



PILLARS – Pathways to Inclusive Labour Markets: Workshop on the impact of automation technologies on the labour markets in the Baltic States

Event Note

Authors Anastasiia Konstantynova, Tatjana Guznajeva and Juanita Garcia Gutierrez, Technopolis Group



This project receives funding from the European Union’s Horizon 2020 Research and Innovation Programme under Grant Agreement No. 101004703.

1	Introduction.....	2
2	Aims of the workshops	2
3	Date and Location of the workshop	3
4	Agenda and format of the workshop	3
5	Main highlights from the discussions in the workshop - Impact of automation technologies on the labour market.....	4
5.1	Innovation and industry	6
5.2	Education and training.....	12
5.3	Migration and labour mobility	15
5.4	Other policy areas.....	17
6	Participating Organisations and participants.....	18
7	Presentations.....	19
8	Pictures from the workshop.....	20

1 Introduction

This event note highlights the main discussion points collected during the **PILLARS Workshop on the impact of automation technologies on the labour markets in the Baltic States**. The workshop took place on the 29th of November 2022 in Riga, Latvia. The event note also presents information on the format of the workshop, its aims, agenda, participants, and the context of the workshop. This event note is structured into following chapters:

- Chapter 2: Aims of the workshop
- Chapter 3: Date and location of the workshop
- Chapter 4: Agenda and format of the workshop
- Chapter 5: Main highlights from the discussions in the workshop
- Chapter 6: Participating organisations and participants
- Chapter 7: Presentations
- Chapter 8: Pictures of the event

2 Aims of the workshops

The PILLARS Workshop on the impact of automation technologies on the labour markets in the Baltic States is a part of the [PILLARS](#) project, funded under EU Horizon 2020 research and innovation programme. The aim of the project is to inform policymakers, stakeholders, and the public about the **impact of technological change, international trade, and industrial transformation on the labour markets**, as well as, to support policymakers in **the design of policies for inclusive labour markets**, in view of future changes in technology.

Throughout the project, the consortium organises 8 regional workshops (in Italy, the Netherlands, Baltics, France, Germany, the United Kingdom, China and Latin America), as well as several academic/scientific workshops and conferences. The current workshop – **the Baltic workshop** – supports PILLARS work package 7 that focuses on the co-design of policies for inclusive labour markets. This work package is intended to **serve as a bridge between the Horizon-funded research and (future) policymaking**. Through engagement with stakeholders, we seek opportunities to **learn lessons about the impact of technological changes on the labour market to be incorporated in inclusive policymaking**.

The aim of the current workshop was to discuss **the impact of automation technologies on the labour markets in the Baltic States** (Estonia, Latvia, and Lithuania), and to highlight **policies in the region that have been designed to stimulate innovation and inclusion on the labour markets**. Specifically, the project team focused on three policy areas during the workshop:

- **Innovation/industry** (policies that support automation technology development/adoption and job creation),
- **Education/training** (policies that increase responsiveness of the education/training system to the market/industry needs),
- **Migration/labour mobility** (policies that increase availability of labour and facilitate occupational labour mobility).

The workshop was organised by [Technopolis Group](#). Technopolis Group provides evidence-based policy advice on science, technology, research, and innovation. It was founded 30 years ago in Europe, and it is now a leading international public policy research and consulting organisation with offices in Europe, Africa, Latin America, and the Caribbean, with projects conducted worldwide.

3 Date and Location of the workshop

The workshop took place in **Riga (Latvia)** on **29th November 2022 between 10:00 and 15:30** (Riga time, GMT+3). The venue of the workshop was **Radisson Blu Latvija Conference & Spa Hotel (room Sigma I)**. The exact address is **Elizabetes street 55, Riga, LV-1010, Latvia**.

4 Agenda and format of the workshop

The **agenda of the workshop** is presented in Figure 1. The format of the workshop included **plenary sessions**, during which the consortium and invited speakers gave short presentations, and **interactive sessions**, where insights and ideas from the workshop were discussed among the participants. The Workshop has been moderated by the Pillars WP7 team members:

- Tatjana Guznajeva, Senior consultant, Technopolis Group, WP7 coordinator
- Dr. Anastasiia Konstantynova, Senior consultant, Technopolis Group, WP7 team member
- Juanita Garcia Gutierrez, Analyst, Technopolis Group, WP7 team member

Figure 1 Agenda of the workshop

Time	Agenda Item	Description of the Item
10:00 – 10:30	Welcome coffee	Welcome of participants, networking and a coffee
10:30 – 10:35	Opening remarks	Overview of the agenda and housekeeping rules
10:35 – 10:40	Introduction of the PILLARS project	Short description of the PILLARS project
10:40 – 10:55	Tour de Table	Introductions of workshop participants
10:55 – 11:00	Impacts of automation technologies on the labour markets in the Baltic States	Presentation by the PILLARS project team
11:00 – 11:10	Long-term labour market challenges in the Baltic States	Presentation by Dr. Oļegs Krasnopjorovs
11:10 – 11:20	Discussion on the state of labour markets and impacts of automation technologies	
11:20 – 11:25	Technological innovation and job creation in the Baltic States	Presentation by the PILLARS project team
11:25 – 11:35	Drivers of innovation and entrepreneurship in Estonia	Presentation by Annely Tank
11:35 – 12:00	Discussion of success factors and barriers for technological innovation and job creation	
12:00 – 12:10	Break	
12:15 – 12:25	Education policies in the Baltic States in response to technological transformations	Presentation by the PILLARS project team
12:25 – 12:35	Preparedness of the Estonian education system for the future of work	Presentation by Dr. Raul Eamets
12:35 – 13:00	Discussion of success factors and barriers for ensuring preparedness of the education/training systems to technological transformations	

Time	Agenda Item	Description of the Item
13:00 – 14:00	Lunch	Lunch provided in the Restaurant Esplanāde at the hotel
14:00 – 14:10	Migration and labour mobility policies in the Baltic states	Presentation by the PILLARS project team
14:10 – 14:20	Labour migration and automation technologies in the Baltic States	Presentation by Dr. Vilmantė Kumpikaitė-Valiūnienė
14:20 – 14:45	Discussion of success factors and barriers for the design of effective migration/labour mobility policies in the Baltic states	
14:45 – 14:50	Other policies for inclusive labour markets	Presentation by the PILLARS project team
14:50 – 15:00	Universal basic income as an activating policy measure	Presentation by Dr. Jurgen De Wispelaere
15:00 – 15:20	Discussion of other policies for inclusive labour markets	
15:20 – 15:30	Closing remarks	Closing remarks by the PILLARS project team

5 Main highlights from the discussions in the workshop - Impact of automation technologies on the labour market

This chapter provides the highlights from the presentations and discussions, which took place during the Workshop. The agenda was structured in **three policy areas**: Innovation/Industry, Education/Training, and Migration/Labour mobility, and are presented in Figure 2 below.

Figure 2 Policy areas

Innovation/industry	Education/training	Migration/labour mobility
<ul style="list-style-type: none"> • policies that support automation technology development/adoption and job creation 	<ul style="list-style-type: none"> • policies that increase responsiveness of the education/training system to the market/industry needs 	<ul style="list-style-type: none"> • policies that increase availability of labour and facilitate occupational labour mobility

Overall, the impact of automation technologies on the labour market in the Baltic States has been discussed in view of **three effects: job displacement, job creation and job transformation**. The definition of key terms can be found in the Box below.

Box 1 Definitions of job displacement, job creation and job transformation effects

- **Job displacement** refers to involuntary job loss and redundancies for employees, following eliminations of tasks or of types of jobs.
- **Job transformation** implies a change in the nature of work and of the workplace itself.
- **Innovation job creation** refers to the process of creation of new jobs due to adoption of automation technologies.
- **Inclusive job creation** refers to the process of creation of new jobs that stimulate inclusion, especially for people who were previously unemployed or inactive on the labour market.

Source: Pillars (2022)

In the long run, in the context of **job destruction**, the demand for low and middle-skilled jobs is expected to decline. For example, in Latvia, there is a projection of a 36% drop in demand by 2035, while in Estonia, OSKA¹ predicts disappearance of at least 6% of jobs. The main industries that will be affected by automation are transportation, storage, manufacturing, agriculture, and forestry. Also, automation technologies expect to replace workers in customer service jobs. Considering the demographic trends (i.e., shrinking, and aging population), the supply of labour (especially of highly skilled labour) might substantially decrease in the future.

From a **job creation** perspective, in the short-term the labour demand in the Baltic states is expected to increase, especially in industries such as business services, construction, social and healthcare services and transport. The exception to this trend is in sectors characterised by high labour intensity, such as agriculture, wood and food processing, trade, and in the public sector. In the long-term, however, the adoption of automation technologies is expected to lower the labour demand. Nonetheless, continuous emigration, shrinking and aging populations might correct these trends, leading to a balance between the supply and demand of labour.

Digitalisation and automation have impacted workers in different contexts, such as data protection, monitoring of workers, industrial relations (i.e., quality and amount of communication), workplace health and safety in teleworking settings. In the Baltic states, **job transformation** effects are mostly related to jobs becoming more flexible and in more remote mode of working. A good example is telework, and how it has considerably increased the flexibility of working time and place over the past decade. Additionally, the sectoral structure of the workforce is expected to change. For example, according to an analysis of Estonian labour market² needs in 24 sectors, labour demand will increase in ICT, wood working, and social and health care services. At the same time, job transformation due to automation and digitalisation are widely regarded as good for productivity in the three countries.

In conclusion, the likelihood of job polarisation in the Baltic states is high. In the labour market, one of the main trends will be creation of highly skilled, well-paying jobs; while on the other hand, low-skilled, low-paying jobs will push medium-skilled jobs out of the labour market. This could further increase wage inequalities – one of the most visible impacts of automation technologies on the labour market. Overall, despite automation having the potential to reduce the need for labour and lead to job polarisation, it also has the potential to create better jobs and therefore have a general positive effect on the economy and labour market. Within sectors, automation will have the biggest impact on the manufacturing sector. Beyond that, there will be a need to supplement digital skills with other technical skills as well as intrapersonal and behavioural skills, so that people and technologies could better complement each other. For example, technologies may perform tasks and quickly collect and synthesise data, but the people would need to decide what the task will be and interpret what the data means. Also, the shape of the work will change, increasing the share of part-time work and the share of self-employed persons. Likewise, the work will become more insecure, but also more flexible.

That is why, policymakers must carefully consider the effects of automation technologies on the labour market while developing **policies** facilitating transition to a more innovative and inclusive economy and preparing workers for the future. These latest effects and important policy considerations for the Baltic states are

¹ Adequate labour supply in the manufacturing industry for economic growth, 2021, <https://www.cedefop.europa.eu/en/news/estonia-adequate-labour-supply-manufacturing-industry-economic-growth>

² The Estonian labour market was in a strong position at the start of this year, 2022, <https://www.eestipank.ee/en/press/estonian-labour-market-was-strong-position-start-year-13042022>

summarized in the next chapters structured in three main areas of policy interventions: **innovation and industry, education and trainings, and migration and labour mobility and other.**

5.1 Innovation and industry

The highlights of the policy area **innovation and industry** are presented as a summary of presentations, listed in the table below.

Discussion on the state of labour markets and impacts of automation technologies	
Long-term labour market challenges in the Baltic States	Presentation by Dr. Oļegs Krasnopjorovs
Technological innovation and job creation in the Baltic States	Presentation by Dr. Anastasiia Konstantynova, Pillars
Drivers of innovation and entrepreneurship in Estonia	Presentation by Annely Tank

Innovation system in the Baltic states. Following the **Regional Innovation Scoreboard 2021³**, Estonia shows the highest overall score of innovation system (99,96), which is followed by Lithuania (83,7) and Latvia (50,8). This places Estonia and Lithuania in the category of moderate innovators across European regions. Meanwhile, Latvia is only considered as an emerging innovator. Nordic and West European countries (such as the Netherlands, Norway, Finland, or Germany) are leading in terms of innovation system, labelled as innovation leaders or strong leaders. Figures 3 and 4 below present a detailed overview of the Baltic countries' scoring (incl. individual indicators and sub-indicators per country and in terms of EU-average). This is structured as per main categories of the regional innovation scoreboard: 1) Framework conditions, 2) Investments, 3) Innovation activities and 4) Impacts (esp. on employment).

Figure 3 Innovation system in the Baltic states

Innovation and entrepreneurial climate for innovative job creation: Overview in the Baltic States

Source: Regional Innovation Scoreboard 2021, European Innovation Scoreboard 2021 comparative assessment of performance of innovation systems across 240 regions of 22 EU Member States. Baltic countries are on NUT1 level = NUT2 regional level



Legend:
■ Innovation leader
■ Strong innovator
■ Moderate innovator
■ Emerging innovator

Category	Regional Innovation Scoreboard	Estonia	Latvia	Lithuania
Overall Index		99,96	50,8	83,7
1 - Framework conditions	Human Resources	123,2	75,4	111,6
	Digitisation	86,6	77,2	104,2
	Finance and support	92,8	37,6	76
2 - Investments	Firm Investment	93,7	25,4	79,6
	Use of information technologies	127,2	75	65,2
3 - Innovation activities	Innovators	95,3	39,3	113,7
4 - Impacts	Employment impacts	144,9	47,5	101

Estonia's innovation performance is the higher among the Baltic states, which indicates that the country can offer a better innovative environment for job creation. Indicators worth highlighting: Estonia - framework conditions, impact on employment and use of information technologies. Lithuania – Digitalization, where Latvia is also quite high but lowest among all. For the high scores in Digitalization and Use of information technologies Desi index can further support.



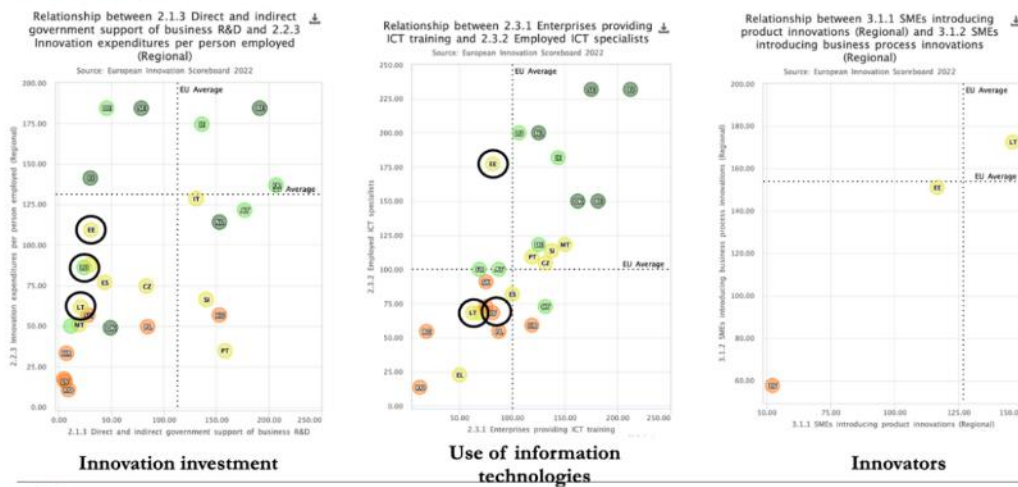
³ Regional Innovation Scoreboard, 2021, https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/regional-innovation-scoreboard_en

Given the focus of the workshop the participants have discussed (sub-)indicators related to Framework conditions, e.g., Human resources (number of doctoral graduates and share of population involved in life-learning activities), Digitalisation (Broadband penetration and number of individuals with above basic digital skills) and Employment effects (based on Employment in innovative enterprises and Employment in knowledge-intensive services). Particularly, for the employment effects its worth highlighting that Estonia is above EU-average in both sub-indicators. It comes in contrast to Latvia (both below) and even Lithuania. This makes Estonia a good example, in terms of possible instruments and policies that can be or have been implemented to capitalise on the advantage of adopting technology within the labour market. Therefore, some of the **factors and policy initiatives** from Estonia and other Baltic countries are presented in the section below.

Figure 4 Innovation system in the Baltic states (sub-indicators)

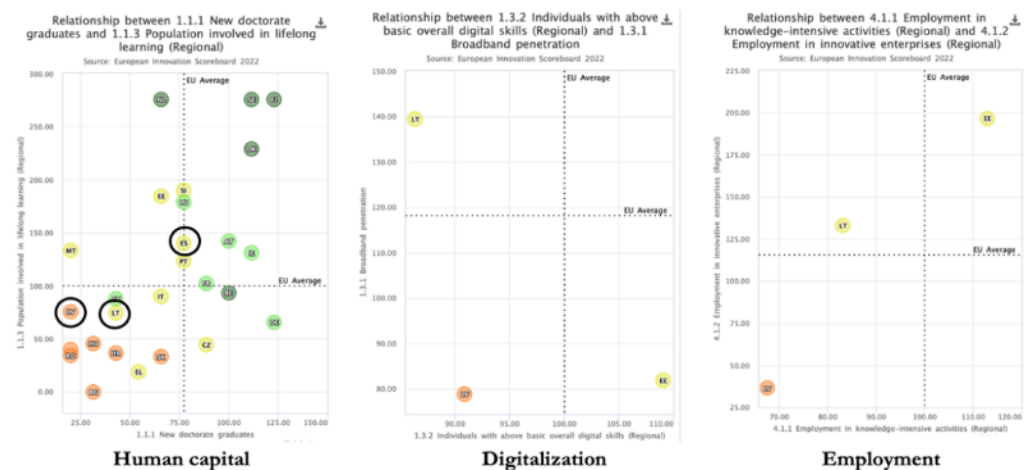
The Baltic overview: Investments and innovation activities

(sub-indicators)



The Baltic overview: Framework conditions and employment impact

(sub-indicators)



In Estonia, the aim is to have **R&D funding** reach 3% of GDP (current 1% of GDP, 2021⁴). It is indicated as part of Estonian Research, Development, Innovation and Entrepreneurship Strategy (2021-2035). In Latvia, the aim is to boost innovativeness through **RIS3 industries and value chain ecosystems** by fostering research, promoting industrial sophistication, knowledge intensive production, technology transfer, and producing highly skilled specialists (National Development Plan of Latvia for 2021-2027). Finally, in Lithuania, current efforts are centred on the development **of start-up ecosystem by creating a favourable and attractive business environment**:

- The “Startup Visa” programme and “Startup Employee Visa” - improve immigration procedures to attract, retain and integrate foreign talents.
- “Startup Lithuania” - advice for start-up founders to move to Lithuania, as well as educating the ecosystem and “futurepreneurs”.
- “Softlanding” - attract foreign start-ups by providing financial incentive.

In terms of digital adoption, one can state following priorities to stimulate innovative job creation in the Baltic countries. In Estonia, the Government has put **emphasis on the digitalisation of the economy**, presented in Digital Agenda 2020. The agenda aimed to create an environment that facilitates the use of ICT and the development of smart solutions in enterprises. Several programs such as SmartCap and Start-up Estonia support development of start-ups. Also, in Latvia the focus is on **the business digitalisation**: supporting introduction of digital technologies; digitalisation of business processes, supporting digital mentoring, as well as supporting digital upskilling (improving basic and advanced digital skills of enterprises). Overall, the **innovativeness of most start-ups is relatively low** throughout the Baltics. But the start-up rates are high, relative to other OECD countries. In Lithuania, **the share of innovative enterprises is growing**, accounting for almost half of all enterprises in the country. The Central Bank of Lithuania has streamlined licensing and automated several supervision procedures that help Fintech newcomers enter the market transparently and smoothly. As a result, Lithuania ranked fourth in the Global Fintech Index in 2020⁵.

We summarised the discussion by listing the **main bottlenecks** that hinder innovative and inclusive job creation in the region. In Estonia, the issue is **high concentration of ICT specialists in a few innovative companies** caused by the slowdown in adoption of automation technologies across the country, which can create a large gap between innovators and non-innovators. Meanwhile, Latvia **lags in terms of innovation** due to fragmented innovation system, lack of cooperation between industry, academia and government, and a low level of public and private investments in R&D&I. Also, entrepreneurs lack information on how to bring ideas (research) to the market. In Lithuania, the **research system seems to not sufficiently attract talent** (within/abroad), business R&D expenditures are low, and policymaking on Industry 4.0 and AI is based on limited evidence.

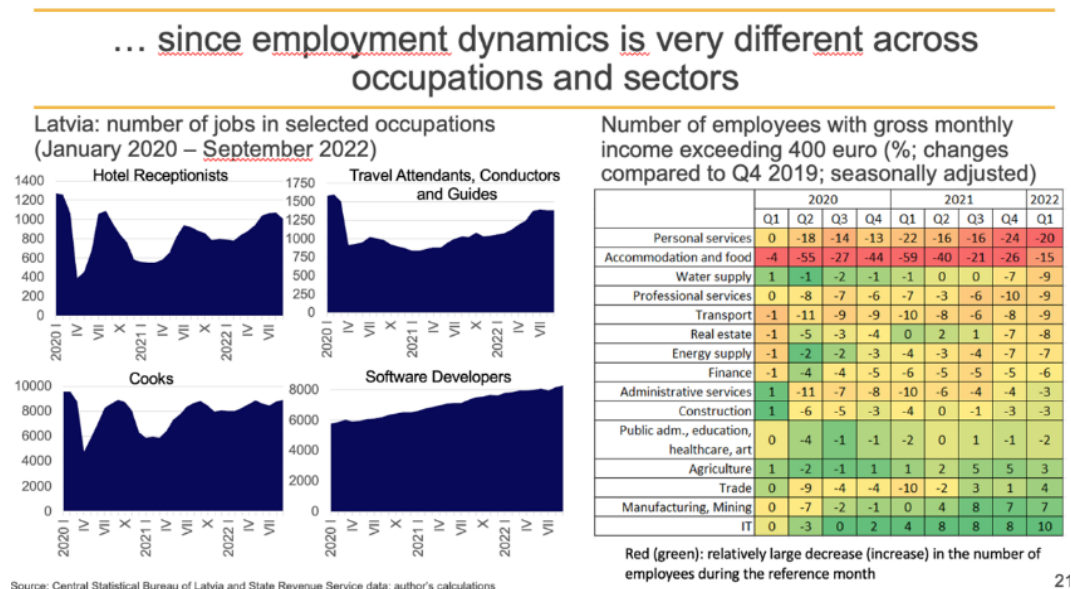
Jobs mismatch in the Baltic states is one of the important long-term concerns in the region. The COVID-19 pandemic has further increased the skill mismatches and natural rate of unemployment. This has been presented by Dr. Oļegs Krasnopjorovs from Latvia National Bank. Official unemployment is about 6%, but in combination with other groups (not interested to find jobs, etc) it raises to 13%. This is very different across sectors and

⁴ Republic of Estonia, Ministry of Education and Research, 2022,
<https://www.hm.ee/en/ministry/ministry/strategic-planning-2021-2035>

⁵ The Global Fintech Index 2020, City Ranking Report,
https://findexable.com/wp-content/uploads/2019/12/Findexable_Global-Fintech-Rankings-2020exSFA.pdf

occupations (see Figure 5 below), e.g., highest decline in accommodation and food, on contrast to manufacturing and IT sectors with highest increase.

Figure 5 Sector dynamics



Some of the **options to decrease skill mismatches** may include:

- i) Raising the quality of education and healthcare,
- ii) Enhancing lifelong learning, digital skills and regional mobility and
- iii) Attracting foreign talents inter alia by making the country a pleasant place to live.

Another recommendation is to **increase labour productivity to achieve higher wages**. This could attract employees from other regions and countries and leading to narrowing the skills' mismatch gap. An overall **increase of quality of life** is also a relevant overall factor.

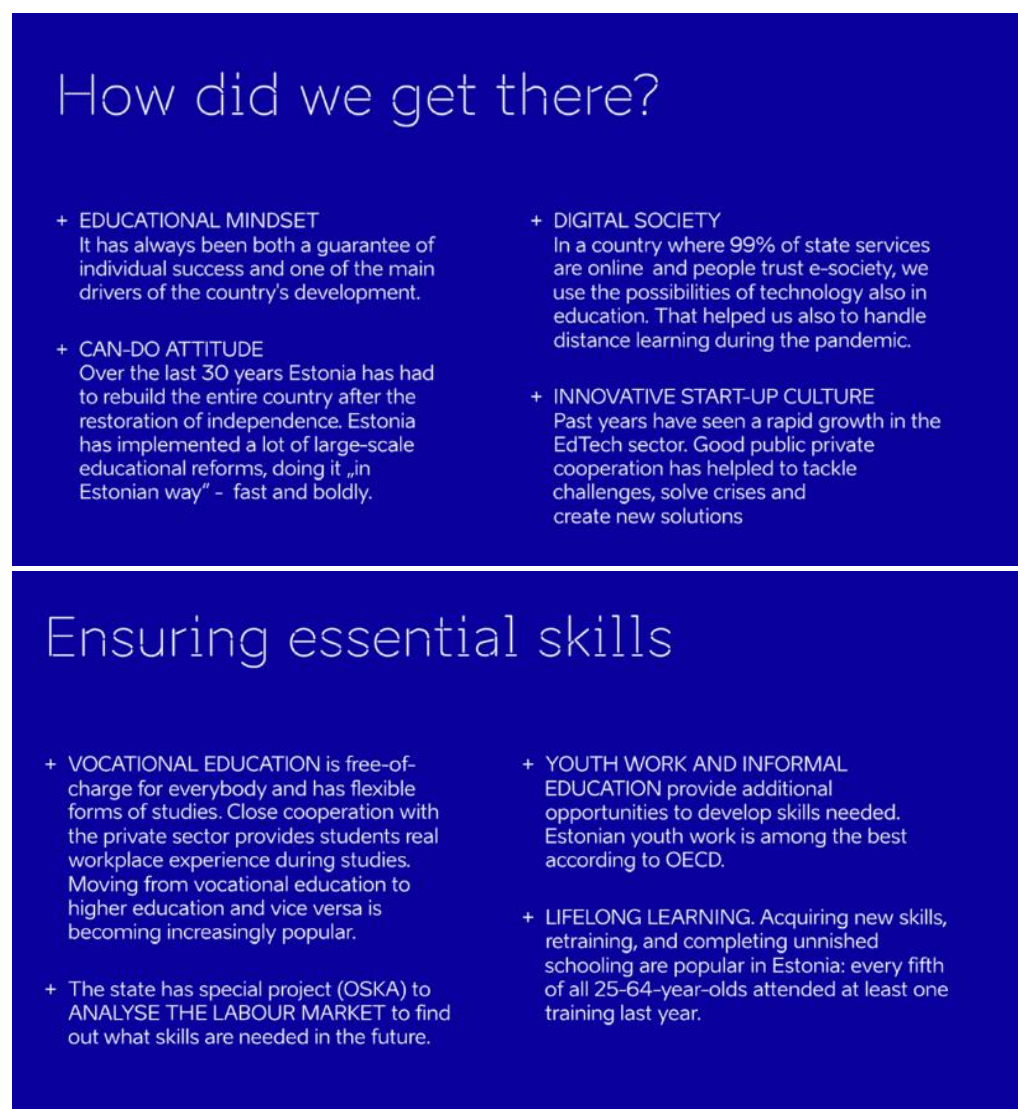
Summing up, the following **takeaways** have been highlighted. Given the still high natural rate of unemployment (8% as per NAIRU), further human capital development is needed (raise education quality, improve health, promote lifelong learning, digital skills, and regional mobility). The COVID-19 pandemic had a strong impact on low-income workers while the number of high-wage earners increased exponentially. Massive state support programs prevented a rise of unemployment and income inequality. Overall, there are limited possibilities to continue raising wages beyond productivity growth (labour income share in Latvia already exceeds the EU average). This leads to a possible **growing income gap** between the Baltic countries and even more considerable **quality of life gap**, which will lead to less possibilities, for example, for Latvia to stop brain drains and attract highly qualified foreigners.

The case of Estonia. Given Estonia's higher rates of performance in many indicators related to innovation, industry, productivity, labour market performance and technology, special attention during the workshop was given to learn about its factors and instruments. This has been done by Annelly Tank, Advisor at the Ministry of Economic Affairs and Communications for Estonia.

It was highlighted that throughout the period of regained independence, the economic and fiscal policy of the government have been aimed at achieving long-term economic growth. The overall government attitude is very

welcoming toward foreign capital, especially into sectors that are export oriented, innovative and support regional development. This also included 0% corporate income tax on all reinvested earnings in Estonia. Some of the further features of the Estonian economic, social, and cultural environment are presented in Figures 6 and include investment in the vocational education, developing digital society, promoting life-long learning, and nurturing innovative start-up culture together with Can-do attitude.

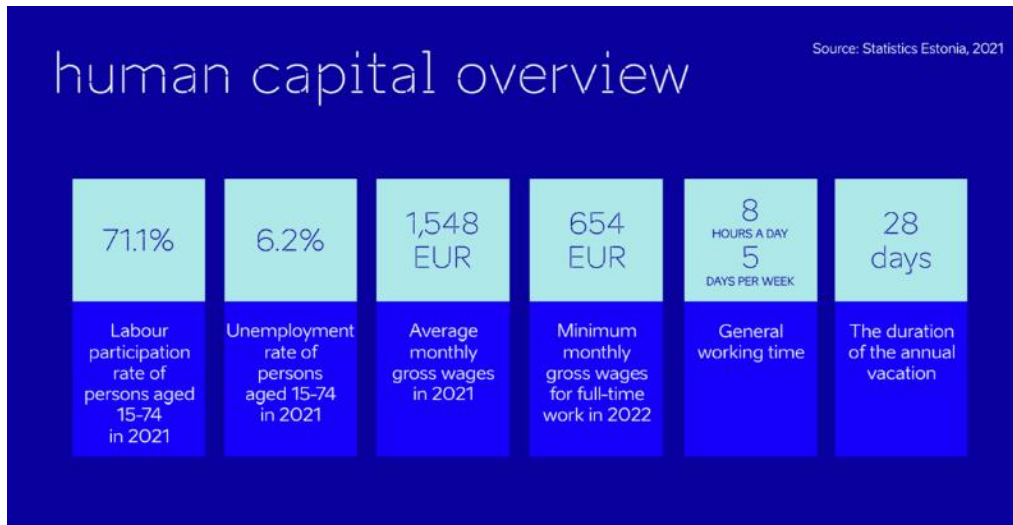
Figure 6 Featured of Estonian socio-economic environment



Estonia's competitive economy supports multinational companies to high growth start-ups. It is considered as a Northern European hub for industrial, global business services, supply chain sectors and a world leader in IT. It is very easy to become an entrepreneur in Estonia.

Estonia's competitiveness and innovation system is closely linked to some key framework conditions, such as human capital. This is very important, especially for investors, business environment and innovative job creation. Some of the main features are presented in Figure 7 and include high participation rate of young people, high level of education and motivation. This is combined with highly developed electronic communications, good access to internet, digital signatures, ID cards, web-based projects etc.

Figure 7 Human capital in Estonia



ICT and digital technologies play a central role in Estonia. People trust IT solutions developed by national companies and use them, which increases the local demand on the production and service. The common denominator for Estonian IT companies is their creativity and the ability to ignore the concept of the impossible. Main Estonian built e-solutions that enable the digital society to function smoothly are Skype, Transferwise, Fujitsu, Kühne+Nagel, CGI, Guardtime. Beyond this, some examples from growing and central Estonian sectors have been presented, such as business services and fintech, electronics and mechatronics, bioeconomy, and timber.

Discussion on the success factors and barriers for technological innovation and job creation has rounded up the presentation on the innovation and industry in the Baltics. A short summary is presented below.

Success factors to innovative and inclusive labour market:

- **Stable macroeconomic environment** is important to maintain for smooth operation of businesses, especially SMEs, entrepreneurs, and start-ups.
- **Development of infrastructure** (in general, but also ICT specific, hard, and soft) to connect people, industry and business and make regions/ cities attractive for high qualified employees to stay.
- **Human capital and especially the ability to offer industry-matching skills** are a core factor contributing to innovation, stimulating entrepreneurship and economic growth.
- **Industry matching skills and basic skills (also soft skills)**. Innovation skills include technical, social and meta/basic skills, plus language skills to communicate, cooperate and partner with different institutions in research but also between industry and research.
- **Industrial structure (positive effect)** has immense impact on the labour market. It's important to stimulate research because even though the future cannot be predicted; it can be estimated based on the models. This can help in setting the right policies.
- **Public and private funding** support. Public funding will increase research, but so far it has been associated with low quality of research and education. Private funding is usually better, but companies often do not communicate about it, so there is not enough information to make solid judgements. To be properly designed, we should be accurate about how we measure public/private funding.
- **Education** is central to grow and develop needed human capital. Hereby important to increase the quality instead increasing the number of graduates.

Barriers to adoption of technology for benefits of labour market:

- **Limited access to disadvantaged areas** hampers access to high skilled people in these regions, as well as attracting high skilled labour to the respective destinations. This leads to their further decline, higher skills mismatch, and wage income gap.
- **Jobs in disadvantages areas** are also affected by the type of skills available, which is often mismatched to take up the development in those areas.
- **Industrial structure (negative effect)** can lead to job destruction and replacement especially if it does not match (or reverse) to the profiles of labour force. It can be solved by stimulating industry-research-university collaboration.
- **Capacity to absorb research infrastructure** limits the potential to use the infrastructure and bring its research to the market. This often relates to either poor industry-research collaboration or skills mismatch.
- **Quality of education system** is ground-breaking to develop the needed skills and labour force to stimulate innovation and business development.
- **Culture (negative effect)**. Here is where mental and psychological barriers are just as important as physical barriers. Removing mental barriers is a precondition to mobilize people and train them.

Final remarks on innovation and industry policy area

Overall, policymakers are not fully aware of the effect of technology adoption on the labour market. This has several reasons, which are related to the type of profiles in the policymaking, character of work, priorities, etc. The following can be done to increase awareness:

- i) educate more policy makers about the uptake of technology and its impact on employment and skills needed,
- ii) include more practitioners in the policymaking institutions (experts that understand both practical and theoretical side of market regulations).
- iii) Since the previous step is difficult, one can facilitate the increase in interactions between policymakers, practitioners, and researchers. Research is especially needed to make evidence-based decisions and policies.

Beyond this, there are **two urgent (unpredicted) developments** that must be dealt by the Baltic countries:

- 1) Refugee crises due to war in Ukraine increases the skills mismatch (or not) / Increase of population – demographics
- 2) Inflation effect can reduce competitiveness of firms (or not) since the technological changes influence the process of innovation at the company level.

Estonia, for example, has positive migration balance and large influx of Ukrainian refugees. There are estimations that the skill matches will increase since Ukrainian refugees are overqualified. The current country of preference by refugees is Estonia, due to higher wages.

5.2 Education and training

The highlights of the policy area **education and training** are presented as a summary of presentations, listed in the table below.

Discussion of success factors and barriers for ensuring preparedness of the education/training systems to technological transformations

Education policies in the Baltic States in response to technological transformations

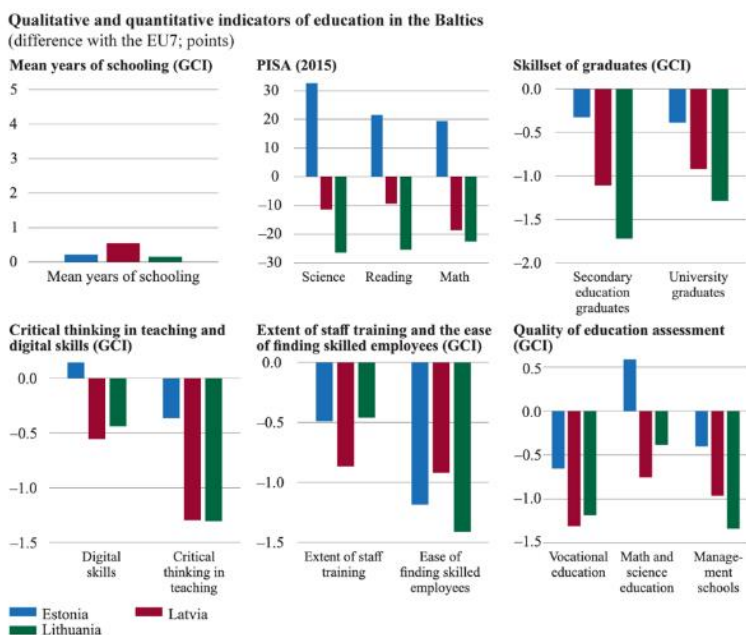
Presentation by Tatjana Guznajeva, Pillars

Preparedness of the Estonian education system for the future of work

Presentation by Dr. Raul Eamets

Generally, all three Baltic countries are characterised by a relatively high level of formal education. Almost 40% of population in the age group 20–64 have a tertiary education degree⁶, which is one of the highest values in the EU (see Figure below).

Figure 8 Education indexes in the Baltic countries



Some of the main policy initiatives across the Baltic countries.

In Estonia, the Estonian Lifelong Learning Strategy 2020 was developed. It aims to make teaching a more attractive career, teach teachers digital skills and give teachers access to modern digital infrastructure. Vocational Education and Training (VET) has been addressed in Estonian Artificial Intelligence Strategy 2022 – 2023, where VET has been identified as an objective to integrate AI skills into IT VET curricula. Also, Estonian Lifelong Learning Strategy 2020 aimed to ensure all digital materials were available at VET institutions to fulfil study results outlined in VET curricula.

In Latvia, as part of Latvian Digital Transformation and Guidelines 2021 – 2027 there is an aim to promote development and monitoring of teachers' ICT skills, modernize curriculum and promote digital literacy among both students and teachers and train teachers in the development of digital learning materials. Modernisation of VET institutions in Latvia was part of 2009 – 2015 Latvia VET strategy and in 2016 – 2022 the government developed ways for VET teachers to learn digital skills.

⁶ Bank of Latvia, Anatomy of labour reserves in the Baltic countries: A snapshot 15 years after the EU Accession, 2019, https://datnes.latvijasbanka.lv/papers/discussion/dp_2_2019-en.pdf

In Lithuania, a similar recommendation has been included in the Lithuanian Artificial Intelligence Strategy 2019: train a new generation of teachers to have high technical competencies and the ability to instruct students on how to use new technologies. Likewise, Lithuania's Recovery and Resilience Plan includes measures aimed at investing €312 million to ensure accessible lifelong education through VET and adult learning, amongst other forms of education.

Also here, in terms of education and training activities, **Estonia can be showcased for several good examples** in education and teaching policies and initiatives:

- Digital Focus Program 2019 – 2022: to build a digital competence model and to identify digital competence in accordance with age – for students, and for teachers - receive digital skills training, and
- Estonian ProgeTiger programme: to improve the digital literacy of students and teachers. Day cares and basic schools are involved in it through computer hobby groups, robotics teams, etc.

In this context the findings from Dr. Raul Eamets, Professor of Macroeconomics at the University of Tartu on **the Preparedness of the Estonian education system for the future of work** has been especially relevant for the discussion. It has been presented based on the Vision paper (2018) for the Estonian Education Strategy 2021–2035⁷. The long-term vision of Estonian competitiveness could be built on the following pillars, focusing on

- 1) **Seamless educational system** - Estonian educational system that involves both formal, non-formal as well as informal study, enables everyone to keep their skills and knowledge over the course of their life consistent with the needs of labour market.
- 2) **Consolidation of higher education and increasing the self-liability of the learner** - Estonian institutions of higher education offer the same top-level education as Nordic and Central European universities and involvement of private capital increase.
- 3) **Prioritising research and innovation** - Estonia makes a radical leap in investments towards research and innovation, laying the groundwork for a general increase in skills in society and for the formation of innovative fields of activity with high added value.
- 4) **Stable environment for private sector** - the development of Estonian economy is broad-based, and changes are carefully considered and carry a long-term perspective.
- 5) **Smart migration policy** - Estonia is a clever manager of labour resources, by considering equally important that the local population remains active and is increasing in labour market as well as involving highly qualified labour from abroad.

Proposals for institutional changes in education may include following steps:

- Reduction **of educational “dead ends”** (it must be possible to continue the path of education from every level) and increase the proportion of people with professional skills within the labour force.
- **Compulsory secondary education.** Enabling students/pupils to choose a profession/occupation at a later age with a purpose of decreasing the drop-out rate in schools as well as unemployment.
- **Upgrading vocational education to the same level as applied higher education.** This will improve career opportunities and address future labour market needs esp. by highly qualified skilled employees and specialists with broader knowledge and good learning skills.

⁷ Republic of Estonia, Ministry of Education and Research, 2022,

https://www.hm.ee/sites/default/files/haridusvaldkonna_arengukava_2035_kinnitaud_vv_eng.pdf

- **Individual approach to study path** (whilst acquiring secondary education in one school, also make a choice between a study path supporting the learning of a profession (in cooperation with vocational education centres) and a study path to prepare for admission into higher educational institution.
- **State support for students** studying certain expensive specialities and young talents studying abroad.

Final remarks on education and training policy area

Summing up on the above for the Baltic states one can highlight the need for: i) stronger focus on the mix between education levels, ii) small scale changes and recommendations, since radical changes in the education system are not possible, iii) increase in the quality and quantity of teachers, iv) building more open profiles and at a later age stage for students (so they can develop the needed and interested careers), v) developing micro-credentials at the universities and schools so that students could gain relevant additional skills and grades.

Also, there is a need to reduce the barrier of entry into the labour market since mid-level skill job are disappearing due to some automation technologies. Apprenticeships could be one of the solutions. For example, IT Academy in Estonia, they're going to give the funding to strengthen the link between education and companies, which should ease the entrance from education to labour market. Overall, this brings us to the general need for a **more flexible and adjustable system**.

5.3 Migration and labour mobility

The highlights of the policy area **migration and mobility** are presented as a summary of presentations, listed in the table below.

Discussion of success factors and barriers for the design of effective migration/labour mobility policies in the Baltic states	
Migration and labour mobility policies in the Baltic states	Presentation by Juanita Garcia Gutierrez, Pillars
Labour migration and automation technologies in the Baltic States	Presentation by Dr. Vilmantė Kumpikaitė-Valiūnienė

All three Baltic States score below the EU average⁸ in **labour market mismatch**, with Estonia scoring the lowest and Lithuania scoring the highest in labour mismatch. As part of the overall effort to close these mismatch gaps, it is important that Public Employment Services (PES) offer occupational labour mobility services with good quality, especially trainings.

Occupational Labour Mobility.

In Estonia, the Estonian Public Employment Service is considered as a provider of good support to those seeking jobs, but it does not reach all in need. One of the main recommendations is the need of Estonian Public Employment Service to improve its cooperation with the institutions that provide public services and simplify the regulatory process of accessing these services.

In Latvia, National Industrial Policy Guidelines 2021 – 2027 indicate that one of the key challenges to strengthening human capital was the integration of unemployed and economically inactive population into the

⁸ Bank of Latvia, Anatomy of labour reserves in the Baltic countries: A snapshot 15 years after the EU Accession, 2019, https://datnes.latvijasbanka.lv/papers/discussion/dp_2_2019-en.pdf

labour market. Meanwhile, State Employment Agency (NVA) offers coupons to unemployed people to participate in trainings, offers Job portal, Individual and group career consultations, and Information days.

In Lithuania, there is Lithuania's Recovery and Resiliency Plan that aims to increase social protection by reforming a guaranteed minimum income protection scheme, increasing the coverage of unemployment social insurance and investing in entrepreneurship support. Lithuanian Employment Services (UZT) provides information and consultations to job seekers by appointment.

Policy initiatives attracting highly skilled employees.

Below we highlight the main initiatives adopted to attract highly skilled workers, per country. Immigration to Estonia is **increasing** and as of 2015 Estonia became a net-immigrant country for the first time. Two initiatives can be listed i) Digital nomad visa (it is estimated that around 1.800 people a year will apply for a digital nomad visa)⁹ and ii) e-Residency is a government issued digital identity that gives holders access to Estonia's business environment. By the beginning of 2021, e-residents had founded about 15.000 companies which employ about 1.700 people and whose average wage was similar to the Estonian average wage¹⁰.

Emigration from Latvia is **decreasing** but it is still a net-emigration country. In 2018, Latvia approved a list of professions where there is a significant labour shortage. These professions were granted special conditions for attracting foreign highly skilled workers. The OECD¹¹ has identified labour migration as a crucial channel for meeting Latvia's labour needs. It recommended i) giving foreign students in Latvia a post-study stay and ii) reaching out to labour migrants through employment agencies and giving them incentives to stay.

In Lithuania emigration has been **decreasing** in recent years. In 2021¹², 18.8 thousand left Lithuania, in 2020 over 15 thousand. In 2019 this indicator was significantly higher – over 24 thousand. The country offers 'e-Residency', meaning it gives foreigners government IDs and allows them to file taxes, give e-signatures, open bank accounts, and have access to Lithuanian administrative, public and commercial environments. There is also a 'Startup visa' programme. This visa gives non-EU citizens a temporary EU residence permit if they can prove that they have enough capital for run a business for at least 12 months in Lithuania. Finally, one can also apply for Startup employee visa, which is meant to facilitate the attraction of highly skilled workers.

The above will significantly change due to refugee inflow to the Baltic states from Russian war in Ukraine.

Challenges to increase migration effected by automation technologies.

Prof. Dr. Vilmantė Kumpikaitė-Valiūnienė from Kaunas University of Technology has further highlighted the trends related to labour migration and automation technologies in the Baltic states. She highlighted the demographic problem, since according to the UN the population in the Baltic States could decline by 2050 (22% Latvia, 17% Lithuania and 13% Estonia). This is combined with other issues related to attracting migrants. For example, i) No embassies of Estonia and Lithuania in many of the world's regions, which causes problems for expatriates when applying for visas, ii) Lack of suitable transport options to their countries of origin, iii) Most information on the websites are provided in the local language and iv) The struggle of the government to fulfil the different needs of

⁹ OECD, International Migration Outlook 2021, <https://doi.org/10.1787/29f23e9d-en>.

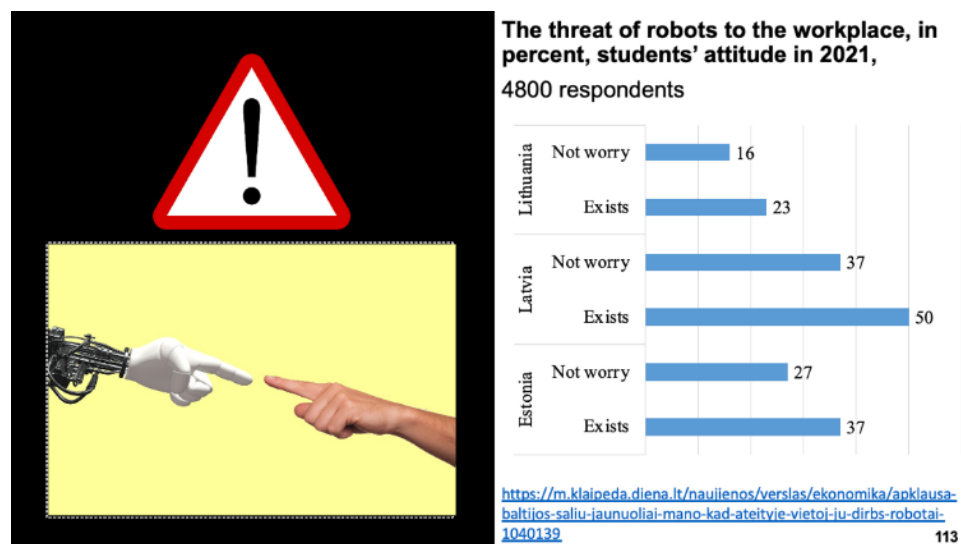
¹⁰ OECD, International Migration Outlook 2021, <https://doi.org/10.1787/29f23e9d-en>.

¹¹ OECD, International Migration Outlook 2021, <https://doi.org/10.1787/29f23e9d-en>.

¹² OECD, International Migration Outlook 2021, <https://doi.org/10.1787/29f23e9d-en>.

diverse immigrant groups. The speaker has also presented the fact that there is still high fear from people (see Figure below) from the robotization and its impact on jobs and labour market.

Figure 9 The threat of robots to the workplace



Final remarks on migration and labour market area

Since the war in Ukraine and an increased flow of refugees, the situation with migration and skill profiles has radically changed, especially as there are estimations that about half of all immigrants will stay in the countries of destination. Therefore, there are high chances that the shortage of labour will be solved (to some extent). The demographic situation is likely to be changed due to the type of refugees from Ukraine (mainly young women with kids) and the wage gap is disappearing. That is why the current outlook indicates the absence of a need to attract many new migrants and highlights the need to focus on matching people with the right profiles to the right jobs. This is because there now are polarisation trends of labour and finding the balance between low and highly skilled jobs for immigrants is more urgent than attracting more.

Public employment services (PES) should be more involved in addressing these polarisation gaps. However, since they deal with very different clients - from highly educated to very low-skilled workers, it is quite a challenge. Therefore, PES need to develop more tailored services for all client groups. A positive trend has been seen since the COVID-19 pandemic, when clients were offered to access online classes (e.g. learning digital skills, life-long learning etc.), which is geared towards highly-skilled workers. These PES issues are EU-wide.

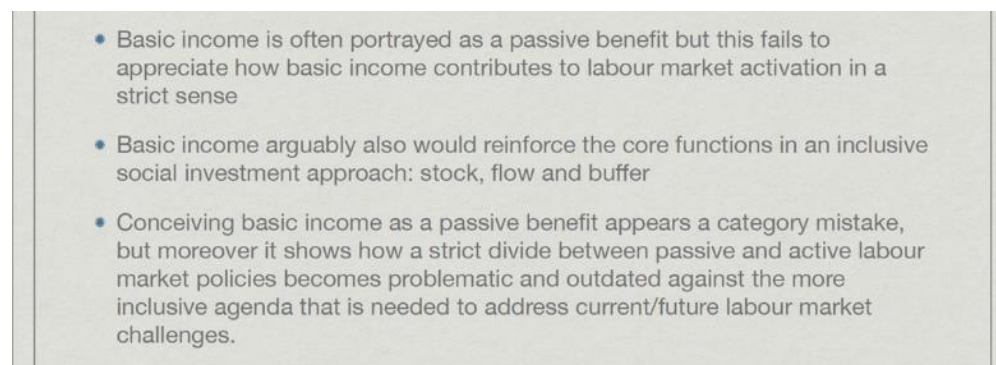
5.4 Other policy areas

Aside from the three main areas, the participants have also discussed the concept of **universal basic income** as an attractive policy measure, which has been presented by Dr. Jurgen De Wispelaere from Tampere University.

Discussion of other policies for inclusive labour markets	
Other policies for inclusive labour markets	Presentation by the PILLARS project team
Universal basic income as an activating policy measure	Presentation by Dr. Jurgen De Wispelaere

Universal basic income (UBI) is a socio-political financial transfer policy proposal in which all citizens of a given population regularly receive a legally stipulated and equally set financial grant paid by the government without a means test. A basic income can be implemented nationally, regionally, or locally. If the level is sufficient to meet a person's basic needs (i.e., at or above the poverty line), it is sometimes called a full basic income; if it is less than that amount, it may be called a partial basic income. Some have labelled UBI as utopian due to its historical origin. There are several welfare arrangements that can be viewed as related to basic income. Many countries have sometimes set a basic income for children. Pension may also be like basic income. Some of the main takeaways from the presentation are summarised in Figure 10, contextualizing for the Baltic states.

Figure 10 Main remarks on universal basic income

- 
- Basic income is often portrayed as a passive benefit but this fails to appreciate how basic income contributes to labour market activation in a strict sense
 - Basic income arguably also would reinforce the core functions in an inclusive social investment approach: stock, flow and buffer
 - Conceiving basic income as a passive benefit appears a category mistake, but moreover it shows how a strict divide between passive and active labour market policies becomes problematic and outdated against the more inclusive agenda that is needed to address current/future labour market challenges.

Discussions on applicability of UBI in the Baltic states illustrated that before using the universal basic income approach, there are still a wide range of traditional instruments, which can be used by the governments, e.g., increasing minimum wage level. Beyond that there are also little evidence Europe-wide, regionally, and globally on the effectiveness of such a policy instrument. Also, implementation of such a policy requires a lot of solidarity, which does not exist in the Baltics. However, the potential may exist for Lithuania and Estonia, which are ranked amongst the highest in favour of using it.

6 Participating Organisations and participants

The Workshop has been attended by total number of **17 participants and speakers**. These participants and speakers come from the following organisations:

- Latvian State Employment Agency
- Bank of Latvia
- Estonian Ministry of Economic Affairs and Communications
- Kaunas University of Technology
- Kaunas Science and Technology Park
- Stockholm School of Economics in Latvia
- Baltic International Centre for Economic Policy Studies
- Daugavpils City Council
- Riga Technical University


The detailed list of participants is presented in the Figure below.

Figure 11 Workshop participants

PILLARS – Pathways to Inclusive Labour Markets: Workshop on the impact of automation technologies on the labour markets in the Baltic States

November 29th, Riga, Latvia

Name	Organization	Signature
Aivars Timofejevs	Stockholm School of Economics in Riga/ Baltic International Centre for Economic Policy Studies	- [Signature]
ANDREJS JAKOBSONS	Riga Business School/ Baltic International Centre for Economic Policy Studies	[Signature]
Anneli Tank	Ministry of Economic Affairs and Communications	[Signature]
Arnis Kokorevičs	Latvian Council of Science	[Signature]
Alis Kapenieks	Riga Technical University	[Signature]
Elita Zondaka	Latvian Council of Science	[Signature]
Eva Lapsina	State Employment Agency of Latvia	[Signature]
Evita Simšone	State Employment Agency of Latvia	[Signature]
Jaan Masso	University of Tartu	[Signature]
Jolanta Uzulina	Daugavpils City Council	[Signature]
JURGEN DE WISPELAERE	Stockholm School of Economics in Riga/ Baltic International Centre for Economic Policy Studies	[Signature]
Kata Fredheim	Stockholm School of Economics in Riga/ Baltic International Centre for Economic Policy Studies	[Signature]
Lauma Mušniece	Latvian Council of Science	[Signature]
Morten Hansen	Stockholm School of Economics in Riga/ Baltic International Centre for Economic Policy Studies	[Signature]
Oļegs Krasnopjorovs	Bank of Latvia	[Signature]
Raul Eamets	University of Tartu	[Signature]
Vaiva Kelmelyte	Kaunas Science and Technology Park	[Signature]
Vilmanė Kumpikaitė-Valiūnienė	Kauno Technologijos Universitetas	[Signature]
Zane Vārpina	Stockholm School of Economics in Riga/ Baltic International Centre for Economic Policy Studies	[Signature]
Anastasiia Konstantynova	Technopolis Group	[Signature]
Tatjana Guznajeva	Technopolis Group	[Signature]
Juanita Garcia Gutierrez	Technopolis Group	[Signature]

 This project receives funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 101004703.

Note: Juanita Garcia Gutierrez and Elita Zondaka have also attended the workshop

7 Presentations

Presentations can be requested via Pillars WP7 coordinator: Tatjana Guznajeva (tatjana.guznajeva@technopolis-group.com).

8 Pictures from the workshop





