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**COMMISSION RECOMMENDATION**

**of 29.11.2023**

**on means to address the impact of automation and digitalisation on the transport  
workforce**

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## on means to address the impact of automation and digitalisation on the transport workforce

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 292 thereof,

Whereas:

- (1) The Sustainable and Smart Mobility Strategy<sup>1</sup> sets out a roadmap for putting transport in the Union firmly on the right track for a sustainable and smart future. One of the milestones<sup>2</sup> on the path towards sustainable, smart and resilient mobility is that by 2030, automated mobility will be deployed on a large scale. The strategy recognises that changes in the transport sector, in particular those relating to automation and digitalisation, are creating many new challenges as well as opportunities for the transport workforce. Therefore, the Commission considers it appropriate to adopt this Recommendation (Action 69 of the strategy's action plan).
- (2) In the EU-27, approximately 10 million persons<sup>3</sup> are employed in the transport and storage services sector (including postal and courier activities), which represents 5.2 % of the total workforce<sup>4</sup>. Approximately 53 % of them work in land transport (road, rail and pipelines), 3 % in water transport (sea and inland waterways), 4 % in air transport, 26 % in warehousing and supporting and transport activities (such as cargo handling, storage and warehousing), and the remaining 14 % in postal and courier activities. Women are underrepresented in the EU's transport sector's workforce (22 %). An analysis by age of the EU transport workforce in 2021<sup>5</sup> shows that the share for persons aged 30-49 years was similar to that for the whole economy, but the share of older workers was higher in the transport sector (36.9 % are aged 50-64 years), while the share of younger workers was lower (12.1 % are aged 15-29 years).

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<sup>1</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Sustainable and Smart Mobility Strategy – putting European transport on track for the future (COM/2020/789 final).

<sup>2</sup> These milestones are set out to show the European transport system's path towards achieving the Union objectives of a sustainable, smart and resilient mobility, thereby indicating the necessary ambition for future policies.

<sup>3</sup> Figures on number of persons employed in transport, total workforce and shares per mode based on Eurostat Labour Force Survey (age 15-64 years) – European Commission, Directorate-General for Mobility and Transport, *EU transport in figures: statistical pocketbook 2022*, Publications Office of the European Union, 2022, <https://data.europa.eu/doi/10.2832/216553>.

<sup>4</sup> 4.6 % of total employment if postal and courier activities are not included.

<sup>5</sup> European Commission, Eurostat, Jere, N., Corselli-Nordblad, L., Ford-Alexandraki, E., et al., *Key figures on European transport: 2022 edition*, Jere, N. (editor), Corselli-Nordblad, L. (editor), Ford-Alexandraki, E. (editor), Xenellis, G. (editor), Publications Office of the European Union, 2023, <https://data.europa.eu/doi/10.2785/322262>.

- (3) With around EUR 555 billion in Gross Value Added (GVA) at current prices, the transport and storage services sector (including postal and courier activities) accounted for about 5 % of total GVA in the EU-27 in 2020<sup>6</sup>.
- (4) The European Pillar of Social Rights sets out 20 key principles and rights essential for fair and well-functioning labour markets and social protection systems. The Pillar is the European rulebook to make sure that the green and digital transitions are socially fair and just, both for transport users<sup>7</sup> and the transport workforce. The Council Recommendation of 16 June 2022 on ensuring a fair transition towards climate neutrality<sup>8</sup> sets out comprehensive guidance to Member States on the necessary policy packages to leave no one behind in the green transition. The Union's digital strategy<sup>9</sup> aims to make the digital transformation work for people and businesses, while helping to achieve its target of a climate-neutral Europe by 2050. The Digital Decade policy programme 2030<sup>10</sup> has established digital targets, including for a digitally skilled population and highly skilled digital professionals, as well as for the digital transformation of businesses.
- (5) The study on 'The social dimension of the transition to automation and digitalisation in transport, focusing on the labour force'<sup>11</sup> assessed the awareness, preparedness and need for guidance of transport stakeholders. It found that, in general, in the sector, there is little awareness of the impact of automation and digitalisation on the transport workforce. Transport stakeholders are, on average, moderately prepared for this transition. Trade unions and national public bodies seem to anticipate or manage change more than employers. The surveyed stakeholders indicate that if guidance and additional measures are needed, they should mostly focus on knowledge sharing, as well as training and education of the workforce. Since transport employers – small and medium-sized enterprises (SMEs)<sup>12</sup> in particular – are often not aware of measures or strategies aimed at facilitating the transition for the labour force, the social dimension of automation and digitalisation appears not to be their priority topic.
- (6) The conclusions of the study were placed in a methodological framework inspired by the results of the High-Level Expert Group on the Impact of the Digital

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<sup>6</sup> The transport share amounts to 4.6 % of total GVA if postal and courier activities are not included. Estimations based on Eurostat National Account (2018 data) – European Commission, Directorate-General for Mobility and Transport, *EU transport in figures: statistical pocketbook 2022*, Publications Office of the European Union, 2022, <https://data.europa.eu/doi/10.2832/216553>.

<sup>7</sup> The study on 'The social dimension of the future EU transport system regarding users and passengers' mapped the challenges and opportunities posed by the modernisation of the transport system to different groups of transport users – including citizens with poor IT literacy or with limited access to the internet – and reviewed possible solutions that would ensure users are at the centre of the future transport system: European Commission, Directorate-General for Mobility and Transport, Kouris, S., *Study on the social dimension of the future EU transport system regarding users and passengers – Final report*, Publications Office of the European Union, 2022, <https://data.europa.eu/doi/10.2832/482141>.

<sup>8</sup> Council Recommendation of 16 June 2022 on ensuring a fair transition towards climate neutrality 2022/C 243/04 (OJ C 243, 27.6.2022, p. 35).

<sup>9</sup> [https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age\\_en](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age_en)

<sup>10</sup> Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030 (OJ L 323, 19.12.2022, p. 4).

<sup>11</sup> European Commission, Directorate-General for Mobility and Transport, *Study on the social dimension of the transition to automation and digitalisation in transport, focusing on the labour force: final report*, Publications Office, 2021, <https://data.europa.eu/doi/10.2832/95224>.

<sup>12</sup> For the definition of SMEs, see Commission Recommendation 2003/361/EC of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (OJ L 124, 20.5.2003, p. 36).

Transformation on EU Labour Markets<sup>13</sup>. That framework provides an overview of preconditions that are essential to a smooth transition (namely awareness of the social dimension; identification of future skills needs; constructive social dialogue; enabling legislative environment; positive attitude towards change) and enablers that will contribute to facilitate the transition.

- (7) The draft content of the present Recommendation was discussed with the Commission's expert group on horizontal social issues in transport<sup>14</sup> and, at a stakeholder conference in March 2023<sup>15</sup>, with all relevant stakeholders from the transport sector, including public authorities, employers' organisations, trade unions, education and training providers, companies, and transport professionals. The sectoral social dialogue committees established in the various segments of the transport sector<sup>16</sup> were also consulted.
- (8) Automation and digitalisation are not new phenomena. They are interlinked, but their impact on the workforce is not necessarily the same. Automation is part of a broader notion of digitalisation and is defined as 'the replacement of human input, in full or in part, by machine or software input'<sup>17</sup>. The broader notion of digitalisation is defined as 'the integration of digital technologies and digitised data into all aspects of life'<sup>18</sup>. Rather than replacing human input in full or in part, digitalisation therefore means the use of digital tools in the workplace.
- (9) Labour market developments will not only be influenced by technology, including its cost and acceptance, but also by other factors, such as globalisation, demographic change, the green transition, economic and other social trends, and the regulatory environment. In addition, the pace of automation will vary across countries and regions, modes of transport, types of occupation, and skills and competences.
- (10) According to a recent report on the future of work in transport<sup>19</sup>, there is a great variation in job automation risks across the more industrialised countries. Between 5.7 and 50 per cent of low-skilled jobs (such as dockers or baggage handlers) are exposed to a high risk of automation. The risk for the middle-skilled jobs (such as able seafarers or heavy truck drivers) is between 7 per cent and 23 per cent. With only up to 2 per cent, the high-skilled jobs (such as ship officers, aircraft pilots and professionals) have the lowest estimated potential for job loss resulting from the introduction of automation technologies.

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<sup>13</sup> European Commission, Directorate-General for Communications Networks, Content and Technology, *Report of the high-level expert group on the impact of the digital transformation on EU labour markets*, Publications Office, 2019, <https://data.europa.eu/doi/10.2759/586795>.

<sup>14</sup> <https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&do=groupDetail.groupDetail&groupID=3732>

<sup>15</sup> European Commission, Directorate-General for Mobility and Transport, *Stakeholder conference on means to mitigate the impact of the transition to automation and digitalisation on the transport workforce: conference report*, Publications Office of the European Union, 2023, <https://data.europa.eu/doi/10.2832/532110>.

<sup>16</sup> In line with Commission Decision 98/500/EC of 20 May 1998 on the establishment of Sectoral Dialogue Committees promoting the Dialogue between the social partners at European level (OJ L 225, 12.8.1998, p. 27).

<sup>17</sup> <https://www.eurofound.europa.eu/data/digitalisation/research-digests/automation-digitisation-and-platforms-in-the-world-of-work#s-178>

<sup>18</sup> <https://www.eurofound.europa.eu/data/digitalisation/research-digests/automation-digitisation-and-platforms-in-the-world-of-work#s-176>

<sup>19</sup> World Maritime University, *Transport 2040: Automation, Technology, Employment – The Future of Work* (2019). Reports. 58. [https://commons.wmu.se/lib\\_reports/58](https://commons.wmu.se/lib_reports/58).

- (11) The European research project SKILLFUL<sup>20</sup> has identified the jobs and positions that are expected to be most affected by the present and future changes and developments of the European transportation system. Amongst the transport jobs that are likely to change are drivers, manual operators, ticket issuers and controllers, logistic centre staff, security controllers, and booking clerks and travel agents. Amongst those that are expected to become more relevant are logistics managers, logistics operators at terminals and delivery dispatchers, experts on artificial intelligence, digital transformation, big data, security and cybersecurity experts, legal services personnel and privacy protection specialists, and automated vehicle and drone operators.
- (12) Different stakeholders may perceive the objective of automation and digitalisation and their impact on the workforce in different ways. Fostering a common understanding of the possible benefits and challenges of these developments and the issues at stake will reinforce cooperation and team spirit across stakeholder groups.
- (13) Transport-related European Partnerships under the Horizon Europe programme, such as Connected, cooperative and automated mobility (CCAM)<sup>21</sup>, Towards zero emission road transport (2Zero)<sup>22</sup> and Zero emission waterborne transport (ZEW)<sup>23</sup>, can facilitate the exchange on the social impact of the transition, as they bring together diverse and extensive public-private stakeholder networks.
- (14) Upskilling and reskilling are crucial for managing the green and digital transitions. Having a workforce with the right skills contributes to sustainable growth, leads to more innovation and improves companies' competitiveness. Principle 1 of the European Pillar of Social Rights states that 'everyone has the right to quality and inclusive education, training and lifelong learning in order to maintain and acquire skills that enable them to participate fully in society and manage successfully transitions in the labour market'. The European Year of Skills<sup>24</sup> aims at helping people get the right skills for quality jobs and helping companies, in particular SMEs, address skills shortages in the Union.
- (15) The transport sector has been identified as one of the sectors where the implementation of the European Green Deal (as well as relevant national strategies) will require new skills and labour, and where the skilled workforce is already scarce. In addition to shortages linked to the shift towards renewable energy sources and sustainable and energy-efficient materials, products and modes of transport, significant labour shortages are already very visible in certain transport occupations. Heavy truck and lorry drivers have been in the top 10 rankings as regards labour shortages in all reports on labour market imbalances in Europe<sup>25</sup> conducted since 2017. In 2022, bus and tram drivers were ranked in the top 10 occupations with an identified shortage for the first

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<sup>20</sup> Skills and competences development of future transportation professionals at all levels (<https://www.skillfulproject.eu/>) – Deliverable D1.1 (2017) *Future scenarios on skills and competences required by the transport sector in the short mid and long-term*.

<sup>21</sup> <https://www.ccam.eu/> – In addition, the Horizon Europe project 'CCAM effects on jobs and education, plans for skills that match the CCAM development, and prerequisites for employment growth' (HORIZON-CL5-2023-D6-01-05) will contribute to an improved understanding of the short-, medium- and long-term employment effects.

<sup>22</sup> <https://www.2zeroemission.eu/>

<sup>23</sup> <https://www.waterborne.eu/partnership/partnership>

<sup>24</sup> [https://year-of-skills.europa.eu/index\\_en](https://year-of-skills.europa.eu/index_en)

<sup>25</sup> European Labour Authority, *Report on labour shortages and surpluses – 2022*, Publications Office of the European Union, 2023, <https://data.europa.eu/doi/10.2883/50704>.

time. Labour shortages may accelerate automation, which could at the same time be an opportunity to compensate for missing workers.

- (16) The European research project WE-TRANSFORM<sup>26</sup> identified the level of importance of different skills and competences necessary to meet the challenges of the future automated and digitalised work environment, including by mode of transport.
- (17) The Commission, assisted by its agencies, can provide guidance as to skills required under the transition to automation and digitalisation, for instance through studies. One recent example is the European Maritime Safety Agency's study on competences for operators of maritime autonomous surface ships from remote control centres<sup>27</sup>.
- (18) Digital tools driven by artificial intelligence (AI) can also help with identifying future skills needs and gaps at national level and help individuals to identify future career paths and learning opportunities. These tools, which are already being piloted by some public employment services<sup>28</sup>, can also offer opportunities for more systemic solutions across sectors.
- (19) As for other sectors, the trend towards greater automation and digitalisation in the transport sector highlights the need for adequate initial and continuing training programmes, including vocational education and training. These programmes need to effectively prepare workers for the challenges of future work in a timely manner, since automation and digitalisation could lead to a mismatch between skills demand and supply. In recent years, there has been a significant increase in the number of jobs in which cognitive abilities are crucial, making advanced training and complex problem-solving skills more important for several types of jobs. Moreover, there is already increasing demand for advanced competences in Science, Technology, Engineering and Mathematics (STEM) and expertise in IT, and this is expected to further increase in the future. Rising skills requirements can potentially further reduce the pool of available workers.
- (20) One of the priorities of the Digital Education Action Plan 2021-2027<sup>29</sup> is to enhance digital skills and competences for the digital transformation, including by promoting high quality and inclusive computing education from an early age, and by encouraging women's participation in STEM. This could help, in the long term, address the difficulties faced by employers to recruit highly skilled workers, including in the transport sector.
- (21) The European Skills Agenda supports the acquisition of skills for the green and digital transitions. One of its flagship actions is the Pact for Skills<sup>30</sup>, which aims to strengthen collective action on skills development through partnerships.
- (22) Against the backdrop of global value chains, the cross-border nature of many transport activities, new business models and forms of work, it is crucial that all workers are incentivised to participate in training measures to keep pace with changing skills

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<sup>26</sup> Workforce Europe – Transformation agenda for transport automation (<https://wetransform-project.eu/>) – Deliverable D3.2 *Analysis of workforce barriers, needs, skills, and challenges*.

<sup>27</sup> <https://etendering.ted.europa.eu/cft/cft-display.html?cftId=8079>

<sup>28</sup> OECD, *Policy brief: Harnessing digitalisation in Public Employment Services to connect people with jobs*, 2022, <https://www.oecd.org/employment/activation.htm>.

<sup>29</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Digital Education Action Plan 2021-2027 – Resetting education and training for the digital age (COM/2020/624 final).

<sup>30</sup> [https://pact-for-skills.ec.europa.eu/index\\_en](https://pact-for-skills.ec.europa.eu/index_en)



requirements in the transport sector. For digitalisation to be inclusive, training on digital matters should be accessible for all groups at higher risks of exclusion, in particular persons with disabilities.

- (23) Short training periods can be a solution to motivate the workforce to participate in training measures, and for employers to support this. The Council Recommendation of 16 June 2022 on a European approach to micro-credentials for lifelong learning and employability<sup>31</sup> asks Member States to put in place legal frameworks that facilitate records of learning outcomes (for example certificate or award) from small learning experiences (for example short online courses).
- (24) Schemes such as individual learning accounts<sup>32</sup> and an enabling framework, including guidance and validation opportunities, can promote the effective take-up of training in the transport sector.
- (25) Union rules on the qualification and training of bus and truck drivers<sup>33</sup> stipulate that the subjects to be covered in the periodic training take into account technological developments. The upcoming revision of the Train Drivers' Directive<sup>34</sup> is intended to better align driver training and certification with the possibility and needs of rail digitalisation and to make it easier for train drivers to operate cross-border.
- (26) On the one hand, automation and digitalisation are expected to improve working conditions in the transport sector, offering, higher safety levels and increased flexibility (for example part-time work), and removing many monotonous and physically difficult tasks. This could make the sector overall more attractive, and notably for female workers and underrepresented groups of workers, such as groups at higher risk of exclusion, young workers and workers with disabilities. On the other hand, there is a risk of higher stress levels<sup>35</sup> for some workers owing to a perception of continuous monitoring and surveillance, including through algorithmic management tools<sup>36</sup> or AI in general.
- (27) The Union aims to build trustworthy AI that puts people first. For that purpose, the Commission has proposed three inter-related legal initiatives, which include a regulatory framework proposal (Artificial Intelligence Act)<sup>37</sup> to provide AI providers and users with clear requirements and obligations regarding specific uses of AI that poses risks to safety and fundamental rights of persons, including workers' rights<sup>38</sup>. At

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<sup>31</sup> Council Recommendation of 16 June 2022 on a European approach to micro-credentials for lifelong learning and employability 2022/C 243/02 (OJ C 243, 27.6.2022, p. 10).

<sup>32</sup> Council Recommendation of 16 June 2022 on individual learning accounts 2022/C 243/03 (OJ C 243, 27.6.2022, p. 26).

<sup>33</sup> Directive (EU) 2022/2561 of the European Parliament and of the Council of 14 December 2022 on the initial qualification and periodic training of drivers of certain road vehicles for the carriage of goods or passengers (codification) (OJ L 330, 23.12.2022, p. 46).

<sup>34</sup> Directive 2007/59/EC of the European Parliament and of the Council of 23 October 2007 on the certification of train drivers operating locomotives and trains on the railway system in the Community (OJ L 315, 3.12.2007, p. 51).

<sup>35</sup> Eurofound (2020), *Employee monitoring and surveillance: The challenges of digitalisation*, Publications Office of the European Union, Luxembourg.

<sup>36</sup> <https://www.eurofound.europa.eu/observatories/eurwork/industrial-relations-dictionary/algorithmic-management>

<sup>37</sup> Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts (COM/2021/206 final).

<sup>38</sup> The proposal classifies as high risk 'AI systems used in employment, workers management and access to self-employment, notably for the recruitment and selection of persons, for making decisions on

the same time, the regulatory framework proposal seeks to reduce administrative and financial burdens for business, in particular SMEs, and to foster innovation. The European Union Aviation Safety Agency has detailed its vision for addressing the challenges and opportunities of AI in aviation, based on a human-centric approach<sup>39</sup>.

- (28) The Commission proposals to improve the working conditions of people working through digital labour platforms include measures to correctly determine the employment status of those people<sup>40</sup>, which will be relevant for delivery riders and ride-hailing drivers. The proposed Directive<sup>41</sup> also aims at increasing transparency in the use of algorithms by digital labour platforms, ensuring human monitoring on their respect of working conditions and giving the right to contest automated decisions. These new rights should be granted to both workers and the genuinely self-employed. The Guidelines on the application of Union competition law to collective agreements<sup>42</sup> clarify when certain self-employed people can get together to negotiate collectively better working conditions without breaching Union competition rules.
- (29) The negotiations between organisations representing employers and workers (social partners) through social dialogue and collective bargaining help improve working conditions. Against the backdrop of the variation in the degree and quality of the involvement of social partners across countries and the unequal coverage of workers by collective agreements, the Commission has presented an initiative<sup>43</sup> to further strengthen and promote social dialogue with concrete actions at national and Union level. On 12 June 2023, the Council adopted a recommendation on strengthening social dialogue in the European Union<sup>44</sup>, where it sets out several ways through which Member States might reinforce social dialogue and collective bargaining at national level, including by involving social partners in policy design, promoting the benefits of social dialogue, and strengthening the capacity of trade unions and employers' organisations.
- (30) According to the Workers' Representatives Convention 135 of the International Labour Organization, currently ratified by 24 Member States, workers' representatives can be persons who are recognised as such under national law or practice, whether they are trade union representatives, namely, representatives designated or elected by trade unions or by members of such unions; or elected representatives, namely,

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promotion and termination and for task allocation, monitoring or evaluation of persons in work-related contractual relationships' since those systems may appreciably impact future career prospects and livelihoods of these persons.

<sup>39</sup> <https://www.easa.europa.eu/en/domains/research-innovation/ai>

<sup>40</sup> Those who, as a result of correct determination of their employment status, will be recognised as workers, will enjoy improved working conditions – including health and safety, employment protection, statutory or collectively bargained minimum wages and access to training opportunities – and gain access to social protection according to national rules.

<sup>41</sup> Proposal for a Directive of the European Parliament and of the Council on improving working conditions in platform work (COM/2021/762 final).

<sup>42</sup> Communication from the Commission – Guidelines on the application of Union competition law to collective agreements regarding the working conditions of solo self-employed persons 2022/C 374/02 (OJ C 374, 30.9.2022, p. 2).

<sup>43</sup> Proposal for a Council Recommendation on strengthening social dialogue in the European Union (COM/2023/38 final); Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Strengthening social dialogue in the European Union: harnessing its full potential for managing fair transitions (COM/2023/40 final).

<sup>44</sup> [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=consil%3AST\\_10542\\_2023\\_INIT](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=consil%3AST_10542_2023_INIT)



representatives who are freely elected by the workers of the undertaking in accordance with provisions of national laws or regulations or of collective agreements and whose functions do not include activities which are recognised as the exclusive prerogative of trade unions in the country concerned. Where both trade union representatives and elected representatives exist in the same undertaking, such representation should not be used to undermine the position of the trade unions concerned or their representatives. Cooperation between the elected representatives and the trade unions concerned or their representatives should be encouraged.

- (31) The Commission's study on social aspects within the maritime transport sector<sup>45</sup> includes recommendations and possible initiatives that can contribute to ensuring adequate working and living conditions of seafarers, including to modernise maritime education and training to take into account technological developments. The study on Air Traffic Controller (ATCO) and Engineering Staff (ATSEP)<sup>46</sup> provides an overview of current and future human and social issues and working conditions as indicated by ATCOs and ATSEPs in the EU Member States.
- (32) All modes of transport will be affected by automation and digitalisation, whether by automated vessels or vehicles or digitalised processes. A combination of a lack of awareness, lack of understanding of new requirements and fear of not coping with change contributes to scepticism and sometimes resistance to change in the transport sector. Against this backdrop, the transport sector would benefit from introducing and implementing ways to better manage this change. Change management includes methods and manners in which a company describes and implements change within both its internal and external processes to ensure a constructive and beneficial transition to automation and digitalisation.
- (33) In line with Principle 8 of the European Pillar of Social Rights, which includes that 'workers or their representatives have the right to be informed and consulted in good time on matters relevant to them, in particular on the transfer, restructuring and merger of undertakings and on collective redundancies', change management plans should be designed in a participatory manner and in close collaboration with workers' representatives.
- (34) Social dialogue also plays a key role in adapting to the changing world of work. The 2020 Framework Agreement on Digitalisation<sup>47</sup>, concluded by the cross-industry European social partners, is an example of the willingness of social partners to shape the future together. Likewise, the European sectoral social partners in the transport sector have carried out various joint projects on automation and digitalisation, which included joint recommendations to their affiliates.
- (35) In the short, medium and long term, sufficient financial resources are essential for the implementation of measures to ensure a smooth transition to automation and digitalisation for the transport workforce. It is crucial for workers to be able to adapt to changing skills needs. However, training is often perceived as costly by employers, and this can act as a barrier for them to provide training and lifelong learning

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<sup>45</sup> European Commission, Directorate-General for Mobility and Transport, *Study on social aspects within the maritime transport sector: final report*, Publications Office, 2020, <https://data.europa.eu/doi/10.2832/49520>.

<sup>46</sup> European Commission, Directorate-General for Mobility and Transport, Dhondt, S., Oprins, E., Zon, R., et al., *Study on Air Traffic Controller (ATCO) and Engineering Staff (ATSEP) social issues and working conditions: final report*, Publications Office, 2021, <https://data.europa.eu/doi/10.2832/68679>.

<sup>47</sup> <https://ec.europa.eu/social/main.jsp?catId=521&langId=en&agreementId=5665>

opportunities. If no sufficient funding is dedicated to support the training and lifelong learning of workers, their skills might no longer be aligned with their job requirements, further increasing labour shortages.

- (36) At national and Union level, various funding opportunities exist for upskilling and reskilling to support the transition to automation and digitalisation. However, those who could potentially benefit from these instruments are often not aware of their existence or do not know how to access them. Information on relevant funds should therefore be further promoted.
- (37) European and national transport stakeholders – including employers, workers, education and training providers, sector associations, and the social partners, while respecting their autonomy –, civil society organisations representing all groups of workers, in particular groups at higher risk of exclusion from the labour market, and policymakers and public authorities at national and regional level are invited to consider and promote the following means to address the impact of automation and digitalisation on the transport workforce, with a view to addressing the challenges and taking advantage of the opportunities related to raising awareness, upskilling and reskilling, improving working conditions, managing change, and funding,

HAS ADOPTED THIS RECOMMENDATION:

## 1. RAISING AWARENESS

1. **Employers** in the transport sector should be aware of the impact of automation and digitalisation to prepare themselves – and their workforce – for a future that includes automation and digitalisation in a fair and just way.

This involves following the latest automation and digitalisation developments regularly, including their impact on operations and human capital in transport. As the first element of awareness is transparency, individual companies could consider adopting a clear strategy detailing the impact of automation and digitalisation on their workforce.

Where companies have limited resources or capacity to keep themselves up to date on relevant developments in transport, companies should seek appropriate support from their respective employers' organisations or sector associations at regional, national or Union level.

2. **Employers' organisations** should play an active role in providing relevant information on the social impact of automation and digitalisation to their affiliates.

They should pay special attention to raising awareness among SMEs in the transport sector, which often have limited resources or capacity to keep themselves up to date on relevant automation and digitalisation developments. In order to provide tailored support to their affiliates, employers' organisations could, for instance, carry out a needs assessment amongst their members, or include the social impact of the expected changes in transport in the list of standard agenda items of their relevant meetings.

3. **Workers** in the transport sector should be aware of the expected impact of automation and digitalisation on their work to prepare themselves for their future careers and to remain employable.

This may, for instance, involve seeking relevant information from workers' representatives or from their management, or participating in dedicated training events.

4. **Workers' representatives** should play an active role in raising the transport workforce's awareness of the impact of automation and digitalisation on their work.

Relevant information should be provided at the appropriate levels, for instance, workers' representatives in the undertaking should provide information to the workers of the undertaking; sectoral or national trade unions should provide information to their respective affiliates; and European-level workers' organisations should provide information to their national affiliates.

In order to provide tailored support to the workforce and engage all workers, including certain underrepresented groups, such as workers with disabilities and workers with a migrant background, in a dialogue on the expected impact of automation and digitalisation on their work, workers' representatives could, for instance, compile information packages, create a website section, or organise dedicated training events. Targeted communication to specific groups of workers, for instance workers with potential difficulties to adapt to new technologies, could also be considered.

5. The **social partners** in the transport sector are invited to jointly contribute to raising awareness of employers and workers and their representatives in a partnership approach.

The dialogue between the two sides of industry, for instance in the framework of a collective bargaining process at company, national or sectoral level, may foster a common understanding of the issues at stake – including of definitions of relevant terms – and thereby contribute to raising awareness of the expected impact of automation and digitalisation on the workforce.

Where not already done, the social partners participating in the transport sectoral social dialogue committees at European level are invited to jointly address the social impact of automation and digitalisation.

The sectoral social partners at European level are invited to widely disseminate, both to their affiliates and to their counterparts in other segments of the transport sector, their relevant recommendations, such as the Joint Recommendations on Digital Transformation and Social Dialogue in Urban Public Transport in Europe<sup>48</sup>, the results from the Union co-funded project on Employability in the Rail Sector in Light of Digitalisation and Automation<sup>49</sup>, and the recommendations from the Union co-funded WESS project (Contributing to an Attractive, Smart and Sustainable Working Environment in the Shipping Sector)<sup>50</sup>.

6. **Policymakers** at national and regional level should use their existing dialogue with transport stakeholders to raise awareness of the social impact of automation and digitalisation. Existing stakeholder platforms should be used to provide relevant information on the social impact of the transition, which stakeholders can then pass on to their affiliates.

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<sup>48</sup> <https://ec.europa.eu/social/main.jsp?catId=521&langId=en&agreementId=5730>

<sup>49</sup> <https://www.etf-europe.org/resource/employability-in-the-rail-sector-in-light-of-digitalisation-and-automation-eda-rail/>

<sup>50</sup> <https://wessproject.eu/digitalisation/>

Policymakers could, for instance, include the social impact of the expected changes in transport and possible ways how to address them in the list of standard agenda items of their relevant meetings with transport stakeholders, and invite relevant experts. If appropriate, policymakers could organise specific information meetings for the social partners in the transport sector.

7. **Sector associations** (such as business associations and chambers of commerce) and **civil society organisations** representing all groups of workers, in particular groups at higher risk of exclusion from the labour market (such as workers with disabilities and workers with a migrant background), should play an active role in raising awareness of the social impact and opportunities of automation and digitalisation, including by investing in awareness campaigns and increasing transparency about the costs of non-anticipation and non-management of change.

## 2. UPSKILLING AND RESKILLING

8. **Employers, workers, and public authorities** at various levels should work together – including with the social partners – to assess and identify skills gaps and future skills needs linked to automation and digitalisation in the transport sector as a whole or in a specific company, mode of transport or occupation.

In doing so, they should take advantage of and spread the word about existing tools at national and European level, such as:

- The skills intelligence tools<sup>51</sup> of the European Centre for the Development of Vocational Training (Cedefop) providing evidence on current and future skills and labour market trends. These include Skills-OVATE that offers detailed information on the jobs and skills employers demand using big data technology on online job advertisements.
- The Digital Skills Assessment Tool<sup>52</sup>, a self-assessment tool allowing individuals to test their digital skills and access training opportunities appropriate for their needs.
- Cedefop guides on ‘Understanding technological change and skill needs’, aiming to inform analysts and policymakers about available skills anticipation methods used to navigate through the uncertainty of changing technologies and skills demands. For instance, the first practical guide<sup>53</sup> provides useful information on employer and employee skills surveys.

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<sup>51</sup> The ‘transport & storage’ section (<https://www.cedefop.europa.eu/en/tools/skills-intelligence/sectors?sector=04.08>) includes activities relating to passenger or freight transport by rail, pipeline, road, water or air, and associated activities such as terminal and parking facilities, cargo handling, storage etc. Also included is the renting of transport equipment with driver or operator, and postal and courier activities.

<sup>52</sup> Based on the Digital Competence Framework, this free test (<https://digital-skills-jobs.europa.eu/en/digital-skills-assessment>) covers information and data literacy, communication and collaboration, digital content creation, safety, and problem solving.

<sup>53</sup> Cedefop, *Understanding technological change and skill needs: skills surveys and skills forecasting*, Publications Office, 2021, <https://data.europa.eu/doi/10.2801/212891>. The second practical guide (<https://data.europa.eu/doi/10.2801/144881>) focuses on automated skills intelligence methods: big data and AI-driven analyses, while the third practical guide focuses on technology and skills foresight methods (<https://data.europa.eu/doi/10.2801/307925>).

9. **Transport stakeholders** – including the social partners – are invited to create strategic approaches and cooperation for concrete skills development solutions in the transport sector as a whole or in a specific mode of transport, with a particular emphasis on digital skills.

For instance, those modes of transport that have not yet engaged in such partnerships are invited to take inspiration from the ongoing Blueprints for sectoral cooperation on skills in maritime shipping (SKILLSEA)<sup>54</sup> and rail supply and transport industries (STAFFER)<sup>55</sup>, as well as from the Automotive Skills Alliance<sup>56</sup>, to prepare themselves for ongoing and future changes.

Moreover, transport stakeholders should contribute to the implementation of the Pact for Skills, for instance by establishing one or several large-scale partnerships on skills in the transport-related ecosystems identified in the European industrial strategy<sup>57</sup>. Members of the Pact have access to knowledge on upskilling and reskilling needs, advice on relevant funding instruments to boost the skills of adults in their regions and countries, and partnership opportunities.

The use of micro-credentials as a targeted way to upskill and reskill workers, could also be explored, following the European approach to micro-credentials for lifelong learning and employability as laid out in the Council Recommendation of 16 June 2022<sup>58</sup>.

10. Based on skills needs assessments, **transport stakeholders** – including the social partners – and relevant **education and training providers** are invited to design and organise adequate initial and continuing training programmes, including micro-credentials, and material.

Training programmes should be conceived in a lifelong learning perspective, contributing also to maintaining and enhancing the employability of the transport workforce, also in view of the expected changes of job profiles or tasks in the transport sector in an evolving labour market. For example, relevant work at European level includes a stock-taking exercise on current refresher classes in inland waterways in general and more specifically for automated vessel operation<sup>59</sup>, and the comparison of vocational training systems to address the port work changes<sup>60</sup>. Training programmes should also be conceived with due regard to ensuring inclusiveness and accessibility, including considering the increasing number of older workers or workers with disabilities.

11. **Employers** in the transport sector should promote upskilling and reskilling in their company, make relevant training measures (such as micro-credentials) accessible to their workforce, and motivate them to participate in training measures addressing their specific skills needs.

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<sup>54</sup> <https://www.skillsea.eu/>

<sup>55</sup> <https://www.railstaffer.eu/>

<sup>56</sup> <https://automotive-skills-alliance.eu/>

<sup>57</sup> The mobility – transport – automotive ecosystem encompasses the production of motor vehicles ships and trains and their accessories, the repair and maintenance, as well as transportation. The tourism ecosystem encompasses accommodation providers, travel operators, hospitality, and transport.

<sup>58</sup> Council Recommendation of 16 June 2022 on a European approach to micro-credentials for lifelong learning and employability 2022/C 243/02 (OJ C 243, 27.6.2022, p. 10).

<sup>59</sup> <https://platina3.eu/classes-for-automated-vessel-operation/>

<sup>60</sup> Union co-funded project ‘Ports and Skills: compare vocational training systems to address the port work changes’, <https://erasmus-plus.ec.europa.eu/projects/search/details/2019-1-IT01-KA202-007778>.

Access to training should be granted in accordance with legislation and collective agreements and to all groups of workers. Additional upskilling and reskilling practices, such as pairing younger and older workers within a transport company to facilitate a mutual transfer of expertise and skills, could also be considered.

12. **Workers** in the transport sector should be open to participate in skills assessments, and subsequently in training measures addressing their specific skills needs. Depending on their professional career and in view of the expected changes of job profiles or tasks in the transport sector, they should consider themselves in a lifelong learning perspective to maintain and enhance their employability.
13. **Policymakers and public authorities** at national level should support the implementation of relevant Union initiatives to upskill and reskill the workforce in line with the actions under the European Skills Agenda, and promote relevant networks, such as the Pact for Skills and the Digital Skills and Jobs Coalition<sup>61</sup>, as well as information about relevant Union funding opportunities.

### 3. IMPROVING WORKING CONDITIONS

14. The **social partners** in the transport sector are invited to contribute to improving working conditions in the context of the transition to automation and digitalisation.

Where not already done, they are invited to incorporate, in their collective agreements at company, national or sectoral level, dedicated provisions regarding automation and digitalisation. Taking inspiration from existing collective agreements in transport<sup>62</sup>, the social partners at national and European level are invited to jointly identify good practice examples of such dedicated provisions for each mode of transport and share them with their respective affiliates.

15. In view of the important role of social dialogue in shaping economic transitions and fostering workplace innovation, and taking into account the variation of collective bargaining coverage across sectors and countries<sup>63</sup>, **policymakers** at national and regional level should encourage and create the conditions for improving the functioning and effectiveness of collective bargaining and social dialogue.

### 4. MANAGING CHANGE

16. **Employers** in the transport sector should introduce and implement change management plans at company level to manage the transition to automation and digitalisation in a proactive and participatory manner and to incentivise and promote a positive attitude of the workforce to change. The change management plans should be developed in close collaboration with workers' representatives. The plans should

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<sup>61</sup> <https://digital-strategy.ec.europa.eu/en/policies/digital-skills-coalition>

<sup>62</sup> See, for instance, the overview of sectoral collective agreements on the social implications of automation and/or digitalisation identified in: European Commission, Directorate-General for Mobility and Transport, *Study on the social dimension of the transition to automation and digitalisation in transport, focusing on the labour force: final report*, Publications Office, 2021, <https://data.europa.eu/doi/10.2832/95224>. Good practice examples from other sectors can be found in: European Parliament, Directorate-General for Internal Policies of the Union, Bednorz, J., Sadauskaitė, A., Czarzasty, J., et al., *Unionisation and the twin transition: good practices in collective action and employee involvement*, European Parliament, 2022, <https://data.europa.eu/doi/10.2861/418933>.

<sup>63</sup> Eurofound, *Collective agreements and bargaining coverage in the EU: A mapping of types, regulations and first findings from the European Company Survey 2019*, Eurofound working paper, Dublin, 2020.



include provisions on the evaluation, monitoring and revision of their change management methods and manners.

In this context, employers should follow the principles and good practices set out in the EU Quality Framework for anticipation of change and restructuring<sup>64</sup>.

17. **Employers' organisations** should play an active role in promoting and supporting the need and merits of change management towards their affiliates. They should pay special attention to the needs of SMEs in the transport sector, which often have limited resources or capacity to set up their own change management plans.

In order to provide tailored support to their affiliates, employers' organisations should share good practices for introducing and implementing change management plans.

18. **Workers' representatives** should play an active role in developing change management plans at company level, both to respond to the workforce's specific needs and to ensure that all groups of workers are involved. This is particularly relevant to foster the digital inclusion of the transport sector's ageing workforce.
19. **Policymakers and public authorities** should accompany change management and support, disseminate and promote the wide application of the EU Quality Framework for anticipation of change and restructuring.

## 5. FUNDING

20. **Transport stakeholders** – including the social partners – are invited to use local, regional, national and Union programmes or funds to manage the social impact of automation and digitalisation, with due regard to ensuring inclusiveness and accessibility for all workers, in particular workers at higher risks of exclusion.

Examples for national programmes or funds<sup>65</sup> are training funds, sectoral funds, individual learning accounts and vouchers. At Union level, there is a variety of funding instruments for upskilling and reskilling, which is accessible through financial intermediaries, through national authorities or through the Commission. An overview of the respective programmes or funds, application process, scope regarding skills, and total budget for 2021-2027, can be found on the website of the Commission<sup>66</sup>. The Knowledge Hub<sup>67</sup> of the European Pact for Skills includes an online database and search tool for Union-, national- and regional-level funding opportunities specific to upskilling and reskilling. Relevant Union funding opportunities for upskilling and reskilling to support the digital competences of individuals and organisations can be found on the Digital Skills and Jobs Platform<sup>68</sup>. At national level, information on relevant programmes/funds should also be made public.

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<sup>64</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – EU Quality Framework for anticipation of change and restructuring (COM/2013/0882 final).

<sup>65</sup> See, for instance, the overview of national and sectoral funding programmes identified in: European Commission, Directorate-General for Mobility and Transport, *Study on social aspects within the maritime transport sector: final report*, Publications Office, 2020, <https://data.europa.eu/doi/10.2832/49520>.

<sup>66</sup> <https://ec.europa.eu/social/main.jsp?catId=1530&langId=en>

<sup>67</sup> [https://pact-for-skills.ec.europa.eu/community-resources/knowledge-hub\\_en](https://pact-for-skills.ec.europa.eu/community-resources/knowledge-hub_en)

<sup>68</sup> <https://digital-skills-jobs.europa.eu/en/opportunities/funding>

21. **Employers' organisations and workers' representatives** should help to raise awareness of their affiliates about these programmes or funds and how to use them. The same applies to sector associations at regional, national or European level. They should pay special attention to raising awareness among SMEs in the transport sector, which often have limited resources or capacity to find out about relevant national and Union programmes or funds. In addition, employers' organisations and workers' representatives should make their specific needs heard during the design phase of these programmes or funds.
22. **Policymakers and public authorities** at national level should promote and facilitate access to information of relevant funding instruments. When setting priorities for these programmes or funds, they should consult the social partners, including from the transport sector, on their specific needs.

Done at Brussels, 29.11.2023

*For the Commission*  
*Adina Vălean*  
*Member of the Commission*

