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Key challenges facing the European transport labour market

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Abstract
The importance of transport for human development is rather unchallenged. Transport is fundamental for the functioning of markets in general, and the labour market in particular, including the labour it needs for its own functioning. The aim of this article is to identify and assess key challenges in the labour market in the transport sector in the European Union, and present some disputable issues related to activities aiming at dealing with these challenges. First, the direct and indirect importance of transport for the European labour market is discussed. Then, the key challenges in the European labour market are identified. Finally, some potential directions of development and their possible impact on employment in the transport sector are discussed.

Keywords
Transport labour market, European Union, challenges, policy on transport employment

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Key challenges facing the European transport labour market

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1. Introduction

The positive role of transport for socio-economic development and the functioning of markets was already identified by Adam Smith (1776) in his famous book *The Nature and Causes of the Wealth of Nations,* as well as many modern economists (see e.g. Krugman, 1979; European Conference of Ministers of Transport, 2001; Eddington, 2006; OECD, 2008). While it is not a sufficient condition, socio-economic development would not be possible and modern man could not "normally" function. However, due to increasing transport flows these positive effects are more and more threatened by negative externalities[1] in the form of, among other things, congestion, air pollution, accidents and greenhouse gases contributing to climate change. This article deals with the importance of the functioning of transport systems for the European labour market, in particular the European transport labour market, in a positive as well as negative sense. The main aim is to identify and assess key challenges in the labour market in the European transport sector, and present some disputable issues related to activities aiming at dealing with these challenges. First, the direct and indirect importance of transport for the European labour market is presented. Then, the key challenges in the European labour market are identified and elaborated. Finally, some potential directions of development and their possible impact on employment in the transport sector are discussed.

The analyses in this article are based on modern literature on transport economics, EU documents regarding the labour market and the functioning of the transport

[1] According to one definition, "externalities exist when the activities of one group (either consumers or producers) affect the welfare of another group without any payment or compensation being made" (Button, 2010, p. 161). This concerns the negative externalities (external costs).

labour market, as well as statistical data from Eurostat, World Health Organisation and Organisation for Economic Co-operation and Development.

2. The role of the transport sector in the European labour market

Without transport, markets cannot function. The positive impact of transport on the social and economic sphere appears in different forms (see e.g. Button, 2010, pp. 419-460; Krugman, 1998; Wachs, 2011, pp. 8-14). Well developed and efficient transport systems enable access to labour markets for both (potential) employers and (potential) employees. As transport systems are constrained by a maximum capacity, access to different modes of transport (car, bus, train, tram, metro, bike) increases the range as well as the flexibility of the labour market. This has as a consequence, ceteris paribus, that employers have access to a larger pool of qualified labour, improving the competitiveness of the company (and, for example, the quality of services in governmental institutions). Employees and unemployed can reach a larger area in the same travel time, implying that the probability of finding employment in accordance with their education, experience and expectations increases. In general, it can be stated, that from the point of view of functioning of the market, a developed transport system supports the reduction of unemployment, stimulates entrepreneurship and the competitiveness of companies, and as a consequence has a positive impact on material well-being of society. A developed transport infrastructure makes a location more attractive for entrepreneurship and investment. Furthermore, the role of transport in integrating society should not be underestimated, which is reflected in the free flow of labour in the EU as well as the functioning of the Single European Labour Market.

Negative external effects reduce the positive effects of transport for the labour market at different levels, from the local labour market to international labour markets. Congestion, for example, negatively influences the labour conditions of truck drivers and increases the probability of different types of diseases appearing (e.g., heart diseases, nervousness, diseases resulting from exposure to toxins contained in exhaust gas). Furthermore, as time is lost due to congestions, delays appear in supply chains while passengers in public transport have increased difficulties in catching their mean of transport, which can lead to different types of economic losses

for enterprises (Paradowska, 2011, pp. 71-73). According to the European Commission, congestion in the EU costs annually around 1% of the EU's GDP (around 100 billion EUR) (European Commission, 2015). Most of the negative external effects appear in the form of health loss of people exposed to these effects. While this is directly visible in case of accidents, it also concerns those who are exposed to air pollutants resulting from exhaust or noise. In effect, the deteriorating health conditions of workers negatively influence employment attendance and performance, in turn negatively influencing the performance of companies (WHO Regional Office for Europe, 2014, pp. 1-2). Another example is the emission of greenhouse gases by the transport sector[2] and its negative impact on climate change. When leading to higher level of groundwater in some countries, extreme and formerly uncommon weather phenomena etc., this both negatively influences employers' and employees' performance.

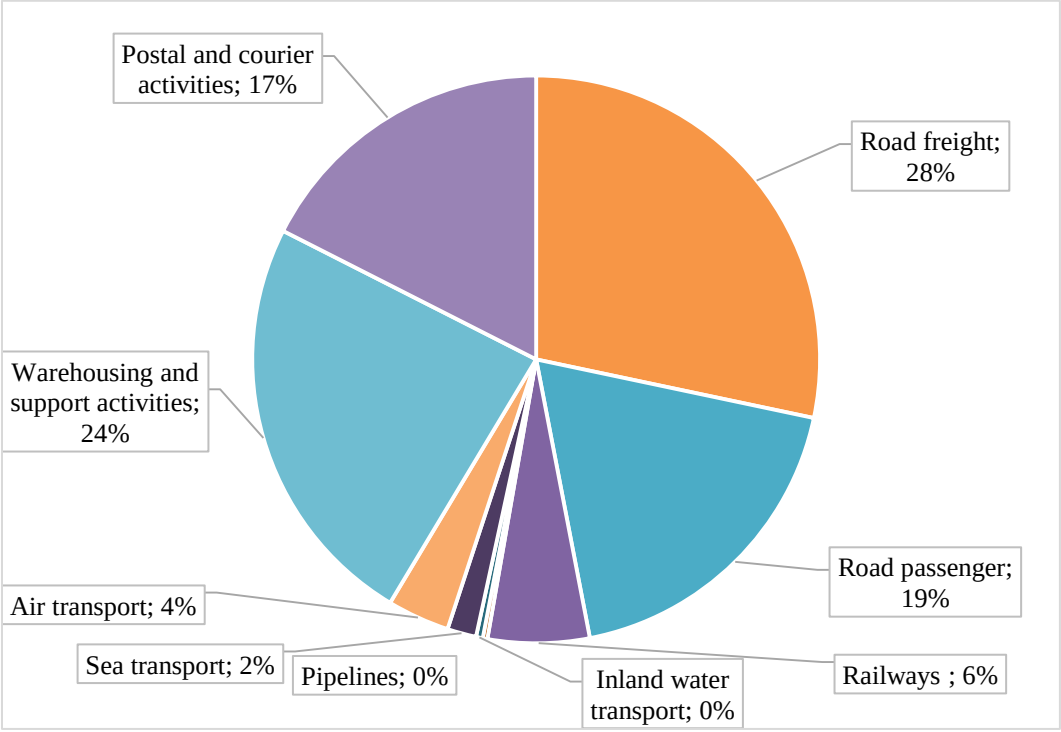
While the positive externalities related to the stimulation of the functioning of markets increase welfare of society in a direct or indirect way, the negative externalities have the opposite effect. Focus in the rest of this article is on challenges in the European transport labour market, which is a condition for the functioning of transport systems, in turn influencing the functioning of the common European market.

Currently, over 10 million people are employed in the transport sector of the European Union. This is about 4.5% of total employment, while the transport sector contributes about 4.6% to total GDP in the EU. When including equipment for transport, these numbers would increase to 6% and 6.3% respectively (European Union, 2013, p. 2). About half of employment concerns road passenger and freight transport, 22.5% warehousing and supporting activities and 17% postal and courier activities (see Figure 1), which are also strongly related with the functioning of road transport. The relatively high level of employment on road transport is important from the point of view of development of transport policy as well as activities aiming at dealing with the challenges facing the European transport labour market. From the point of view of sustainable development, the role of road transport should be reduced due to its negative external effects on health and the environment. However, such policy may negatively influence employment in the freight transport sector (see e.g. European Commission, 2014). While changing the modal split, i.e., reducing the

[2] The transport sector is responsible for almost 22% of the total GHG emission in the EU-28 (Eurostat, 2015).

absolute and relative share of road transport in total freight transport, may currently create negative employment effects, when considering the future expected shortage in labour in this sector such a policy may become more attractive. Regarding the modal split in freight transport, road transport has a share of 45% (in tkm). For passenger transport the share is 72% (in pkm), while the share for bus and coaches is 8%, and for powered 2-wheelers 2% (European Union, 2014).

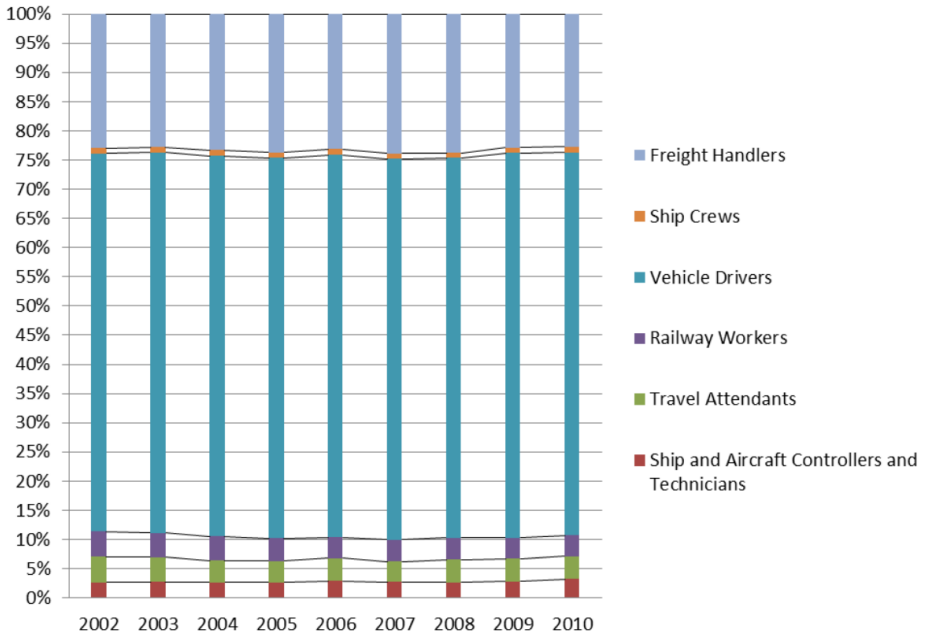
Figure 1: Employment in the transport sector in the EU-27 countries in 2011



Source: European Union, 2014.

As shown in Figure 2, almost two third of employment in the EU transport sector concerns the profession of vehicle driver. About one quarter of employment concerns freight handlers, while the remaining 10% includes ship crews, railway workers, travel attendance as well as ship and aircraft controllers and technicians.

Figure 2: Share of transport occupations in total transport employment



Source: Christidis et al., 2014, p. 15.

While the other branches employ less people than road transport, this does not mean they are unimportant from the point of view of employment, as well as the functioning of the European transport labour market and the common market itself. The importance of transport for employment and markets should be considered as a whole, in particular in the context of the importance of multimodal transport for a more sustainable (or less unsustainable) transport system. As a whole, the European transport labour market experiences important changes resulting, among other things, from socio-demographic changes as well as technological development.

3. Changes and challenges influencing the European transport labour market

At the time of writing (2015), the European transport labour market faces changes and challenges to a smaller or larger extent in four different areas (European Union, 2013, pp. 2-4; Christidis et al., 2014; Turnbull, 2013; WHO Regional Office for Europe, 2014):

1) demographic changes and the related ageing of society;
2) attractiveness of work, labour conditions and educational requirements in the transport sector;
3) female employment in the transport sector;

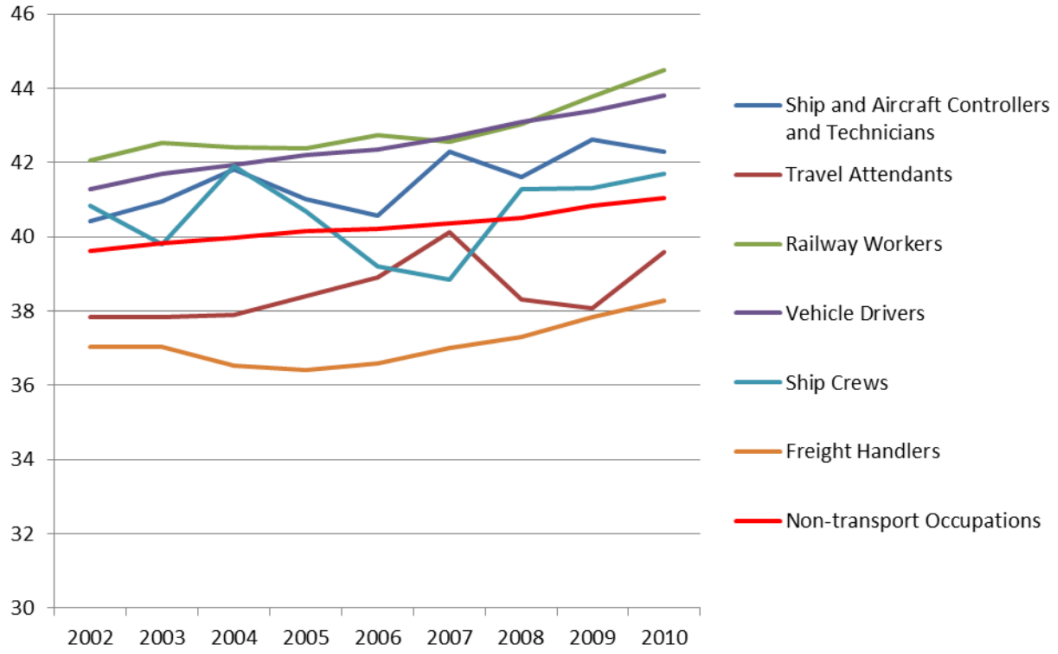
4) sustainable development of transport and the creation of so-called „green jobs" in this sector.

5) Each challenge will be discussed shortly below, and main directions of EU policy will be identified.

Ageing labour force in the transport sector

Although the average age of employed people differs depending on the branch of transport and the profession (see Figure 3), the labour force ages more quickly than on average in other sectors in the EU. Research shows that about one in three workers in the transport sector is over 50 years old and will be pensioned in 10-15 years. The smallest share of employment (about 17.5%) is found in the age category 15-29 years (European Economic and Social Committee, 2011). On average, railway workers are the oldest, followed by vehicle drivers. These two groups, as well as ship and aircraft controllers, technicians and ship crews, have an above average age. Freight handlers and travel attendants are on average the youngest. Ageing of workers in the transport sector is a complex issue, not only determined by demographic tendencies in Europe, but also by the low level of attractiveness of work in this sector as well as the relatively small interest of young workers to work in this sector.

Figure 3: Average age by transport occupation



Source: Christidis et al., 2014, p. 16.

The most important problem with the ageing labour force in the transport sector is the expected shortage in supply during the coming years. In road transport, the demand may exceed supply by about half a million jobs by 2020. It is difficult to estimate future demand and supply in the transport sector, among other things due to the strong relation with economic activity (which is difficult to predict itself), as well as the change in activity and productivity in each branch of transport (Christidis et al., 2014, p. 20). However, according to estimations based on trends in supply and demand in 2005 and 2010, when no significant changes appear at the supply side, by 2020 labour shortages will be visible in each branch of transport (see Table 1). In order to prevent such a situation, policy should be directed towards supporting education of labour force for the transport sector (Christidis et al., 2014, p. 20).

Table 1: Projected number of jobs in land transport, maritime transport and aviation in 2015 and 2020, EU-27

	Transport mode	**2010**	**2015**	**2020**
Number of jobs (million)	Land transport	6.3	6.2-6.5	6.5-6.9
% change from 2005		-	5.5%-12%	12%-19%
Increased demand (thousands)		-	-	-
Retired 2005 employees (+)		200-250	900-1200	1700-2100
Labour demand from increased activity (+)		400-500	400-700	700-1100
New labour supply (-)		700-800	1400-1800	2200-2700
Gap		-100 to -50	-100 to +100	+200 to +500
Number of jobs (million)	Maritime transport	324	320-340	340-360
% change from 2005		-	3%-9%	9%-16%
Increased demand (thousands)		-	-	-
Retired 2005 employees (+)		20	60	100
Labour demand from increased		12	25	30-40

activity (+)				
New labour supply (-)		18	30-40	60-80
Gap		+15	+30 to +50	+40 to +70
Number of jobs (million)	Aviation	447	500-50	600-650
% change from 2005		-	12%-23%	35%-46%
Increased demand (thousands)		-	-	-
Retired 2005 employees (+)		30	50-80	110-130
Labour demand from increased activity (+)		0	60-100	160-200
New labour supply (-)		60	120-150	200-250
Gap		-20	-10 to +20	+30 to +80

Source: adapted from Christidis et al., 2014, pp. 20-21.

Low attractiveness of labour in the transport sector

In general, economic growth and socio-economic development has as a consequence that demand for transport services increases in each of its branches (European Commission, 2001; Stead and Banister D., 2003, pp. 515-526). Normally, the increase in supply of transport services would be accompanied by an increase in employment. However, due to competitive pressures in the freight transport market, and the aim of improving efficiency in public transport in order to reduce the pressure on local and national governments' budgets, new strategies for logistics management are developed and used (e.g., "just-in-time") and work pressure and workloads tend to increase (European Union, 2013, p. 4).

According to the third and fourth edition of the European Working Conditions Surveys (EWCS), transport is among the sectors where work is the hardest and labour conditions are considered to be among the poorest, while attractiveness of employment is very low (European Economic and Social Committee, 2011, see more at: Eurofound). Determinants of this low attractiveness of employment in this sector are: atypical working hours, a typical working week comprising more than 40 hours, working hours not fitting to family or social commitments, high requirements of qualifications, violence and stress, some health problems. The fifth edition of the

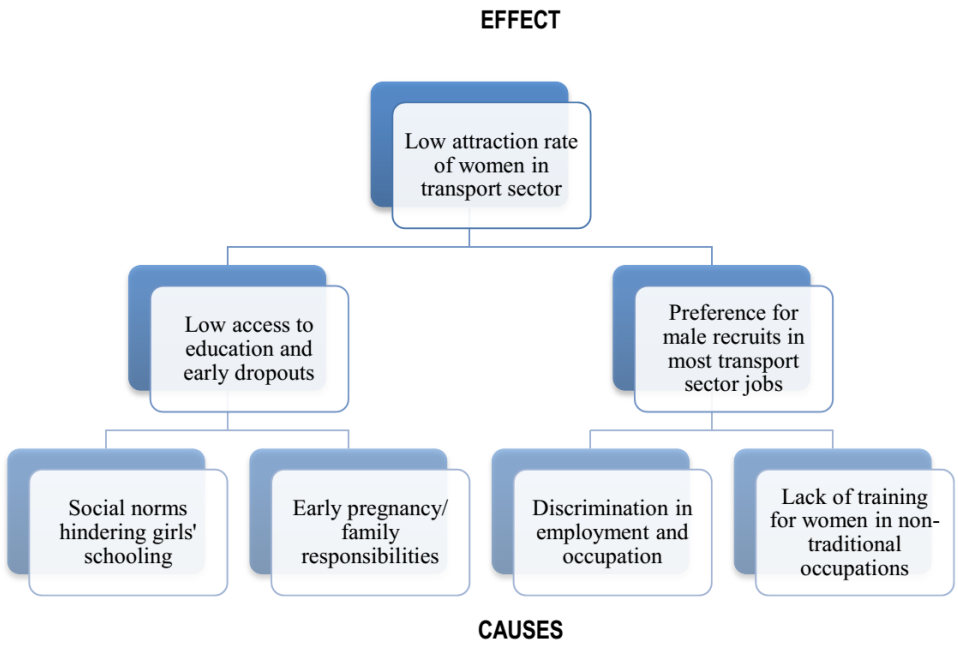
EWCS shows research from 2010, which mostly confirm the mentioned problems (Eurofound, 2012). Based on this research, analysis was carried out regarding the satisfaction of people employed in the transport sector, distinguishing land transport and transport via pipelines, water transport, air transport and warehousing and support activities for transportation, as well as different other professions (Christidis et al., 2014, pp. 10-12). It turned out that the relatively lowest job quality existed in land transport and transport via pipelines, for all three categories under assessment: satisfaction with working conditions, satisfaction with wage and motivation to perform. Freight handlers were most satisfied with the labour conditions, followed by lift truck operators, heavy truck and lorry drivers and bus and tram drivers. Workers employed in air transport are most satisfied, followed by water transport. Interestingly, atypical working hours are most common in professions such as ship and aircraft controllers and technicians, railway workers, travel attendants and ship crews. A typical working week comprising more than 40 hours is mostly found among ship crews, vehicle drivers and ship and aircraft controllers and technicians (Christidis et al., 2014, pp. 18). It turns out that working hours are not a crucial element of job satisfaction. Dissatisfaction is rather related to other determinants.

High requirements and qualifications are partly responsible for low attractiveness of employment. Although differences exist in different sectors, for the last years a general tendency can be observed in each branch of the transport sector that requirements are becoming more strict and more qualifications are demanded, while labour conditions are considered to deteriorate (European Union, 2013, p. 4). Increasing demands regarding qualifications of employees is caused by technological changes and internationalization of transport services. For example, technological changes have as a consequence that more knowledge is required for handling and driving. The internationalization of transport markets and development of international transport services have as a consequence that drivers more often have to know foreign languages, possess social skills in order to function in an international environment, possess analytical skills regarding logistic requirements, possess knowledge on international law and regulations (including environmental law and regulations), etc. (European Union, 2013, p. 4). This may provide disincentives for young people to start a career in the transport sector.

Women in the transport sector

Transport is on the second place (after construction) when considering male employment – about 20% of all employed in the transport sector are women (Eurofound, 2012, p. 21). The share of women is the highest in air transport (40%), while being the lowest in road transport (14%). About 10% or bus drivers are women (European Union, 2013, p. 4). It should be noticed that the low level of employment not only concerns drivers, but also transport-related services. For example, in 2006 in the EU-27 countries only 21% of the employed in all transport services were women, including 9.2% temporarily employed. The respective shares were 13.7% and 7.3% for land transport. Although the employment share of women in the transport sector differs between countries, the reasons of this fact are similar working conditions (including the time, timing and place of work), and gender stereotyping (Turnbull, 2013, p. 5). The most important reasons are: working time, shift-working and the location of employment (very often far from home). These factors trade-off with motherhood or taking care of the family, when this is an aim of women. Not without significance are stereotypical behaviour and traditional mental models, leading to reduced female access to transport education and favouring males in employment decisions (see Figure 4).

Figure 4: Cause-effect relationship of limited attraction of young women in transport



Source: Rosas and Rossignotti, 2008, cited by: Turnbull, 2013, p. 15.

Sustainable transport and “green jobs”

Transport related threats in the form of the direct and indirect consequences of negative external effects are a reason that the European Union developed policy aiming at the sustainable development of transport systems (see e.g. European Commission, 2014). This is, among other things, expressed by change in the modal split of transport, as well as support for forms of moving people and freight in a more environmentally-sound way. The effects of the policies are in particular visible in urban areas, where local governments with help of different measures provide incentives to reduce the use or individual car transport and to use public transport, bicycle or to go on foot (see e.g. European Commission, 2015). At the same time, the development of these forms of mobility is considered to be an opportunity for the creation of new employment, for example in the field of bicycle retail and maintenance, bicycle production, construction and maintenance of public transport vehicles, construction and maintenance of high quality infrastructure and environments for public transport, walking and cycling etc. (WHO Regional Office for Europe, 2014, p. 4). According to EU estimates, an investment of 1 billion euro in sustainable development of transport results in the creation of 21 500 full time jobs, about 16 700 jobs in construction and maintenance of infrastructure and transport vehicles and related jobs, and 4 800 jobs thanks to increased expenditure of people with “green jobs” in transport (Sustainlabour, 2013). Research carried out in France shows that there are nearly 10 jobs per €1 million turnover in the bicycle industry and 2.5 per €1 million turnover in the car industry (Dumont et al, 2009, cited by: WHO Regional Office for Europe, 2014, p. 9). Research carried out in the capital cities of 57 countries show that an increase in the share of bicycles in individual transport to the level of 26% (cycling modal share in all trips for Copenhagen in 2013) would create an additional 77 000 jobs and would enable to avoid more than 9 400 premature deaths (WHO Regional Office for Europe, 2014, p. 13).

Directions of the EU policy to handle key challenges in the transport labour market

The general social and economic benefits of an effective and efficient transport system, as well as the potential problems related to a lack of reaction to the earlier discussed negative tendencies and the changes in the functioning of European

transport are the basis of policies and measures in the European Union. These policies and measures aim at reducing tensions and problems while at the same time maximizing benefits in the context of the performance of the European transport labour market. Many initiatives are developed in the framework of other policies, such as counteracting the negative impact of the ageing society or equal treatment and opportunities for women. The main directions of the EU policy on transport employment are shortly presented in Table 2.

Table 2: Main directions of the EU policy on transport employment

Direction of the EU policy	Examples of planned / organised actions
Retaining older workers in the transport sector	• "EU Strategy The demographic future of Europe: from challenge to opportunity" - increase workforce participation of men and women over the age of 55, e.g. by enhancing skills, lifelong learning, and active ageing. • "Dealing with the impact of an ageing population in the EU" - providing more job opportunities, especially part-time work and flexible working hours. • "A Sustainable Future for Transport" - avoiding the situation that ageing population would jeopardise Europe's competitive position in the world economy and the capacity to maintain high living standards. • "White Paper, Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system" - the need to create quality jobs and improve working conditions in transport. • "A Common Immigration Policy for Europe: Principles,

	actions and tools” - alleviating labour shortages by means of immigration.
Improving access for women	• “Strategy for Equality between Women and Men 2010-2015” - improving the quality of jobs and work-life balance for women. • “Europe 2020 Strategy for Smart, Inclusive and Sustainable Growth” - reconciling work and private life. • “A Sustainable Future for Transport” - facilitating women’s access to jobs.
Encouraging youth employment	• “Keep Europe moving – Sustainable mobility for our continent” - the need to motivate young people to enter the transport workforce.
Building a skilled workforce for the transport sector	• “Keep Europe moving – Sustainable mobility for our continent” - development of advanced training programmes, certification and certification methods for transport workers. • “Europe 2020” - initiative *New Skills for New Jobs* (since 2008) • “An Agenda for new skills and jobs” - lifelong learning and new approaches to adult learning. • “Keep Europe moving – Sustainable mobility for our continent” - develop new skills for quality jobs and the responsibility of social partners in this process. • “Directive 2003/59/EC on the initial qualification and

	periodic training of drivers of certain road vehicles…” - drivers of trucks, buses, coaches and minibuses need to hold an initial qualification and to undergo periodic training.
Improving working conditions	• “Keep Europe moving – Sustainable mobility for our continent” - the need to improve the quality of jobs and working conditions in the transport sector. • “Directive 2002/15/EC on the organisation of the working time of persons performing mobile road transport activities” • “Regulation (EC) No 561/2006 on the harmonisation of certain social legislation relating to road transport…” • “Council Directive 2005/47/EC on the Agreement between the Community of European Railways (CER) and the European Transport Workers’ Federation (ETF) on certain aspects of the working conditions of mobile workers engaged in interoperable cross-border services in the railway sector”
Creating green jobs in the transport sector	• “the Transport, Health and Environment Pan-European Programme (THE PEP)” - stimulating a debate on creating green jobs in the transport sector. - analysing the potential for greening “old” jobs and creating “new green” jobs in transport. - sharing good practice and disseminating experiences, policies and approaches.

Source: Rows 1-5: European Union, 2013, pp. 5-7.; row 6: WHO Regional Office for Europe, 2014, p. 3.

4. Discussion

The main challenges in the functioning of the European transport labour market described above are the basis for the following reflections. Above all, the mail issue seems to be the expected shortage of young qualified labour during the next decades. The European Union aims at the elimination or at least mitigation of the problem by way of dealing with the low attractiveness of employment in the transport sector for young people. At the same time it is tried to increase the level of employment of women and to maintain employment for older people. However, a question is whether the measures are justified or may turn out to be ineffective. For example, as the level of work overload and work pressure as well as qualification requirements and knowledge of knowledge increase, it is doubtful that older employees will feel themselves secure and will be as effective and efficient as demanded by the employer. As a rule, older employees do not feel the urge "to keep up" with technological novelties, while the excessive work pressure may be to high keeping in mind their age and the related physical and health problems – e.g., concentration, physical strength needed and social and language skills.[3] Improvements in the labour conditions during the last decades in particular branches of transport[4] are not necessarily a solution to the problems. Furthermore, in the case of transport professions, where human life (e.g., for truck drivers, airplane pilots) depends on the efficiency and effectiveness of labour, older employees may have a disadvantage due to their (perceived) worse reflexes or potential problems such as accidents in case of health problems. Thus, it should be researched and discussed in which particular occupations older employees can find employment, where they can be efficient while obtaining high job satisfaction, and what is the upper age limit they can do this work instead of only looking at the retirement age.

Similarly, some concerns may arise regarding the increase in female participation in employment in the transport sector. Of course, the elimination of prejudices and negative stereotypes is recommended, as well as enabling women to work and make a career in this sector. However, a difficult issue is how to reconcile the eventuality of having children and a family and the irregular working hours and long separation from

[3] Although the life expectancy at birth for women and men increases in Europe (respectively 82 and 75 in the EU-27 countries in 2008, the expected healthy life years at birth is 62 and 61 years respectively (see: OECD, 2012).

[4] This mostly concerns road freight shipping (see Sitran and Pastori, 2013).

family and absence from home. While in Western Europe this may be a lesser problem, in a more traditional society like Poland this is a difficult issue, as the role of the women in the family is often considered to be more traditional. Furthermore, from observations and discussions with people working in the sectors we have the impression that the logistic processes are not adapted to differences in physical strength. In general, in many occupations in the transport sector it may be too difficult to change the labour conditions in such a way that the work and motherhood can be easily combined. While changes should be made in order to reconcile the work and motherhood, this should not lead to discrimination of men who also may have a family, where irregular working hours and long separation from the family may negatively influence their family life.

Another issue that is disputable it the increasing requirements in qualifications and demanded skills for people to be employed in particular occupations. Technological advance cannot be avoided, as it is considered to be desirable and also needed because of competitive pressure. For this reason, changes in transport and new expectations regarding employees are something natural. However, the increasing requirements in combination with the low attractiveness of jobs may even more "scare" young people away from employment in this sector. This may in particular concern women. With the increasing pressure on improving the effectiveness and efficiency of mobility, innovation and technological change may speed up, in turn increasing the need to improve skills and qualifications for (potential) employees.[5]

The last issue to be discussed is the creation of "green jobs" related to the transformation of transport systems in accordance with the principles of sustainable development. A change of urban transport into the direction of an increasing share of public transport, bicycles and pedestrians creates demand for other vehicles and means of transport, transport equipment and partially different transport infrastructure. However, this is counteracted by a decline in demand for cars, leading to a reduction of employment in the car industry, its suppliers as well as car maintenance and repair services. It is difficult to assess whether the effect on employment will be positive of negative, as well as to answer the question whether people losing a job in, e.g., the car industry can easily find a "green job" due to

[5] On the other hand, the development of Personal Rapid Transit (PRT) systems shows that human beings can be replaced by technology – PRT vehicles at London Heathrow airport do not need drivers for transporting passengers (see: Freemark, 2009).

differences in required qualifications and skills. One can also wonder whether the creation of “green hobs” as a result of the pressure to make transport more sustainable is an aim in itself, or just the effect of further changes and evolution in transport, like was the case when in the past the car replaced other means of transport (e.g., carriages, train).

5. Concluding remarks

The aim of this article was to identify and assess key challenges in the labour market in the European transport sector, and present some disputable issues related to activities aiming at dealing with these challenges. Ageing society, low attractiveness of employment in the transport sector accompanied by increasing requirements regarding qualifications and skills, as well as the domination of men in this sector are among the main issues resulting in the expected labour shortage in the next decades. The European Union undertakes many activities in order to prevent such a situation or, at least, to alleviate the negative consequences of this expected labour shortage. A lack of skilled labour may create a threat for the effectiveness and efficiency of the transport sector, in turn reducing its positive impact on socio-economic development as well as the international competitiveness of the EU. However, it remains a question whether the policy regarding these issues are satisfactory, and should not be revised.

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