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Towards an integrated waterway transport system in the Danube Region

Abstract

The global economic power shift from West to East requires new techniques in spatial development of East Central Europe. This paper aims to examine what challenges and opportunities this process can pose for the Danube Region, how integrated infrastructure planning and sustainable, resource-efficient transportation can contribute to prosperity, emphasizing that international and global environmental issues that affect infrastructural development should be considered for regional strategies and transnational cooperation.

Keywords: macro-region, infrastructure, environmental impact, regional strategy.
JEL Classification: R11.

Introduction

The increasing volume of trade between Europe and Asia (EEA 2011) requires transport infrastructure development. Building roads is no longer a solution for the challenge since it would only cause more GHG emissions. Neither are GHG mitigating projects since they would not help congestion. Instead there is a need for the given potential to be used in a more efficient way via enhancing eco-friendly modes of transport and regional networking. Long wish-lists of EU priorities however are not effective. Networking and integration of regional, cohesional, energy and environmental policies are needed to make transport competitive (Erdősi 2007).

Cities are drivers of economic growth, innovation, and international competitiveness (Rechnitzer 2009) and thus it is appealing to study the relation be-

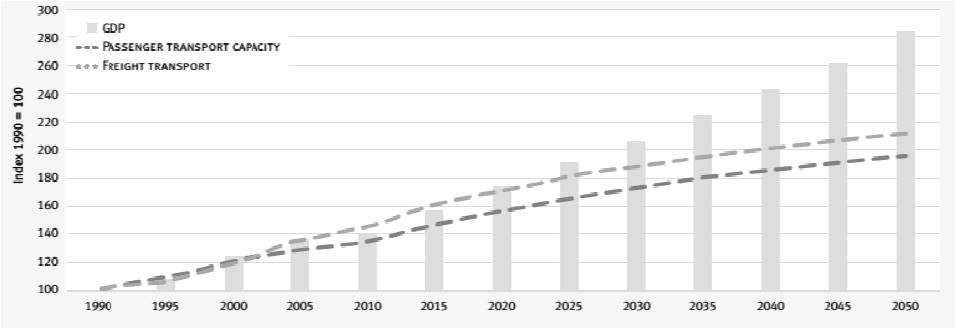
tween growth centres and major transportation corridors. The potential of the Danube is really tempting as it interconnects historic cores and logistic centres of the region. The main challenge is the currently inefficient infrastructure (both physical and ICT) making inland navigation uncompetitive. Member states on their own are unable to make use of the freight since they are no potential market in the developing Europe-Asia relation – moreover they suffer from climate change and overall environmental impacts of present freight transport e.g. delivering goods to Rotterdam. The aim is not to increase inland waterway freight, but make it resource efficient. Danube countries in a strategic power bloc through developing infrastructure along with the environment and creating added value of logistics services and ICT innovations can create competitive pricing and mobilise macro-regional synergies. Competition among member countries and modes of transport can undermine the overall region's ability to successfully compete and leverage its resources. A strategy at macro-regional level seems a better option where the broader framework can provide a spatial perspective and the environmental impacts of transport can be considered.

1. Growth of freight and environmental impacts

Simply through targeted infrastructural investments, the decarbonization of the EU transport sector will not be achieved. The Commission's roadmap for 2050 addresses the challenges of dramatically reducing Europe's dependence on imported oil and cutting carbon emissions, however, does not answer the question how to prioritise the scarce funding more strategically to aim at a transport system that goes beyond developing a mass transport infrastructure. An overall integrated transportation network should be created and high level project management should be governed by coordinators. Coordination between CEE governments should be encouraged through emphasis on a new integrated network approach, which among other things ensures the environmental and climate impacts of individual projects are considered coherently. We are concerned that this could be more effectively attained through macro-regional cooperation than at national or EU level.

Establishing a common market lead to growth in freight transportation in the period of 1995-2005. Mobility in transportation in Europe continues to increase due to macroeconomic drivers such as GDP, private income and volume of trade. This trend however will discontinue due to saturation factors more in passanger mobility and less so in freight. According to data from SCENES the extrapolation of the relationship between mobility and macroeconomic drivers to the future shows gradual decuopling of mobility growth from economic growth (Eurelectric 2007).

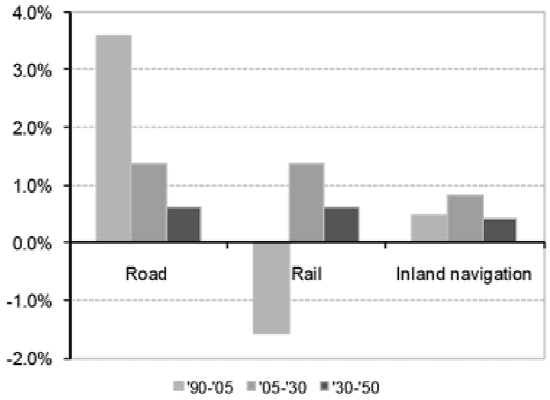
Figure 1. Mobility projections in transportation for EU-27



Source: Eurelectric (2007); Breijenberg et al. (2013).

The European Commission projects that in the absence of additional policies beyond those adopted by March 2010 (i.e. in the Commission's White Paper Reference scenario) freight transport activity (in t-km, including international maritime) would increase by 82% and without decisive policy intervention transport system will not meet the EU target to reduce GHG emissions by at least 60% by 2050, compared to 1990 (European Commission 2011).

Figure 2. An average growth per year in freight transport activity (t-km, in %) 1990-2050



Note: For each mode of freight transport, the first column shows average growth from 1990-2050, the second from 2005-2030, the third from 2030-2050.

Source: European Commission (2011); Breijenberg et al. (2013).

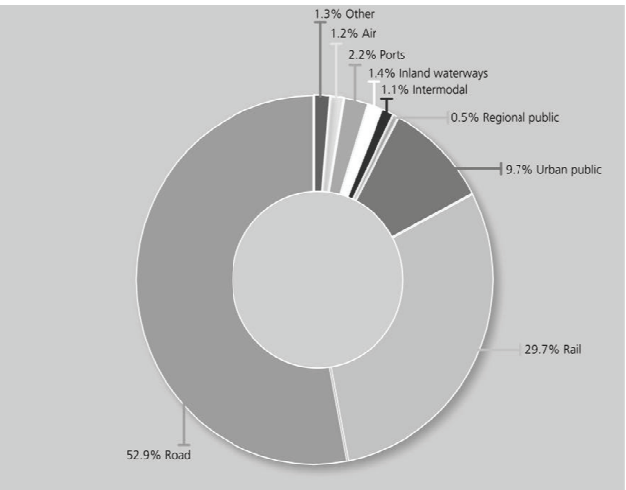
CO2 emissions from freight transport – as opposed to passenger related CO2 emissions that are expected to decrease – are projected to grow, resulting a slight net rise of CO2 emissions from transport between 2005 and 2050. This increase in CO2 emissions can be explained by the growth in transport activity, which

outpaces reductions in energy intensity of vehicles and carbon intensity of fuels. For freight transport, the overall 18% increase of CO2 emissions (equivalent to 88 Mt of CO2) can be attributed to the aggregate of a 55% increase in CO2 emissions due to growth in activity, a 28% decrease in CO2 emissions due to a decrease in the energy intensity of transport and a 9% decrease in CO2 emissions, due to a decrease in carbon intensity of the energy used.

The world's biggest public lending institution, the European Investment Bank (EIB) instead of shifting its lending towards sustainable and energy efficient modes of transport continues to support fuelling climate change through its bias towards road transportation (Breijenberg et al. 2013). As a result of EIB's transport and related industry investments from 1996-2009 54% (out of EUR 67.6 bn invested in the transport sector) went for the most carbon intensive transport modes: 45% for road-, 9% aviation-investments. Only 32% were invested in rail and urban public transport. In Central and Eastern Europe 66% of investments were made into road transport. In the current period (2007-2013), 22% (75.8 bn EUR) of the total Cohesion Policy budget is dedicated to transport infrastructure and 73% (EUR 55 bn) of total EU funds transport funding goes to the CEE-10 countries in Central and Eastern Europe (without Bulgaria and Romania). These amounts should significantly improve the poor public transport and decarbonise the region's transport sector. Member states, however, misallocate their funds:

- 53 percent of transport funds are allocated for roads and motorways,
- less than one-third is being invested in railway infrastructure and
- only one-tenth (EUR 5.7 bn) in urban public transport.

Figure 3. Breakdown of 2007-2013 EU funds for transport in CEE-10 countries according to mode



Source: Bankwatch (2013).

Instead of further financing roads, financial commitments to environmental friendly modes of transport and energy efficient transport networks are necessary to break the current trend of increasing GHG emissions from the transport sector. Besides the fact that the transport sector contributes with 13,5% to global greenhouse gas emissions, transport is the only sector where emissions are still increasing and greenhouse gas emissions from the transport sector need to fall by 60% by 2050, compared to 1990 (European Commission 2011) Decisive transport strategy and actions are urgently needed otherwise GHG emissions from transport are expected to grow by 74% over by 2050 (Skinner et al. 2010).

The Trans-European Transport network (TEN-T) is the flagship infrastructure which should deliver on the goals of EU transport policy, including decarbonization in order to minimise the impacts of climate change and increase energy security. The Connecting Europe Facility (CEF) is the new name for the EU fund for development of major infrastructure projects. The separate guidelines for each part of the CEF – Transport, Energy and Communications – determine how that funds should be used. Should the regulations on the TEN-T Guidelines and the CEF – that guarantee that EU spending on transport protects the environment and biodiversity while delivering measurable steps towards a low-carbon, climate-resilient and resource-efficient economy – fail Europe gets locked into further emissions and carbon-intensive development. The CEF would create a single European fund for infrastructure projects, mainly based on grants but EIB loans and financial tools to include private sector co-funding are also crucial. Allocation of €10 bn from the Cohesion Fund for poorer regions, especially to support transport infrastructure projects is also proposed. (Bleijenberg et al. 2013).

Central and Eastern European countries could decrease the level of GHG emissions by increasing rail and public transport but CEE countries seem to be reluctant and they spend twice as much EU funds on roads as on railways. The funding for public urban transport is marginal in these countries. Transport decarbonisation therefore needs to be prioritised in the next EU funds programming period (2014-2020) and so Cohesion Policy will probably focus on supporting integrated traffic management and back member states to use funds from EU for more sustainable modes of urban transport when implementing Transport Operational Programmes at national level. This could help the process of decarbonisation, but will not ease the burden of CEE energy dependency and will not develop economy in the region.

The Commission proposal (European Commission 2011) seeks to tackle five issues via the TEN-T guidelines:

1. Completing missing links, especially cross-border links.
2. Improving infrastructure standards, especially in Central and Eastern Europe.

3. Connecting different transport modes, for both passengers and freight.
4. Reducing greenhouse gas emissions from the transport sector by 60% by 2050, compared to 1990.
5. Harmonizing rules and requirements in all transport modes to facilitate transport.

EU transport policy before 2010 did not assess biodiversity impacts and transport infrastructure played a role in the failure to meet the EU target to halt biodiversity loss by 2010 when NGOs stepped in to compare the TEN-T plans against the Natura 2000 network of protected nature areas. Clashes between infrastructure and protected sites should be avoided. This is still a poorly handled objective in the policy.

Different stakeholder groups have different interests and different expectations from EU transport planning and budget. The TEN-T policy seems not able to meet any of those expectations. A set of 30 priority projects was accepted (first a list of 14 projects at a Ministerial conference in 1994, then the list expanded to 30 projects in 2004) and only four of these projects finished to date. Others missed the deadlines, or went over the budget, etc.

Previous transport funds also aimed to reduce regional economic differences and the focus on rail projects was expected to bring on better sustainability but unfortunately this was not the case. It has become clear that infrastructure investment in itself cannot solve such regional challenges (Hardi 2012).

2. Central and Eastern Europe need upgrade, expansion and integration in the transport sector

The development of an efficient Trans-European Transport Network (TENT) that will enable the economic, social and territorial cohesion of the European Union is a key objective of the EU's transport policy. To make transport resource efficient, seamless and integrated the future policy has to overcome barriers such as the present slow progress in development and the fact that past plannings mostly focused on national rather than EU priorities (High Level Group 2003; van der Geest et al. 2011). The objective to fight climate change as indicated in the Commission's proposal for TEN-T is a driving push since the challenge require both more urgency and EU focus. Different funds of the EU budget can be used to speed up the development but private investments are also necessary to support the network and infrastructure requirements.

Interaction between GHG policies for transport and congestion is more complex than often indicated in transport plans and sometimes controversial, too. In case of freight transport a multi-modal framework, through strategic

transport hubs could reduce emissions significantly by facilitating modal shift. From studies (van Essen et al. 2012) we can conclude that actions to mitigate GHG emissions in general either reduce or have a neutral effect on congestion while actions to reduce congestion have very different outcomes. That is some actions to reduce congestion can mitigate GHG emissions e.g. pricing, while others e.g. building road infrastructure can result increases in GHG emissions.

A competitive and resource-efficient transport system is defined through the targets of the White Paper for 2050 and 2030 which underline the role of multi-modality "efficient co-modality in passenger mobility and goods transport throughout the entire chain of transport and logistics services – measured in terms of economic efficiency, environmental protection, energy security, social, health and employment conditions, safety and security, and taking account of territorial cohesion and the geographical environment in individual countries and regions – should be the guiding idea for future transport policy… transport modes must complement one another and interact and that the parameters outlined above should be used to determine the current and future modal distribution in countries and regions, according to their individual possibilities; considers, further, that use of sustainable means of transport should be systematically promoted, also for short and medium distances" (European Parliament 2011).

Some of the key elements like efficient multi-modality in integrated transport policy even if shared by various stakeholders are sometimes seen differently. Model shift is regarded by the Commission as a key policy objective whilst seen as an outcome to reduce GHG emissions rather than a goal by others. The European Commission's aim as stated in the White Paper (2011) is to allow shifting 30% of road freight over 300 km to other modes such as rail or waterborne transport by 2030, and more than 50% by 2050" by overcoming fragmentation, better co-ordination and other incentives. There are, however serious arguments (ACEA 2011) that policies should aim at achieving efficient co-modality, in which all transport modes are optimised and integrated in order to achieve seamless transport and reach the EU GHG reduction targets.

Efforts focusing merely on making incremental changes to current transport systems could result in lock ins, leaving Europe fixed in an outdated and inefficient transport structure. (EEA 2014). A more resilient and flexible multi-level macroregional approach is required, but that goes far beyond the scope of transport. This broader framework can provide a spatial perspective, offer opportunity for dissemination of knowledge and facilitate a discussion among different stakeholders and overcome the fragmentation of the river-basin.

The Danube is traditionally an important trade route in the region. The navigable length from Kelheim (Germany) to Sulina (Romania) is 2,414 km

serving 78 ports. In 2007 49 tons of freight were transported on the Danube (Romania accounted for 25.6 tons, Serbia for 4.7 million tons, Austria for 12.1 tons). Road transport (especially transit) in the new member states has grown at the expenses of rail and water transport. The number of cargo ships on the Danube is only one tenth of those floating on the Rhine and despite the inauguration of the Rhine-Main-Danube canal, traffic on the Danube has dropped by 50% since 1980. Political changes in the region resulted in insufficient public investment in rail and waterway transport and the war in Yugoslavia in the 1990s even worsened the case (Pavisa, Kulcśar, eds. et al. 2010).

3. The potential of inland waterways

The 2011 mid – term evaluation of the TEN-T programme 2007-2013 (Steer Davies Gleave 2011) reports that though waterway freight transport is credited with some potential to reduce emissions transport, but waterways are underutilized. Recognising the potential of waterways in Europe the European Commission intends to develop a 'European Maritime Transport Space without Barriers' to ensure free maritime movement in and around Europe. The Blue Belt Initiative has the main objective to facilitate intra-EU maritime transport and improve system operation by integrating the use of monitoring tools by all relevant authorities, ensure the full interoperability between ICT systems in the waterborne sectors, guarantee the monitoring of vessels and freight and set up appropriate port facilities. In order to reach this aim the administrative barriers in EU ports (such as customs, veterinary and plant protection control) should be reduced, by the means, amongst others, of 'Blue Lanes' (fast-track procedures) that will ensure the speedy transport of goods. Besides this seaport efficiency improvement and reduction of fragmentation of the overall institutional and regulatory framework are also necessary (European Commission 2011). There are some good practice examples of successful eco-system restoration and enhancement, such as the Seine-Scheldt waterway in Flanders where some 500 hectares of wetlands were restored as part of the project (Birdlife et al. 2008).

In case of the Danube – where the river gives home to important habitats, species and ecosystem – there are serious concerns that it could clash with an ill-considered waterway infrastructure planning. We are concerned that at macro-regional level thorough public and scientific consultation could lead to dual benefits and infrastructure priorities could not take precedence over binding environmental protection laws, and binding requirements for SEA, EIA and

Appropriate Assessments. Identifying mutually beneficial solutions is more fruitful than simply minimising ecological harm.

As highlighted by Stojanovic et al. (2006), however, the "fact that each port is unique in terms of its geography, hydrography and commercial profile means that a 'one size-fits-all' strategy of prescribed environmental management response may not be appropriate even though there are many issues in common". The same can be applied to river management, as ecosystem features depend among others on the geographical location of the estuary. Therefore a site-specific analysis is necessary to take all regional factors and interests into account to resource efficient benefit.

Besides transport costs in Central and Eastern Europe differ from transport costs in Western Europe The state of road and railway infrastructure increases transport time. The situation varies between routes and countries but in general the quality of services is better in the Central East European countries than in the countries further downstream in Danube region. Danube could be turned into a key transport infrastructure for East-West European transport flows on the South-East axis, but current logistics on the Danube suffers from poor market positioning. Significant increase of unit costs is not the real problem, it is rather a symptom. Part of the problem is physical barriers like shallow water in dry periods which raises the question of building dams or dredging the river or other alternatives. And there are technological barriers like harmonization among different sectors road, rail and waterway, etc. which requires modern port infrastructure and technological innovation. Tri-modality less developed, and functional integration of ports with each other and with their hinterland is missing. European Policies, however, neglect the Danube potential therefore a more focused regional strategy seems more effective where integrated transport strategy could be more proactive.

Conclusions

Without a coherent and integrated transportation policy and decisive policy intervention in the current trend transport system will not meet the EU target to reduce GHG emissions by at least 60% by 2050, compared to 1990. The new policy should support transport modes with a smaller climate impact. Transport Policy has changed a lot recently and lessons from the past could be learnt. Potential of tri-modality (rail, road and waterway) can be used more resource efficiently through upgrading waterway and rail infrastructure at regional rather than national level. Accordingly the new transport strategy should consider the following: right balance between different interest groups and stakeholders

should be created; environmental issues (biodiversity impacts, GHG emissions, wetland ecosystems management principles, 'no net-loss approach', etc.) need to be involved; prioritization should succeed definition of the projects; internalization of the external costs of transport should speed up and get implemented.

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