposals applying to CEF calls. In addition, the agency is fostering synergies between the three sectors of the CEF programme by promoting transport, energy and digital connectivity. I hope this will also positively impact the way the next multiannual financial framework (MFF) is being designed.

The ECA has shown a consistent interest in the activities of INEA, in particular in the transport sector. Currently several performance audits are ongoing, which concern programmes managed by INEA or the agency itself. We are witnessing a progressive shift from compliance to performance, which can be seen in the ECA's increased attention to the EU added value of spending. Examples are the recent audits on high speed rail, EU research and innovation for climate and energy, deployment of Single European Sky ATM Research, the EU transport flagship projects, road transport and urban mobility. These audits (some of which are currently still ongoing) target whether the life of European citizens will be improved when the projects are completed. I believe that their results will offer us the opportunity to further improve our efficiency and effectiveness at INEA.

Wherever possible, we aim at implementing ECA recommendations, which help to improve our working methods as swiftly as possible.

Another instrumental tool to assess the results of our projects are performance indicators, which are helping to ensure better spending, increased accountability and transparency. INEA has been very active in this field and notably assessed CEF indicators and proposed improvements, which are now the basis for preparing a future performance framework for the 2021-2027 programming period. Although it is crucial that we are able to measure the direct output of EU funded projects, it is also important to consider what overall impact programmes like the CEF are having, for example on economic growth or the environment.

A project success: the Brenner Base Tunnel

The Brenner Base Tunnel (BBT) is the centrepiece of the railway upgrade from Munich to Verona on the Scandinavian-Mediterranean corridor reaching from Finland and Sweden in the North to Malta in the South. The overall project aims at building a 55 km rail tunnel between Innsbruck (Austria) and Fortezza (Italy) that will remove a major bottleneck for both freight and passenger transit traffic. Together with the Innsbruck bypass, it will be the longest rail tunnel in the world (64 km) and will enable heavier and longer trains to operate on the line. Once completed, the traffic throughput can increase from the current 240 trains per day to 591. By removing this transalpine bottleneck, travel time will decrease and traffic will be shifted from road to rail. The trip from Innsbruck to Fortezza takes 80 minutes today; through the BBT it will take only 25 minutes .



Source: INEA

The BBT is being financed to a large extent by the EU. Since 2005 the EU contribution amounts to €1.6 billion, including the co-financing of works/studies until 2020. The tunnel is foreseen to start operations in 2027.

The BBT has been subject to several audits conducted by the ECA, such as the audit on the high speed rail network, where the ECA highlighted the difficulties in realising major cross-border infrastructure projects.

The future for INEA

The efficient deployment of smart solutions for transport, energy and ICT is one of the main EU priorities and INEA has a central role to play in successfully achieving these objectives on the ground, through its funding of research, of innovative solutions and of the deployment of infrastructure. I am convinced that despite the numerous challenges INEA is facing, , we are well equipped to respond to the needs of various stakeholders and continue to deliver excellence for all its stakeholders, also thanks to the professionalism and dedication of all its staff.

An important aspect will remain our relationship with the ECA, which I am sure will be as fruitful in the future as it has been in the past. In the 10 years from 2008 to 2018, 99 of INEA's projects have been examined in the context of the annual Statement of Assurance (SoA) exercise, where the auditors mainly look at the compliance with rules. In 2017, one third of the audited projects were without observations. INEA has also been the auditee in eighteen performance audits on the implementation of the programmes it manages. We are now looking forward to the results of the current audit which has as main audit question 'Does the EU Innovation and Networks Executive Agency's management of EU programmes optimise their implementation?' and to explore together with the ECA ways to further improve our work.

Europe goes into space: looking back on what has happened since the ECA audited the 'Galileo' programme 10 years ago



By Els Brems, Sustainable Use of Natural Resources Directorate,
and Olivier Côme, European Space Agency



Lift-off for four Galileo satellites on 25 July 2018 from Europe's spaceport in French Guiana atop an Ariane 5 launcher.

Source/copyright: ESA/CNES/Arianespace/Optique video du CSG

Since the 1990's, the European Union has been developing its own global navigation satellite system (GNSS). It is called 'Galileo', it is one of the flagship space programmes of the EU and the European counterpart of the USA's Global Positioning System (GPS). This programme is clearly a strategic investment for the EU, given the importance of high-precision positioning services in many sectors of our economy. Els Brems and Olivier Côme explain what the Galileo programme is about and how an audit done by the ECA in 2009 helped to move the Galileo programme forward. Olivier Côme participated in this audit and currently works as head of the EU Administrative Service Division in the European Space Agency and, in that capacity, remains familiar with the financial management issues relating to Galileo (mainly its procurement activities related to infrastructure). Els Brems was the head of task for the ECA audit on Galileo. She currently works in the Sustainable Use of Natural Resources Directorate at the ECA where she is senior auditor.

Why Galileo ?

When the Galileo programme was initiated, the original idea was to create a (primarily) civilian equivalent of the US-based Global Positioning System (GPS) or the Russian GLONASS system, so that Europe would be autonomous. Named after the Italian astronomer Galileo Galilei it was to be an independent high-precision system and the use of its basic services would be free and open to everyone. Precise positioning is deeply woven into the fabric of our daily lives (just think of the navigation systems in our cars and mobile phones) and has become essential for a large number of economic sectors and fields of application (see **Box 1**). Galileo is intended to provide better positioning services than its competitors at higher latitudes and, in combination with US and Russian satellites will provide metre-scale positioning accuracy almost anywhere on earth.

Box 1 - Importance of GNSS and Galileo in various fields

Navigation services, including

- Road traffic surveillance and improved traffic safety with the European eCall distress service
- The rail sector, supporting the train driver advisory service;
- International maritime navigation aid; improving maritime safety by contributing to worldwide Search&Rescue service (SAR);
- Precision farming - high precision navigation service (free of charge).

Pending international harmonisation and certification, Galileo is not yet fully integrated into aviation navigation and surveillance. Currently, the European Geostationary Navigation Overlay Service (EGNOS) is used for air traffic management. By augmenting the existing GPS signals, it offers enhanced vertical precision and integrity of the signal, allowing pilots to rely on it for a safe approach.

Land surveying – particularly useful in conjunction with Copernicus earth observation programme; greater numbers of satellites and frequencies means greater accuracy

Civil protection – particularly useful in disturbed environments (disaster areas), again in combination with Copernicus

Encrypted service for sensitive information (public authorities, the military)

Social networks and games

Fitness, sport and activity tracking

By increasing the number of satellites and frequencies available Galileo will provide a better service for users, particularly where signal reception has been poor, and greatly increase the EU's strategic autonomy.

Source: EPRS; Galileo Satellite Navigation System: Space applications on earth; Scientific Foresight Unit (STOA); October 2018

Where are we now with Galileo?

The European Commission officially made a 'Declaration of Initial Services' on 15 December 2016, which marked the start of the Galileo exploitation phase. Since then, and after an extensive testing period with 26 satellites in orbit and their supporting ground infrastructure, Galileo has been offering three services:

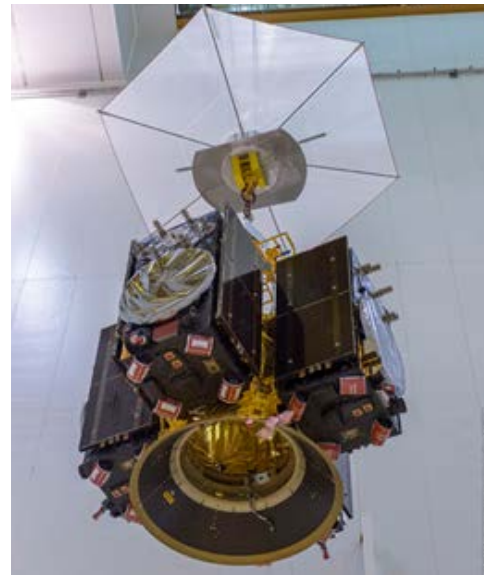
- Open Service: a free mass-market service for positioning, navigation and timing;
- Public Regulated Service for government-authorized users;
- Search and Rescue Service, which is Europe's contribution to the international distress beacon locating organisation COSPAS-SARSAT.

The deployment phase is expected to be complete in 2020, when Galileo's space segment will include a total of 30 satellites (including 6 spare ones).

Europe goes into space: looking back on what has happened since the ECA audited the 'Galileo' programme 10 years ago

For the time after 2020, industrial work on the next batch of satellites is already well underway, with additional satellites in production and a series of launch events expected in 2021/2022. Industrial procurement is also currently being organised for what are known as transition satellites, which will pave the way for the second generation of Galileo satellites in the next decade.

Equally important, deployment of Galileo's complex and large ground segment continues to be further expanded in accordance with strict performance standards, with stringent security requirements and constant system upgrades (for business continuity, operability improvements and further robustness). The ground infrastructure includes sensor stations worldwide, two control centres, Mission Uplink stations, and Telemetry, Tracking and Command stations.



Source/copyright: ESA/CNES/Arianespace/Optique
Video du CSG – P Baudon

Lifting satellites up to the top of the Ariane 5 launcher ahead of their launch on 25 July 2018



Source/copyright:
ESA/Fermin Alvarez Lopez

Galileo ground station on Jan Mayen Island in the Norwegian Arctic with protective 'radome' housing. The site houses a Galileo Sensor Station plus satellite link to pass data back to the Galileo ground system.

Box 2 - Some key financial data

According to a 2018 European Parliamentary Research Service study (STOA - October 2018), Galileo is expected to have a calculated cumulative value of approximately €130 billion in the period of 2014-2034 (together with the geo-stationary satellite-based augmentation system EGNOS). Immediate direct benefits are expected for the space industry as well as downstream markets for GNSS-based applications and services. On the other hand, according to this same study, total Galileo-related budget commitments (including Horizon 2020 research expenditure and EGNOS) from the early 1990s until 2020 are estimated to amount to approximately €16 billion.

Is Galileo already being used?

Anyone with a Galileo-enabled device is now able to use signals provided by Galileo's global satellite constellation. Signals are highly accurate, but not available all the time. This is why Galileo signals are used in combination with other navigation systems (like GPS) during this initial phase. The upcoming satellites will enlarge the Galileo constellation and will gradually improve its signal availability worldwide.



Source/copyright: ESA

Galileo's global ground segment, situation March 2018.

Since the Commission's initial service declaration, we have seen several developments showing that Galileo is recognised in the market of GNSS receivers. To give a few examples. In September 2017, Apple introduced its new iPhone 8, 8 Plus and 10/X, which are equipped worldwide to receive Galileo signals. It joined Samsung, Sony, Huawei, BQ and other smartphone devices which are already compatible with Galileo. Since 2018, a Galileo-enabled device has also been built into every new car sold in Europe, thus enabling the eCall emergency response system.

Today, we also have information that all major GNSS receiver chips support Galileo. Considering all this, one can conclude that Galileo has reached the mass market of location-based services. Galileo (coupled with GPS) is de facto a standard for dual frequency applications functioning with both signals.

Why did the ECA look into Galileo?

When we audited Galileo in 2007-2008, the programme was only in its development and validation phase, already suffering from delays and cost overruns. It was the first EU space programme and a key area of concern was the set-up for managing the programme. For our team it was a challenging task involving audit work at the European Space Agency (ESA), the Galileo Joint Undertaking, the Commission and the private sector (space industry).

The ECA performance audit helped decision-makers to envisage alternative solutions to those available in 2007. Quite soon after the start of our audit, it became clear that the programme needed a significant and rapid re-orientation. There were two main issues:

- first, the Galileo concession project was simply not progressing, with industry not accepting (or not being in a position to accept) the risks associated with the future deployment of the Galileo system;
- second, the early 'political' creation of an industrial consortium, which regrouped the main European space companies at that time, prevented competition for the space segment contract (at least for the first four in-orbit validation satellites). The main problem was that de facto the consortium had no contractual leverage on its suppliers, which were its shareholders and commercial partners. This contributed to the cost and schedule overruns.

Already during our audit, in 2007, the concession negotiations for a public private partnership (PPP) to carry out the programme had failed and subsequently the programme was reorganised. The European Commission opted to use public procurement for the Galileo infrastructure through ESA. In parallel ESA decided to terminate the existing contract with this industrial consortium and to take it over by novation – replacing the failing industrial consortium in its rights and obligations in its entirety. For the phase of full operational capability deployment, the opportunity of new contracts - attributed by batches - helped to restore competition, notably in the Galileo space segment.

Retrospectively, it is fair to say that the choice to re-orient the programme by abandoning the Galileo concession project and opting instead for public procurement of the necessary infrastructure was essential to secure full and successful deployment of the Galileo system.

The ECA audit helped to identify significant shortcomings in the initial phase of the programme. It also offered a number of lessons for similar programmes in the future:

- the strategic importance of robust programme governance;
- the inherent shortcomings of a concession scheme to implement programmes like Galileo;
- the fragility of an ad hoc entity (such as the Galileo Joint Undertaking) with no prior experience in the industry and with limited capacity to impose its authority;
- the necessity of establishing a solid programme manager with resources and expertise which are commensurate with its tasks and which can also rely on appropriate cooperation/delegation schemes with its partners;
- the limits of using grant agreements (in this case Ten-T) as instruments to fund such infrastructure deployment.

The ECA also identified a number of issues to be considered for the strategic positioning of the Galileo system in respect of its potential market uptake.

Despite, or perhaps even because of, its findings and recommendations, the ECA's special report on Galileo was well received and acknowledged by public and private stakeholders when it was published in 2009. Since then, it has taken another ten years to make Galileo operational, clearly more than planned but some people thought it would never fly at all. Hopefully, soon all EU citizens will be able to benefit fully from the services made possible by EU funds, which will improve and increase connectivity and safety. Data will be essential for further digitalisation in the future, and not only in transport.

More audits on the EU's space programmes in the pipeline

Since 2009, the ECA has published no further reports on the performance of the EU's space programmes. However, the ECA's 2019 work programme lists two such space-related audits ([[add hyperlink](#)]). One is about the EU's space assets. This may also shed further light on the current status and management of the Galileo programme. Another audit is about the use of new technologies (such as earth observation data) for monitoring agriculture. This also concerns another EU flagship space programme, named Copernicus, which focuses on earth observation and currently has seven dedicated satellites in orbit. And there are many other potential topics for future ECA audits in this sector, as these space programmes will inevitably become a key aspect in a range of EU policies.

EIB leveraging finance to connect Europe through cleaner, smarter and safer mobility

By Stéphane Petti, European Investment Bank



Source: Greenway

Charging Station

The importance the European Investment Bank (EIB) attaches to the transport sector is reflected in the multiple financing facilities set up by the Bank that provide investments for connecting Europe. In early February 2019, the Bank announced having invested over €1 billion through the Juncker Plan, supporting sustainable transport in Europe. Stéphane Petti, transport innovation expert in the EIB Mobility Department, explains what the key drivers and actions of the Bank are...and which distinguish the EIB from many other banks.

Innovative transportation solutions condition for a connected and sustainable Europe in the future

When most of us think what transport might be like in the future, we see perhaps a futuristic, science fiction type world of flying vehicles, super high speed trains travelling faster than airplanes, and perhaps even teleportation. A world where human beings no longer have to drive, and where the use of petrol as a fuel seems like a distant memory. A world of safe, hassle-free and comfortable mobility for all.

Whether you subscribe to that vision or not, the transport business is taking its first tentative steps towards making it a reality. There is a huge variety of new technology being deployed in sectors such as energy, information, communication and robotics, and these are now becoming part of the new world transport. They offer a fantastic opportunity to provide new ways of being mobile and are profoundly transforming the sector.

Not a single month goes by without there being press releases from automotive manufacturers about future production plans for electric or self-driving vehicles. Governments are queuing up with plans to ban petrol and diesel cars in city centres. New companies and projects are emerging that propose alternative mobility models complementing private vehicles ownership and conventional use of public transport.

Transport has played a fundamental role in the development of Europe as we know it today. The political geography and history of Europe makes it a uniquely fragmented continent, which has meant the Member States having to work together to develop integrated transport networks, such as the Trans-European Transport Network ([TEN-T](#)), and ensure the requisite level of connectivity, for example through the Connecting Europe Facility ([CEF](#)).

Transport has a major role in ensuring economic growth and prosperity and has been a very important sector for the European Investment Bank (EIB), representing on average about 20% of the Bank's overall annual lending in the last ten years. However, with current technology and growing demand, transport does have a cost to society. It creates vast amounts of greenhouse gas emissions, and air pollution kills an estimated 7 million people worldwide every year according to the World Health Organisation (WHO). Furthermore, about 1.3 million people are killed each year in road traffic accidents¹.

In this context, the EIB's core mission in transport is twofold:

- to strengthen connectivity of goods and people in Europe through deployment and rehabilitation of physical networks and infrastructure;
- to be instrumental in transforming the sector towards more sustainable transport.

EIB's approach with respect to supporting this transformation is to identify new ideas and technologies, and support projects, that will most effectively mitigate transport's wider global impacts.

Cleaner, Smarter, Safer mobility, for all...

CLEANER, SMARTER, SAFER is the Bank's approach to current developments and future trends in the transport sector.

CLEANER transport is any technology deployed on vehicles or infrastructure that supports a reduction in carbon and other emission types. Decarbonisation and pollutant emissions reduction is a principal EU priority reflected in an increasing number of EU regulations. The



Charging Plaza

Source: Allego BV

decarbonisation of transport is a key part of achieving the targets set out in the Paris Climate Agreement, while reducing the volume of air pollutants is fundamental for improving the quality of our air. The transition to a low carbon and cleaner economy will require significant investment in new technology deployment and new types of infrastructure, estimated to amount to above €650 billion per year for the vehicle stock only during the period 2011-2030².

In the context of cleaner and alternative fuels technology, the Bank launched the Cleaner Transport Facility (CTF) together with the European Commission in December 2016. This is an umbrella initiative primarily to support the deployment of alternative fuel vehicles and their associated infrastructure, such as charging stations. With an initial focus on public transport, the CTF has now had twenty operations since its launch including investments in cleaner vehicles fleet or electric vehicles charging infrastructure, representing EIB financing of about €1.8 billion. There is now a need to accelerate the rate at which cleaner transport technologies are deployed across other transport modes, particularly shipping and aviation.

SMARTER transport projects are those digitally enabled and innovative services that help to make the transport of people and goods more efficient. Digital technology based on collecting, analysing and sharing data is becoming increasingly pivotal across all aspects of transport. As the European Council underlined in its [conclusions of 5 December 2017](#) these new solutions,

¹ <https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries>

² https://ec.europa.eu/info/sites/info/files/file_import/ip041_en_2.pdf

services and processes are simply of 'vital importance for the European economy.' The Bank is already engaged in the financing and development of smarter transport projects, which might be either standalone projects, such as electronic tolling, or a component part of larger infrastructure projects, like the European Rail Traffic Management System.

SAFER transport in all respects is also a key priority for the EU. The Bank is already very active in promoting and supporting the most pressing aspect of it, Road Safety. However, a new technology dimension is starting to play an increasing role, as automation and the development of connected and automated vehicles (CAVs) suggests substantial safety benefits, not only in road transport but also across other modes of transport. Automation and advancements in areas such as drones are considered both smart and safe, as sophisticated and more reliable forms of automated control replace the human error element of transport.

Future evolution of EIB transport financing

The Bank is aiming to support the Cleaner, Smarter and Safer transport projects that will have the greatest impact and contribution to Europe and the wider world.

Some of those developments that we think have a good chance include truck platooning, in which a group (platoon) of trucks follow a lead truck at very short spacing (~10 cm) using cutting edge vehicle-to-vehicle (V2V) communication technology. The early pilot implementations are suggesting promising results.

Truck platooning can reduce the number of accidents substantially owing to the autonomous driving technology while it is also possible to achieve substantial fuel economy. The deployment of cooperative Intelligent Transport Systems (C-ITS) infrastructure enabled by the advancements in communications technologies, should develop alongside and allow cooperation between vehicles and roads for safer journeys.

We also expect to see the deployment of autonomous vehicle fleets, last mile public transport shuttle service operating between neighbourhoods and public transport stations. Recent advancements in autonomous driving technologies coupled with public transport labour costs and high volatility in public transport demand, suggest automated shuttles as a promising solution to the *last mile* problem of passenger transport with a potential to reduce substantially traffic in city centres.

Finally, in a world where the cities are dominated by cars, mobility needs to be more inclusive. Digitalisation is triggering new mobility services that help to make a better use of public space. Relying on a digital platform employing sophisticated matching, dispatching and routing algorithms, new urban mobility services (such as car sharing or ride hailing) are emerging as alternative business models. Further efforts in opening transport data and information, and deliver it through user-friendly interfaces, mobile phone applications or information systems, will enable travellers to make smarter choices about using transport networks. Mobility as a Service (MaaS) is a good example of how a user-centric approach can be implemented in transport and public transport particularly. We expect to see development in these areas as well.

Future transport for all

The history of transport has been largely one of technological innovation, and it is now increasingly advanced and sophisticated, faster and more connected than ever. Travel time has decreased while accessibility has increased. The future of transportation goes beyond technology and self-driving cars, and our collective challenge is to increase mobility for all whilst simultaneously addressing today's societal needs. It is not enough for transport to be digital, cleaner or autonomous – it needs to be all three to make a lasting difference.



Autonomous electric shuttle

Source: Navya

EU transport safety and the Morandi Bridge collapse - an admonishment

By Christian Verzè, private office of ECA Member Oscar Herics



Source: Pixabay

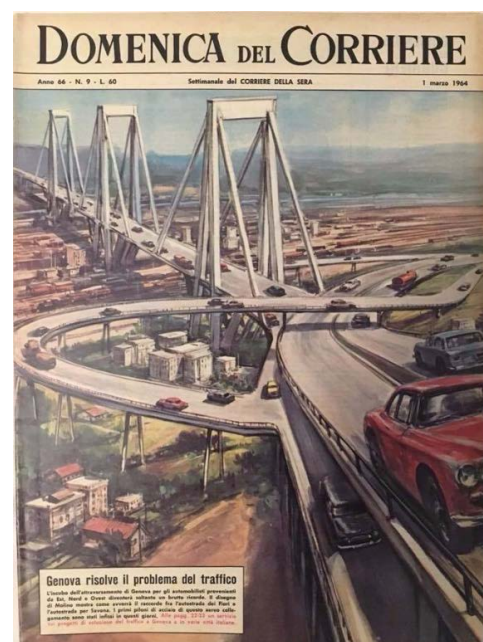
The Morandi Bridge collapse in Genoa

On 14 August 2018 a lightning struck a pillar of an old 1960s highway bridge in the Italian city of Genoa. Parts of the bridge collapsed on top of the fluvial and industrial area it overlooked killing 43 people and injuring many more. The disaster has ignited intense debate on transport safety in the EU and infrastructure maintenance, or the lack thereof, in particular. Christian Verzè analyses the events leading up to this tragedy and explains some of the safety requirements of the modern-day EU transport regulations.

Disaster struck

The collapse of the Morandi bridge in Genoa (named after the engineer Riccardo Morandi) filled the international headlines in August and September 2018. The worst of it all ... the loss of life could have been avoided. Falling from more than 40 meters down onto a dry riverbed, rail tracks and small streets below, 43 people lost their lives and were found among rubble and skeletons of ruined cars and slabs of concrete cement, while the area affected became a 'red zone.' The 560 people living there were forced to leave their homes.

At this stage it is still unclear who bears the responsibility for the collapse and what caused it. Looking at the facts, this bridge, nicknamed by the citizens of Genoa as their very own 'Brooklyn Bridge,' was not conceived for today's heavy traffic. Moreover, it was built using, as is seen now, outdated designs and techniques. Already within a decade after its completion in 1967, Morandi himself highlighted that the sea breeze and the corrosive fumes of nearby steel mills were causing serious damage to the bridge's building blocks.



The cover page of Domenica del Corriere of 1 March 1964

Italian newspaper welcoming the Morandi bridge as a solution for traffic problems



Corroding elements of the Morandi bridge before the collapse.

However, there is more to it. Soon after its completion, the structures of the deck began to flex, ending up having a wavy conformation, which, although near the sea, clearly was not the initial intention. Many experts considered these weaknesses as deriving from the heavy use of armoured cement, which, at the time of construction, was known for its plasticity and low construction costs. However, a major problem of the material is that it is easily eroded and, if no regular maintenance is provided, it can crumble by its own weight and structural flaws.

Who is to blame?

Although the exact causes of the collapse of the Morandi Bridge are still to be determined, the information available points at a combination of structural weaknesses, political ineptness and managerial greed that presumably led to a lack of maintenance. The most pressing questions, of who bears the final responsibility, and if it could have been avoided or not, have not been answered yet. The difficulty here lies in the fact that Morandi Bridge was part of a national highway, thus owned by the State, but that a managing authority had been contracted to operate it.

This raises the question of the safety of other, similar infrastructure. This issue becomes even more pressing since once shiny and 'avant-garde' infrastructures increasingly become old and decaying. This happens not only in Italy, but also in many other EU Member States alike. So, how is the situation regulated with regard to EU Transport infrastructures?

The EU transport network

The TEN-T Regulation establishes the EU legal framework for the Trans-European Networks (TENs) which provides the tools for building the EU transport infrastructure. The regulation foresees to build a core network, as well as the development of a secondary comprehensive network. The transport policy contributes to the achievement of other and major EU objectives and towards the development of a competitive and resource efficient transport system, supporting the smooth functioning of the internal market and the strengthening of economic, social and territorial cohesion. The idea is that an improved transport infrastructure will increase the accessibility for both European citizens and businesses across the Union.

There is however one important catch: time. The regulation states that the core network should be completed in 2030, and the comprehensive network in 2050. In order to achieve these results, the EU has provided co-funding to support Member States' infrastructure investments by way of structural funds and the more recent instrument called the Connecting Europe Facility (CEF).

Safety is key

The TEN-T and CEF policies have key features in terms of security and safety of passengers, and of environmental protection. When establishing new infrastructure, Member States must take all the necessary measures to ensure that the projects are carried out in compliance with relevant EU regulations and national law. Particular attention should be given to, e.g., the environment, safety, and public procurement. The general framework, priorities and objectives of the EU transport policy, as well as who deals with what, are clear. Completing the network on time is the main priority, but maintaining the quality of infrastructure already in place is also essential.

The collapse of the Genoa bridge shows that there still is a lot of room for improvement when it comes to enforcing the conditions regarding safety and maintenance that are set by the TEN-T and CEF regulations, despite the legal safeguards established by the EU. And while travelling in Europe has never been so easy, the EU and its Member States should be extremely cautious of any risk and take the safety of citizens as the outmost priority. The tragic history of the Morandi Bridge highlights the importance of investing both sufficient time and money, not only in the construction of new and prestigious projects, but especially also in the maintenance of transport infrastructures built in the EU.

Researching transport issues for the parliament –the work of the EPRS and how it uses the ECA reports

Interview with Sarah Sheil, European Parliamentary Research Service

By Derek Meijers and Gaston Moonen



Sarah Sheil

The European Parliamentary Research Service (EPRS) was created in 2014 to meet the need of a bigger source of in-house expertise for the Members of the European Parliament (MEPs). With its staff of around 330, it is one of the largest parliamentary research services in the world, second only to that of the US Congress. An interview with Sarah Sheil, head of the Structural policies unit in EPRS, to find out how the service supports MEPs' parliamentary work and how they make use of ECA reports.

Addressing MEPs' information needs

Sketching the outline of the European Parliamentary Research Service (EPRS), Sarah Sheil explains its work is very much driven not only by the parliamentary and legislative agenda, but also by the needs of the individual MEPs. 'EPRS offers a number of services specifically targeted to the EP committees or to the individual MEPs. For the latter, we are able to provide input to them on a customised basis. Whether they need to attend an event in their Member State, prepare for a plenary session, or simply dig further into one specific topic or the other, the EPRS can provide them with made-to-measure information,' says Sarah. And: 'In addition, of course, we pro-actively publish reports, notes and infographics on various topics, as well as background information relating to ongoing legislative and budgetary procedures. The bulk of our work is publicly available on the EPRS's website and via the EPRS app.'

Sarah emphasises that the service is free to be creative and to initiate briefings or other products on trending issues that are in the interest of the wider parliamentary community. It also produces regular series of briefings on issues such as individual budgetary programmes, EU trade agreements or legislative files. 'When drafting our public briefings, we do not assume that our readers are specialists. So when we prepare information material, we aim at setting the scene and providing the essential background information, in order to ensure its usefulness for a large audience.' She adds to this that many of the individual information requests of MEPs is related to spending. Laughing: 'And as our unit covers policies such as cohesion policy and agriculture policy that represent almost 70% of the EU budget, we get to answer the bulk of those questions!'

The right information at the right time

Sarah explains that since most of the work of the Members' Research Service is focussed at the information requests of individual MEPs, a key challenge is to find the data which answers their



Source: EPRS

Screenshot of the App, offered by the EPRS, by which many EPRS products become easily available. Source: EPRS

“... we do not assume that our readers are specialists.[...] we prepare information [...] in order to ensure its usefulness for a large audience.”

specific needs, and also to present it in a user friendly way. ‘We get to know our customers over the course of a five-year term, but with the upcoming elections in May we will have to start with a new client base. Fortunately, our statistics show that more than 93% of all MEPs, from all parts of the political spectrum, have used our services during the past legislative period. I think that clearly shows our work is appreciated across the board and that the MEPs value our products.’ Sarah adds it requires trust to achieve such uptake. ‘For us, it is essential to provide impartial and objective research of high quality.’

“ ... we do not assume that our readers are specialists.[...] we prepare information [...] in order to ensure its usefulness for a large audience.

Compared with the ECA, whose audits are in general backward looking, assessing policies, programmes or measures that generally have already been implemented, the EPRS also has to be forward looking , in order to provide the MEPs with the research input and evidence to base their decisions on. Sarah: ‘Our philosophy is that the legislative process - or policy cycle - is indeed a cycle. That means that we really have to be active at several stages simultaneously.’ She explains that, sometimes it can be hard to say where the preparatory work ends and the legislative work begins. Or where the legislative work ends and the evaluation stage begins. ‘But we aim to support Members and committees at all stages of the cycle. We are active both upstream, so to be ready when the legislative process begins, and we work downstream at the same time, to be able to contribute to the impact assessments and the evaluation of the legislative process later on.

The EPRS and the ECA

According to Sarah, ECA reports often provide input for the EPRS’s work, for example the recent landscape review on transport and mobility. Sarah: ‘They are a valued source of information, and apart from the overview such reports provide, they are useful for our researchers because they focus on aspects that are or are not working well, and serving as a signpost for good and bad practices.’ She adds: ‘Obviously, MEPs need to be aware of those shortcomings, what has been done already to address them, which questions have been raised and examined in the past, etcetera, to be able to substantiate their legislative proposals. Our briefings usually contain references to other sources, including ECA reports, and set out the main conclusions of these studies.’



© European Union 2018 - Source : European Parliament. Photographer: Christian CREUTZ. Ref. EP-072418C

In this context, Sarah underlines that here it is important to keep in mind that the MEPs often are not experts on each issue and that they are not necessarily familiar with the ins and outs of a certain policy area. ‘They cannot be aware of all the inherent problems of a certain area, because, due to the nature and scale of the parliamentary work, they simply do not have the luxury to merely focus on their specialist areas. In fact, they are all members of several different parliamentary committees and sub-committees, for which they need to be able to switch between topics continuously.’

There is frequent interaction between the EPRS and the ECA, says Sarah. ‘We can often complement each other’s work. Take for example the recent discussions in the EP on streamlining the implementation of the TEN-T regulation, or the preparations for the ECA audit on high-speed rail in the EU. These are topics where we very explicitly worked together. In addition, we have a unit dedicated to ex-post evaluation work; our colleagues there are regularly interacting with the ECA.’

“ There is frequent interaction between the EPRS and the ECA [...] We can often complement each other’s work. audience.

Looking ahead – transport and mobility

Currently, there are pressing issues that require the attention of MEPs, such as Brexit, ongoing conflicts in the Middle East, and tensions in the relationships with the United States, Russia and Turkey. In addition, the European Parliament is preparing for the elections that will take place from 23 to 26 May this year. Sarah: ‘These are major topics that require us to be very flexible, and to be able to provide good ‘intel’ once such events take place. We have to look ahead, as I mentioned before.’ As one example of this forward looking work, Sarah refers to the annual EPRS publication ‘Ten issues to watch in 2019’, which names electric mobility as an important trend that will probably gain traction in the coming year. On a longer time-frame, other forward-looking services in EPRS



Cover of EPRS publication 'Ten issues to watch.'

include a 'Global trends' unit and a scientific foresight service, which provide MEPs with strategic foresight and analysis on trends in science, technology and social and economic issues.

Sarah: 'In the field of transport policy, one trend we see is that many of the issues we deal with are becoming very horizontal.' She explains that, traditionally, the EPRS research into transportation has been divided along the lines of the different modes of transport, so rail, road, air, maritime transport and waterways. 'However, I feel this division does not do justice anymore to the big issues Europe is facing at the moment. In fact, in most cases we see cross-cutting issues emerging, as the modes are linked to each other, as well as to other policy areas.'

Sarah: 'Take the tardy completion of the trans-European networks, this is a huge issue of which the impact will be much broader than just on the transportation sector.' As another example of horizontal matters that will feature prominently on the parliamentary agenda of

the coming parliamentary terms, Sarah mentions decarbonisation, environmental sustainability and ridding the world of toxic emissions. 'There is no doubt that these topics will remain pressing in the coming years.'

Innovations in transport will require new legislation

Fortunately, Sarah's work is not only driven by dark scenarios. Laughing she replies: 'On the contrary, if you look at transport, one of the next big things is of course automated mobility and the impact of artificial intelligence and digitalisation in the field of transport and mobility.' She adds: 'Those are developments that are very promising and that might offer sustainable solutions for the problems I mentioned before.' And: 'But these developments, especially relating to road safety, self-driving cars, the sharing economy or the use of drones will require legislation, so one can be sure to see a lot of debate in the EP on that.'

Sarah emphasizes the speed with which such developments are taking place. 'It is very challenging for us to keep up with that, and difficult to prepare for it as well. Take a company such as Google and Apple, who would have thought ten years ago that these would be in the car business today! So when it comes to transport and our research in that field, I am expecting some exciting times.'

“ Take a company such as Google and Apple, who would have thought ten years ago that these would be in the car business today!

Wanted: a broad approach

Concluding, Sarah argues that, because of the cross-cutting and cross-border nature of many of the topics parliaments will need to discuss in the coming years, it is important that the EPRS and its staff remain agile: 'We need creative people that can pull all those different threads together, and that are natives in the digital world to be able to provide our Members with useful information in the format they prefer.' And this certainly also applies to the ECA.

Foresight for transport and mobility: forces, factors and future challenges

By Andreas Bolkart, Directorate of the Presidency

Foresight

A Supreme Audit Institution normally looks at things that happened and tries to assess past events to come up with valuable lessons to improve policies and processes in the future. But looking back is not always enough. To prepare for the challenges that lie ahead, we cannot rely on our experience alone, because after all, past performance is not necessarily indicative for future results. Therefore, as was highlighted in the October 2018 edition of the ECA Journal, the ECA has started to invest in strategic foresight. By doing so, it hopes to ask the right questions today, so that it may have the right answers ready when they are needed tomorrow. In this section, we try to probe into foresight issues whenever this fits the Journal theme. First stop: foresight for transport and mobility.

Recently, the ECA's Foresight Task Force undertook a broad trend study, the 'ECA trendwatch', based on more than 40 major international trend studies and consultations with more than 60 experts. In this article, Andreas Bolkart zooms in on the results of this analysis for the transport and mobility sector. He provides an overview of the forces and factors at work in the sector and discusses future challenges for public sector analysts.

Forces and factors at work in transport and mobility

The transport and mobility sector is driving many change processes in European societies. There are numerous internal and external forces that either originate from or affect this sector. Below an overview of the most important ones.

Internal forces

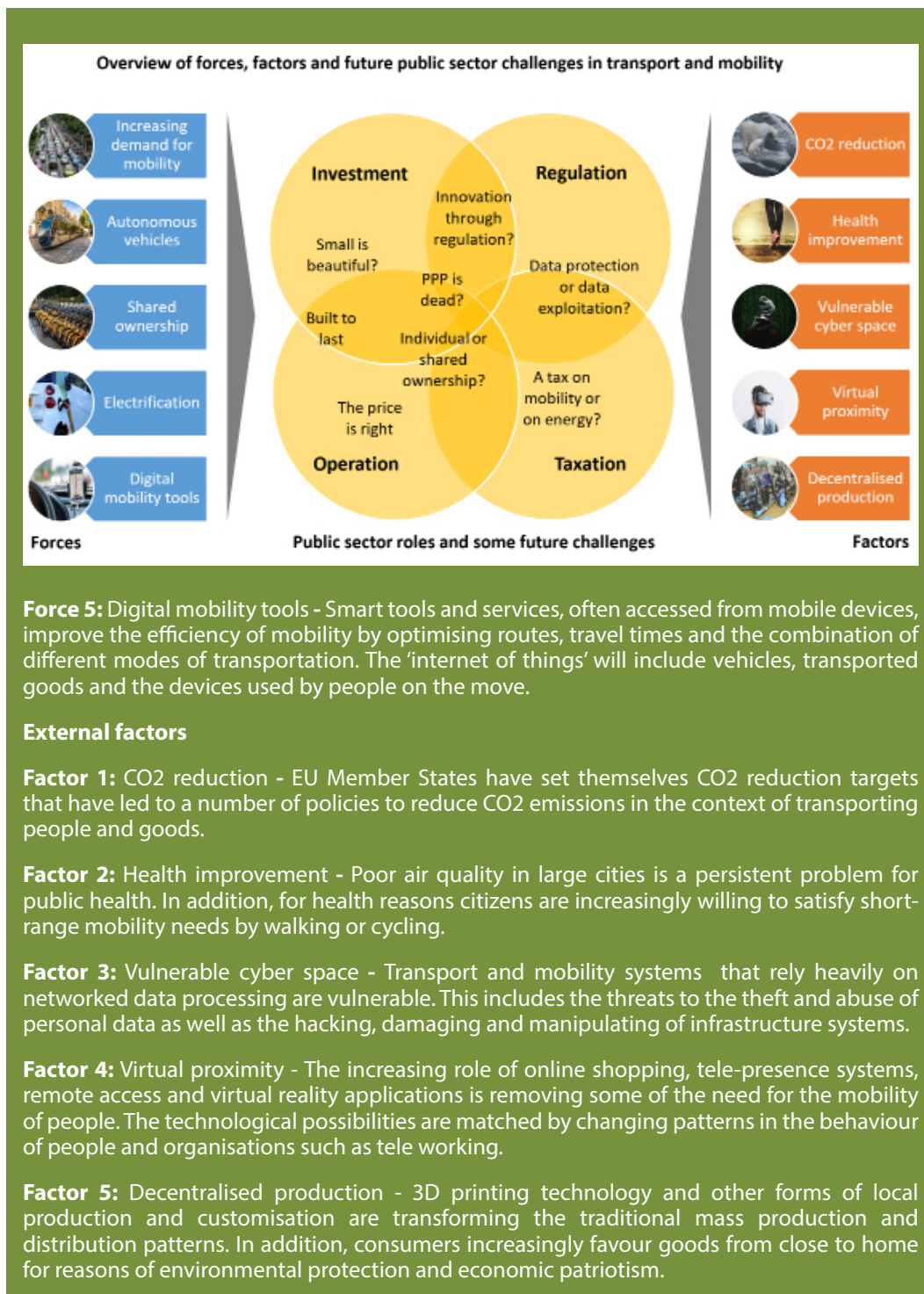
Force 1: Increasing demand for mobility - Passenger and freight transport volumes in the EU have been steadily rising in recent decades. The European Commission estimates that they will continue to grow (42 % for passenger transport activity and 60 % for inland freight between 2010 and 2050¹).

Force 2: Autonomous vehicles - Vehicles are increasingly equipped with assistance technology that will ultimately replace the need for a human driver. This applies to personal cars, ride hailing and sharing vehicles, public transport vehicles such as buses and trains, and freight vehicles such as cargo ships, trucks and delivery drones.

Force 3: Shared ownership - An increasingly urban population is struggling with rising fixed cost, hassle and climate remorse of personal car ownership. At the same time, digital tools make car sharing and ride sharing a convenient alternative. Therefore, personal car ownership is expected to drop at the expense of shared ownership models.

Force 4: Electrification - Price and performance of vehicle batteries are improving dramatically. The same is true for renewable electricity generation. Finally, public opinion and public policy is increasingly favouring electric engines because of the absence of local emissions. As a result, electric engines are increasingly replacing combustion engines.

¹ Europe on the Move: An agenda for a socially fair transition towards clean, competitive and connected mobility for all COM(2017) 283 final, p. 4.



Future challenges for public sector policy makers and auditors

The public sector is the largest investor in transport and mobility infrastructure and technology. Public sector agencies are also operating mobility systems themselves. The public sector is heavily regulating transport and mobility for safety, environmental and accessibility reasons. Finally yet importantly, taxation plays an important role in influencing mobility choices. The forces and factors discussed in the previous sections make it very hard to get public sector investment, operation regulation and taxation right. The challenges for public sector action and the audit thereof are manifold. The following section discusses these dilemmas.

Small is beautiful? - Public sector decision makers face the difficult choice between classical large infrastructure projects and small incremental network projects. The latter are available thanks to new technology but are also very unpredictable. An example would be in city planning of choosing between extending a tunnel for underground trains or investing in a fleet of self-driving minibuses.

Individual or shared ownership? - In the past one hundred years, individual car ownership was a great success story. Lately, this model is stalling and shared ownership models are emerging. Has the public sector created the right regulatory environment? Are public investment decisions mindful of these changes? For instance, public parking spaces should now be reduced or planned in a way to be repurposed as shared electric vehicle stations later on.

Built to last? - In times of rapidly evolving technology solutions, large public infrastructure should be adaptable. That means that planners should anticipate as far as possible changing mobility patterns, new technologies and new user behaviour when planning large-scale infrastructure projects. An example is a tunnel for underground trains that could be planned in a way to be used later on for other mobility purposes such as a sub-terrain tunnel for self-driving person and freight vehicles.

PPP is dead? - Public Private Partnership projects have a bad reputation of late. Too often, it seems, service levels deteriorated and private investors took the returns but not the risks. However, the future will hold many opportunities for effective collaboration between private investors and public services providers. This could be crucial for future mobility to operate across transport types, geographies and functionalities.

The price is right? - The public sector faces a large array of possibilities to charge for the use of public mobility infrastructure and services. In the future, this pricing could be made mode neutral and dependent on use of infrastructure. Nowadays, most countries charge a flat rate tax for owning a vehicle. Some have fees for motorway use or entering congestion zones. However, the available technology would allow charging exactly for every kilometre of road infrastructure used, including higher fees for congested areas or times of the day. In addition, some cities are experimenting with free public transport.

Data protection or data exploitation? - This dilemma exists in many sectors but is particularly relevant in mobility. User data such as travel routes can go a long way to solve congestion problems and provide additional services to users. On the other hand, this data also allows for the total control of the whereabouts of every citizen. The public sector needs to sort out how best to use and share the data it generates itself and then regulate the use of any other data gathered in the public sphere (open standards and protocols).

A tax on mobility or on energy? - Taxes on different forms of mobility are nowadays the result of a series of historic events rather than a thoughtful and holistic design process. Fuel or energy in general is taxed very differently in the various transport modes and are often not or only very loosely connected to the impact on CO2 emissions or other externalities. Some tax incentive schemes are actually discriminating between different forms of mobility, company car tax incentives are an example.

Innovation through regulation? - Public sector regulation is traditionally slow in keeping up with technological innovation. However, regulatory edge can become a competitive advantage in advanced economies. Regulators should encourage new technologies by creating early on the regulatory conditions for rapid adoption and experimentation. This applies for instance to creating standards for autonomous vehicles such as trucks and drones. Safety assurance in road traffic may have to be adapted with the advent of self-driving vehicles.

Connecting above and beyond

Public sector analysts and auditors should be mindful of these future challenges when assessing public policy and programmes in the transport and mobility area. As there are many different forces and developments to take into account, there is a clear need to assess the public sector's role in mobility as a whole, instead of isolating individual policies.

Reaching out

Third time the ECA presents its work at a UN Climate Change Conference: looking back at the COP24 in Katowice

By Arfah Chaudry, Private Office of Phil Wynn Owen, ECA Member, and Katarzyna Radecka-Moroz, Private Office of Janusz Wojciechowski, ECA Member



From left to right: Katarzyna Radecka-Moroz, Janusz Wojciechowski and Colm Friel, all ECA, and Roxana Lesovici, European Commission

The 24th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP24) took place in Katowice, Poland from 3 to 15 December 2018. With nearly 23,000 representatives from over 200 countries meeting to discuss issues relating to climate change, COP24 is the most important climate change event of the year. An ECA delegation participated in the Katowice COP conference and Arfah Chaudry and Katarzyna Radecka-Moroz provide more details on the ECA work presented, and other activities in Katowice the ECA delegation participated in.

Rising emissions not met by concrete commitments

The priority for the COP24 was to agree on the framework of rules that will guide the implementation of the 2015 Paris Agreement, which will come into force in 2020. These rules determine how governments will measure and report on their efforts to cut emissions (see **Box**). However, at the end of the conference, some important questions on rules such as how to scale up current commitments on reducing emissions remained unresolved and were postponed for the next COP conference, which will take place next year in Chile.

Box - The 1.5°C objective – new research findings

In October 2018, the Intergovernmental Panel on Climate Change (IPCC) published its special report on Global Warming. The IPCC has issued a number of recommendations on how to limit global warming to no more than 1.5°C. Research released at the COP 24 conference shows, however, that global emissions were increasing and not decreasing.

Third time the ECA presents its work at a UN Climate Change Conference: looking back at the COP24 in Katowice

The ECA was well represented at the COP24, with ECA Members Janusz Wojciechowski speaking on EU action on air pollution and Phil Wynn Owen on desertification in the EU.

Air pollution in the EU: our health still insufficiently protected

Our special report 23/2018 on EU action to protect human health from air pollution, was presented Janusz Wojciechowski, ECA Member; Colm Friel, ECA Principal Manager and Katarzyna Radecka-Moroz, attaché took part in this side event in the EU pavilion.

This report deals with the Ambient Air Quality Directive, which is the cornerstone of the EU's clean air policy and sets air quality standards that need to be complied with all across the EU. The audit assessed the Directive's design, whether Member States had implemented it effectively and how the Commission had monitored and enforced air quality standards.

During the conference, our representatives emphasised the link between air pollution and climate change. Air quality can impact climate change and, in reverse, climate change can impact air quality. Some air pollutants can also be short-lived climate forcers, which can have a potential impact on climate and global warming in the short term. Furthermore, air pollutants concentration can increase due to changes in weather patterns, which are exacerbated by climate change.

The event contributed to the ongoing discussions about the shape and ambition of the future European clean air policy. Roxana Lesovici, Deputy Head of Unit in the Directorate-General for Environment, also explained how the ECA's audit findings are being considered in the context of the European Commission's ongoing work in this field.

In the discussions, it was noted that academics and policy makers treat climate change and air pollution as separate domains. In some cases, this may result in the paradoxical situation that decisions made to combat climate change may be detrimental for air pollution. This is why an integrated approach and coordination of actions are needed to tackle these problems effectively. For example, broad mitigation measures in the energy sector can reduce non-CO₂ emissions, hence improving air quality, with immediate benefits to human health. In this way, synergies with the UN's Sustainable Development Goal on public health will be also achieved.

The team also took part in a 'Meet the Expert' session, where participants from around the world, including for example from India and Peru, could enquire what the EU was currently doing on air pollution and share their experiences.

SAIs event on air quality

On the margins of the COP24 conference Janusz Wojciechowski also participated in an event organised by the Polish Supreme Audit Institution (SAI), NIK. Together with Krzysztof Kwiatkowski, President of the NIK, Vladimir Toth, Vice-president of the Slovak SAI, representatives of regional authorities, academia and NGOs he discussed challenges, opportunities and threats to air quality in Poland and Europe. One of the main points of the debate was the presentation of the national findings contributing to the joint report on air quality of the European Organisation of Supreme Audit Institution (EUROSAI), which the ECA is contributing to, along with 15 other SAIs.

Desertification in the EU

ECA Member Phil Wynn Owen and Ramona Bortnowschi, head of task, presented key issues on desertification in the EU, at a side event in the pavilion of the Benelux-European Investment Bank (EIB), in view of the ECA special report 33/2018 to be published on 18 December 2018. Topics they covered were: why the audit was carried out, what the audit questions were and what the emerging themes in the audit were. Jonathan Taylor, EIB Vice President, also took part in this session. Phil Wynn Owen underlined that auditors have a responsibility to draw attention to risks such as desertification, which could place growing pressure on public budgets, both at EU and national levels.

Third time the ECA presents its work at a UN Climate Change Conference: looking back at the COP24 in Katowice



Phil Wynn Owen and Ramona Bortnowschi participating in a discussion on desertification in the EU during the COP 24

Third ECA participation since 2012

This is the third COP conference the ECA has participated in. In 2012, Kevin Cardiff, former ECA Member, presented the ECA's work relating to the EUROSAI Working Group on Environmental Audit's coordinated audit on adaptation to climate change. In 2017, Phil Wynn Owen, along with Olivier Prigent and Katharina Bryan, presented the ECA's Landscape Review on EU Action on Energy and Climate Change.

Reaching out

Touching base with the EP's Conference of Committee Chairs: discussing possible priorities for the 2020 ECA work programme

By Helena Piron Mäki-Korvela, Directorate of the Presidency



From left to right: Cecilia Wikström, Chair of the CCC, Rimantas Šadžius, ECA Member, and Martin Weber, ECA Director

It has by now become a tradition for the European Parliament, and more particularly its Conference of Committee Chairs (CCC), to invite the President of the European Court of Auditors during the month of January for an exchange of views about work priorities for the coming year. For the ECA this is also an opportunity to encourage the parliamentary committees to make known their suggestions for potential audit subjects and to inform the parliamentarians which of the previous proposals have been selected for an audit. Helena Piron reports from the CCC meeting on 15 January 2019 in Strasbourg.

Meeting the CCC – a fixture in the ECA programming calendar

The annual meeting of the ECA President with the parliamentary committees – which generally takes place in the month of January - has by now become a fixture in the ECA's work programming calendar. This year, the Chair of the Conference of Committee Chairs (CCC), Cecilia Wikstroem, welcomed the ECA Member for Institutional Relations, Rimantas Šadžius, to this exchange with the European Parliament. He replaced President Klaus-Heiner Lehne, who was unexpectedly taken ill on this important occasion.

Nearly 60% of the suggestions the EP made last year were reflected in the 2019 ECA work programme

Cecilia Wikstroem underlined the importance of the work done by the ECA for a meaningful and targeted scrutiny of EU policies and programmes and expressed her satisfaction that more than 60% of the suggestions made by EP committees in the previous year had been taken up in the 2019 work programme. She also urged the EU auditors to report on 'good practice' examples in EU spending - rather than just pointing at weaknesses and shortcomings - and to identify the added value of EU action. She was also pleased to point out that more and more of the ECA's reports were being taken up for discussion by EP Committees.

44 reports published in 2018 and a similar number of publications expected for 2019

Rimantas Šadžius pointed out that the ECA had published 44 reports in 2018: 35 special reports, two landscape reviews, six briefing papers and one rapid case study, in addition to annual reports and opinions on the Commission's legislative proposals. For 2019, he said that, again, more than 40 such reports were planned for publication. In this context, he stressed the importance given by the ECA to the input provided by the parliamentary committees when setting priorities and deciding on its work programme. Taken together, last year the EP committees made nearly 70 suggestions and around 60% of these ideas had found their way into the [work programme for 2019](#).

Question and answer time with EP committee chairs

The discussion was opened by Ingeborg Grässle, the Chair of the Budgetary Control Committee. She thanked the ECA for the excellent cooperation during 2018 and pointed to a recent change in focus in the ECA work programme towards policy evaluation. Against this backdrop, she expressed her preference for more informative, in-depth audit reports, rather than a further increase in the number of audits on EU policies. She called on the ECA not to neglect aspects related to financial control. She also urged the other EP Committees to use to the full all ECA special reports relevant to their work.

Claude Moraes, the Chair of the Committee for Civil Liberties, Justice and Home Affairs, stated that he was very grateful for the ECA's performance audits, such as for example in the recent special report on the EU trust fund for Africa. He also indicated his committee's particular interest in the on-going audits on cybersecurity and FRONTEX, the European Border and Coast Guard Agency.

Petra Kammerevert, the Chair of the Committee for Culture and Education, was looking forward to the outcome of the currently on-going rapid case review on Euronews which had been proposed by the EP in 2018. For 2020, she referred to the Creative Europe programme and the Solidarity Corps as potential topics worth considering.

Jean Arthuis, the Chair of the Committee for Budgets, recalled that around three quarters of the EU budget was managed at the level of the EU Member States. He suggested several topics to look into: the structure and transparency of the EU budget, the use of consultancy services by participants in EU programmes and the reasons behind the level of non-committed funds in the field of research.

Linda McAvan, the Chair of the Committee for Development, asked the ECA to also provide in its reports cross-policy 'lessons-learnt.' For 2020, she suggested examining the design of development cooperation funding, including private sector funding and recalled the need to allow for a certain element of risk in this field of EU action. She also suggested that the new European Parliament should include systematically making full use of ECA reports in its strategy.

In response, Rimantas Šadžius underlined the ECA's role in contributing to financial accountability, but also in providing an independent view on whether EU policies and programmes met their intended objectives. He reassured the parliamentarians that the ECA's work on financial management aspects had not diminished and would always remain a priority. At the same time, money did not always solve a policy problem, as shown in the special report 10/2017 on young farmers. As regards the EU auditors' examination of EU added value, he referred to the recent special report on Erasmus + as an example where this aspect had been explicitly assessed by an audit.

Finally, the ECA Member thanked the speakers for their contributions and again invited all the EP committee chairs and secretariats to come forward with their suggestions in the coming weeks through the CCC. A broad contribution from this outgoing parliament could only help the ECA to put together a work programme for 2020 that focused on those issues that were most relevant, and this would benefit the next parliament.

Reaching out

Visit by the Belgian Chamber of Representatives

By Dennis Wernerus, Private Office of Annemie Turtelboom, ECA Member



From left to right: Luk Van Biesen, Annemie Turtelboom, Eric Van Rompuy and Tom De Geeter at the ECA

Early January 2019 Annemie Turtelboom, ECA Member, presented the ECA's 2017 Annual Report and a selection of other ECA reports to the Belgian Chamber of Representatives and its joint parliamentary committees for Finance and Budget as well as to the Belgian Court of Audit. Subsequently, on 4 February, she welcomed a delegation of the Belgium's Chamber of Representatives in Luxembourg to discuss issues related to the EU finances. Dennis Wernerus, head of the Private Office of Annemie Turtelboom, reports.

Long lasting interest of Belgium parliament in EU issues

Belgium has always been deeply enthusiastic of European cooperation. It is a founding member of the Benelux Union and of the European Communities, the precursor of today's European Union. It is fair to state that Belgium's federal and regional institutions often see multilateralism as the best possible answer to many of EU citizen concerns, whether these are about bridging socio-economic differences in Europe, free movement, migration, or environmental, health and safety standards – to name a few. Especially in the context of the new Multiannual Financial Framework (MFF) for 2021-2027, the Belgian federal parliament has a particular interest in the EU's budget, its implementation and audit. In this context, Annemie Turtelboom initiated a process to intensify contacts between the ECA, as the EU's external auditor, and the Chamber of Representatives, Belgium's budgetary authority for the federal budget. Within the parliament, this responsibility rests with the Committee for Finance and Budget. Its Sub-committee for the Belgian Court of Audit scrutinises the Belgian Court of Audit's reports, for the purpose of budgetary control.

Wide interest ranging from MFF discussions to air pollution

During the meeting in Brussels in January it was evident that Belgian Members of Parliament had a wide ranging interest, also in issues going beyond those covered in our Annual Report. From the large MP attendance questions ranged from the future Multiannual Financial Framework (MFF) on the revenue-side, through the fight against fraud, to the implementation delays as one of the causes for the rise in outstanding budgetary commitments (Reste-à-liquider) and slow delivery of project results. There was also a strong interest in the ECA's views on the Commission's proposal on how to deal with general deficiencies in Member States with regard to the rule of law during the next MFF, a topic also addressed in ECA opinion 1/2018.



Annemie Turtelboom presenting the Annual Report 2017 and a selection on Special Reports at the Belgian Federal Parliament on 9 January 2019

The Delegation visiting the ECA on 4 February 2019 consisted of Eric Van Rompuy, Chair of the Committee for Finance and Budget and member of the Sub-Committee for the Belgian Court of Audit (and also a former MEP), Luk Van Biesen, Chair of the Sub-Committee for the Belgian Court of Audit, and Mr. Tom De Geeter, First Advisor and Committee Secretary.

During an afternoon of presentations, where feasible covering ECA findings particularly relevant for Belgium,, they had the opportunity to discuss first hand our audit work on the EU budget and specific issues with Cohesion spending, as well as a number of special reports of particular interest to Belgium, such as for example special report 23/2018 *Air pollution: Our health still insufficiently protected*.

Reaching out

100 year anniversary of the Supreme Audit Office of Poland

By Kinga Wisniewska-Danek, Private Office of Janusz Wojciechowski, ECA Member



Krzysztof Kwiatkowski, President of the NIK, addressing the NIK's 100-year anniversary during the opening of the celebrations in the Polish National Theatre

An anniversary is a good moment to look back at what has been achieved and forward to where one would like to go. These were two major components of the event organised to celebrate the 100th anniversary of the NIK, the Supreme Audit Office of Poland, in Warsaw on 7 February 2019. An ECA delegation, led by President Klaus-Heiner Lehne and Janusz Wojciechowski, ECA Member, took part in the celebrations. Kinga Wiśniewska-Danek, head of the Private Office of Janusz Wojciechowski, also attended and reports.

Auditing for 100 years

On 7 February 2019, the Supreme Audit Office of Poland (NIK) celebrated its 100th anniversary. The NIK was one of the first institutions established in 1918 in a revived and independent Poland. For a century, the NIK has examined how the Polish state operates and how it spends public funds. ECA President Klaus-Heiner Lehne and Janusz Wojciechowski visited Warsaw to take part in the celebrations. Janusz Wojciechowski was invited as the Polish Member of the ECA ... and as a former President of the NIK, a post he held from 1995 to 2001.

Looking back...

The NIK's history has been as changing as that of the Polish state. One of the first decisions taken by the Polish national authorities after they regained independence in 1918 was to set up a state audit institution to conduct audits of state finances — the Supreme Office of State Audit. It was established by a Decree of Chief of State Józef Piłsudski on 7 February 1919, even before the first elected Polish parliament became operational. Setting up an independent and efficient audit institution to safeguard public money was no easy task, and the NIK faced a number of organisational, personnel and logistical challenges in its early days. Its name was formally enshrined in the Polish Constitution in March 1921, followed by the Act on the Supreme Audit Office. These legal texts significantly strengthened the NIK and introduced fundamental principles of its functioning which are still in place today — such as collegiality, independence from government and its position regarding the Sejm, the lower house of the Polish parliament.

The outbreak of the Second World War forced the Polish government and the NIK into exile. However, the NIK did not cease to operate, as an audit office in exile was set up in France and then in Great Britain. At the same time, the underground audit service was operating under occupation. For example, NIK auditors verified whether money sent from the West for resistance activities against the occupying forces was spent appropriately.

What many people may not know is that the NIK operated in exile for nearly 50 years, until the end of the communist regime. Under communism, an institution was created to replace the absent NIK. However, its independence was limited in various ways. The return of democracy to Poland in 1989 also meant the restoration of the pre-war state audit model — fully independent of the executive power and accountable only to the Sejm .

The new socio-political framework made it necessary to revise the legal basis for the NIK. The new Act on the NIK, adopted in 1994, modernised state auditing in Poland, introducing, for example, a six-year term of office for the President that was deliberately not synchronised with the parliamentary term. This was done to strengthen the independence of the NIK, and it helped to enhance public confidence in state auditing.

Nowadays, as a modern audit institution, the NIK operates centrally and through 16 regional branches located throughout Poland. It employs approximately 1 600 auditors and administrators. More information on the present-day NIK can be found on the ECA's web-based portal 'Public audit in the European Union :Role and challenges for the state audit in the modern world

To mark the 100th anniversary, the NIK organized an international conference on the role and challenges facing public audit in the modern world. Apart from presidents of the NIK and the ECA, representatives of the International Organisation of Supreme Audit Institutions (INTOSAI) and its regional European branch EUROSAI, as well as Presidents of the Czech and Ukrainian SAIs took part in the debate. All the speakers stressed that nowadays, independence, transparency, reliability and integrity are crucial for a state audit institution to function properly.

Participants of the conference were debating on how to best respond to challenges of the modern world. They agreed that SAIs should stay up-to-date with the developments in technology – such as data analysis methods and machine learning tools - and use it to improve the auditing process. They also highlighted the need for interaction with stakeholders and clear communication of the results of auditors` work. There was a consensus among participants that a 'modern SAI' needs to be sensitive to the problems of society and investigate subjects of key importance for citizens.



Source: NIK

ECA President Klaus-Heiner Lehne addressing the audience during the NIK conference on 7 February 2019. From left to right: Harib Saeed Al Amimi, President of the SAI of the United Arab Emirates; Krzysztof Kwiatkowski, President of the NIK; Seyit Baş, President of the Turkish SAI; Miloslav Kala, President of the Czech SAI; Filip Łobodziński, moderator.

President Klaus-Heiner Lehne stressed that SAls need to be forward-looking and explore a range of possible future scenarios: 'To be able to invest our scarce human and financial resources in the right way to be future-proof as a modern public audit institution, we need to anticipate now what we will need tomorrow.' In this context, he referred to the foresight task force that the ECA had set up in 2017 to reflect on how to make the ECA 'future-proof'. Klaus-Heiner Lehne also explained why he considered it important to link audit and foresight: 'Foresight is a support tool for the institution's leadership, it's a strategic planning tool, it fosters capacity-building and innovation. It needs to be integrated into the institution's decision-making and planning processes. But it has an impact on all levels of the organisation. In the end, it is a mind-set of the people working for the institution.'

In concluding the conference, Krzysztof Kwiatkowski, President of the NIK, thanked the participants for the inspiring discussion and then addressed the NIK's employees — experts who have often dedicated a major part of their lives to their work for the NIK — to thank them for their work and commitment.

Increasing ECA's visibility

During the evening celebrations in the National Theatre, on behalf of Andrzej Duda, the President of Poland, President Lehne was awarded with the Officer's Cross of the Order of Merit of the Republic of Poland for his achievements in furthering international cooperation in public audit.

The ECA delegation also met with the Polish Prime Minister, Mateusz Morawiecki, to discuss various topics of mutual interest. Klaus-Heiner Lehne presented the ECA's activities and strategy and stressed our role in providing advice to policy-makers and legislators. The Prime Minister welcomed the shift in the ECA's priorities to ensure more time and resources for performance audits. He found it particularly valuable that our audits check whether EU policies are effective and where EU actions are actually adding value. Also discussed were possible topics which, from a Member State's perspective, it could be interesting for the ECA to consider when planning its future audit work (for example measures to address money-laundering).



The ECA delegation (on the left) meeting Polish Prime Minister Mateusz Morawiecki and some of his staff members in Warsaw

Source: KPRM

Reaching out

ECA signs new partnership agreement with University of Lorraine for diploma in statistics applied to audit

By Gaston Moonen



From left to right: Philippe Lengès, Deloitte, Eduardo Barredo Capelot, Eurostat, Sabine Chaupain-Guillot, University of Lorraine, and Lazaros Lazarou, ECA

On 8 February 2019 a partnership agreement was signed between the ECA and the University of Lorraine in Nancy. In cooperation with the University a new postgraduate university programme is organised, leading to a postgraduate university diploma in 'Fundamentals of statistics applied to audit.' Gaston Moonen attended the signing ceremony and got some reactions from the partners in the programme.

Cooperation agreements between ECA and universities

Since 2015 the ECA has embarked on cooperation agreements with several universities to open a wider range of opportunities for ECA auditors to capture and leverage useful knowledge and give contents to life-long learning. First there is the agreement with the University of Lorraine (Nancy, France) for a Postgraduate university Diploma in *Audit of public organisations and policies* and a Master Diploma in *Public Administration – Management of public organisations*. The programme is now in its fourth cycle, drawing dozens of ECA staff members in each cycle. Since 2017, the ECA has an agreement with the European university Institute in Florence, Italy, with several elements ranging from access to documentation to hosting events and staff exchanges. And since 2018 there is the partnership agreement with the University of Pisa, Italy, for summer school teaching in public auditing and accountability. Its first edition took place in July 2018, focusing on data analytics. For more information on these programmes see the ECA Journals of April 2018 and August/September 2018.

Bringing together statistical experts from different organisations

With the agreement signed on 8 February 2019 the partners – the University of Lorraine, Nancy, and the ECA - intend to bring together professors from the University of Lorraine with experts from Eurostat and the audit firm Deloitte Luxembourg. The courses are based on a combination of theory and practice, aimed to give you a broader understanding of statistic and big data. The programme consists of four modules, two on statistics and two on big data. A successful completion of the programme will give you a postgraduate university diploma in 'Fundamentals of statistics applied to audit.'

The interest in the programme is high, as shown by the fact that soon after opening for registration the first cycle quickly received the maximum of 15 candidates for that one. As Magdalena Cordero Valdavida, ECA Director Information, Working Environment and Innovation, explained, the programme is geared to pick up statistical skills and learn how to apply them.

Geared to life-long learning

During the signing ceremony on 8 February 2018 the ECA was represented by Lazaros Lazarou, ECA Member, and Eduardo Ruiz Garcia, Secretary General. The University of Lorraine delegation was headed by Sabine Chaupain-Guillot, Vice President for Education and Professional Training, assisted by Professor Antoine Tabbone, Director of the University's Digital Institute, and other university staff.

The agreement was signed by Sabine Chaupain-Guillot and Eduardo Ruiz Garcia. The new programme cycle will take place in the second half on 2019.

Present were also representatives of other organisations contributing to the programme: Eduardo Barredo Capelot, Director in Eurostat, the statistical office of the European Commission, and Philippe Lenges, Partner at Deloitte Audit, Luxembourg.

Magdalena Cordero Valdavida, ECA Director, commented:

The idea regarding deepening the topic of statistics started already when the ECA got into an agreement with the University of Lorraine to train our auditors in techniques that we consider useful, but that they may not have in their toolbox yet. And since there is a lot of data auditors have to deal with, statistics and big data came up. Topics being dealt with in this programme will be: what is real statistical analysis, so getting the right data. And second, that with these data set you apply the right tools. This is basic statistical data.

There are a few risks if you do not have these above skills. One is assuming that you arrive to a conclusion that is wrong because you see data which are not true. Or, you represent in a chart a reality that is not correct. Another risk is that you know which tools you can use and which data you could use with those tools, you can arrive at conclusions. But if you do not know which tools or datasets to use, you will never arrive at those conclusions.

Sabine Chaupain-Guillot, Vice President for Education and Professional Training of the University of Lorraine, commented:

For our university an important objective is to educate peoples to professionals and provide the competences they need, like for many other universities. But another objective is that this professional training and development continues, as there is a demand for that from the many socio-economic actors in our society. And it is important to respond to this. We have now two different programmes with the ECA, one directly related to training auditors, and one related to statistics, through our university's Digital institute.

Currently we do not have any such agreements with other EU institutions. However, within our philosophy of continued professional training, we offer such training to companies. In doing so we try to respond to the business needs for continued professional training and programmes tailored to their needs.



Philippe Lengès, Partner at Deloitte Audit, commented:

Our part in the programme consists of providing a technical session on statistics: how can it be used in audit and what impact of statistics can be in auditing the accounts. And also when auditing big data. The person from our side to contribute is one of our directors. He is specialized in statistics data modelling and how to apply it. Together with the university input we aim to gear it to the activities of the ECA. The statistical component becomes more and more important because the audit job is transforming drastically. And technology will help us and statistics will also be more and more applied, via tools that will help to use statistics in the audit of financial information.

As Deloitte, we are contributing to this programme for free in view of our partnership with the ECA. It is a great opportunity to further work and cooperate with the ECA.

Eduardo Barredo Capelot, Director in Eurostat, commented:

In the world we are living now, with plenty of information, sometimes fake news, it is important to be trained in statistics and big data. For EU institutions it is important to show to people what are the sources of statistics. And where they can find sources of information and statistics that is reliable and comparable. We, as Eurostat, have this role, and we try to promote this with contributing to initiatives like this one, but also with other institutions, like the Commission's Internal Audit Service, and universities. Explain statistics and their role in the normal world. Because this is what we as official statistics need to show. Not that there THE truth, because there is not absolute truth. But which figures are available, with a stamp of quality. I think this is important, also in audit.

We try to share the experience, and we have plenty of experience. Show not only the sources where people, in this case ECA auditors, can get the information, but also how they can ensure the quality of statistics. In addition, increasingly there is a call to base for example the impact assessment achievements of certain programmes and performance indicators on statistics. This increases the need for overall knowledge about statistics.

ECA publications in January / February 2019

Special report N° 35/2018

Published on 18 December 2018



Transparency of EU funds implemented by NGOs: more effort needed

The way in which EU funding is channelled through NGOs (Non-Governmental Organisations) for humanitarian and development aid, environmental protection, culture and other purposes needs to be more transparent, according to a new report by the European Court of Auditors. The current system of classifying organisations as NGOs is not reliable, warn the auditors, and the European Commission does not have sufficiently detailed information on how the money is spent. There is a similar lack of clarity when EU money is paid to NGOs indirectly through United Nations bodies.

[Click here for our report](#)

Special report N° 33/2018

Published on 18 December 2018



Combating desertification in the EU: a growing threat in need of more action

The European Commission does not have a clear picture of the challenges presented by the growing threats of desertification and land degradation in the EU, according to a new report by the European Court of Auditors. The steps taken so far by the Commission and Member States to combat desertification have limited coherence, say the auditors, and the Commission has not assessed progress towards its goal of achieving land degradation neutrality by 2030.

[Click here for our report](#)

Special report N° 01/2019

Published on 10 January 2019



Fighting fraud in EU spending: action needed

The EU must step up its fight against fraud and the European Commission should ensure leadership and reconsider the role and responsibilities of its anti-fraud office (OLAF), as the current fraud investigation system has inherent weaknesses, according to a new report from the European Court of Auditors. Currently, the Commission lacks comprehensive information on the scale, nature and causes of fraud. This hinders the effective prevention of fraud against the EU budget, say the auditors.

[Click here for our report](#)

ECA publications in January / February 2019

Special report N° 02/2019 **Chemical hazards in our food: EU food safety policy protects us but faces challenges**

Published on 15 January 2019



Although the EU's system for protecting consumers from chemical hazards in food is soundly based and respected worldwide, it is currently overstretched, according to a new report from the European Court of Auditors. The European Commission and the Member States do not have the capacity to implement the system fully, the auditors say.

[Click here for our report](#)

Public Audit in the EU

Published on 24 January 2019



Overview of EU supreme audit institutions' role and work now available online

The Court today launched the first edition of Public Audit in the European Union, an online portal containing information on the work and role of the 29 supreme audit institutions (SAIs) in the EU and its Member States. The portal illustrates the SAIs' contribution to the effective functioning of democracy and provides an overview of their mandate, status, organisation, work and output, as well as identifying the differences and similarities between them.

[Click here for our report](#)

Special report N°03/2019

Published on 29 January 2019



European Fund for Strategic Investments: Action needed to make EFSI a full success

The European Fund for Strategic Investments (EFSI) has been effective in raising finance for investments in the EU, but the amounts of investment mobilised may be overstated, according to a new report by the European Court of Auditors. The auditors also found that some EFSI support just replaced other financing from the EU and the European Investment Bank. Part of the money went to projects that could have used other sources of public or private finance, although on different terms, and most investments went to few larger EU-15 Member States with well-established national promotional banks.

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ECA publications in January / February 2019

Joint report Air Quality

Published on 30 January 2019



Joint report on air quality in Europe

Fifteen supreme audit institutions (SAIs) from the EU Member States and neighbouring countries have joined forces to produce a joint report on air quality. The report, published today, unfortunately shows that many countries in Europe are failing to meet air quality standards

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Briefing paper

Published on 7 February 2019



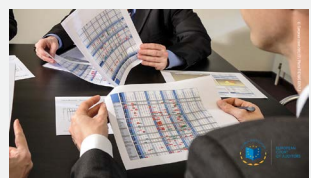
The EU's response to the "dieselgate" scandal

EU laws on vehicle emissions have been improved since the Dieselgate scandal, but challenges remain, according to a new Briefing Paper from the European Court of Auditors. The auditors welcome the improvements in market surveillance but point out that its effectiveness depends on implementation by the Member States. They also warn that manufacturers may find ways around the new testing systems which have been introduced and that scope for independent third-party testing may be limited because of the high costs involved..

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Audit preview

Published on 12 February 2019



Performance data for EU budget support in the area of external actions

The European Court of Auditors is conducting an audit on the reliability of the data underlying nearly one fifth of EU financial aid to partner countries outside the Union. Known as budget support, the payments support the EU's partner countries in their reform efforts and in achieving the United Nations' sustainable development goals.

[Click here for our report](#)

ECA publications in January / February 2019

ECA remarks in brief

Published on 14 February 2019



The Commission's legislative proposals for the next multiannual financial framework (MFF)

The European Court of Auditors has today issued a new publication summarising the main remarks submitted to the European Parliament and the Council for use when discussing and deciding upon the European Commission's proposals for the 2021-2027 multiannual financial framework (MFF).

[Click here for our report](#)

Audit preview

Published on 26 February 2019



EU action to fight antimicrobial resistance

The European Court of Auditors is conducting an audit of EU action against superbugs, including bacteria which have become resistant to antibiotics. In particular, the auditors will examine how the European Commission and relevant agencies manage the key activities and resources in this domain. They will also assess the relevance and effectiveness of EU contributions and support.

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NEXT EDITION

Fraud & Corruption

Promoting clarity and going beyond clean opinions

High moral standards, an appetite for transparency, and truthful and honest operations. These are the qualities anyone may expect from public institutions, not the least from those at EU level. What do audit institutions do to promote such mind-set and approach in dealing with the vast sums of money nowadays transferred between economic operators, be it in the public domain or in the private sector? And what can they do against bad intentions?



Source: Pixabay

For our next issue, we will dive into the world of fraud and corruption. What role do auditors play when it comes to ridding the world of malicious practices? What powers do they have to prevent and fight against fraud and corruption and how do they cooperate with other institutions?

**EDITION
HIGHLIGHTS**

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COVER:

Moving towards a cleaner future?

Source: Pixabay/Nicolas toulas