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Impact assessment of EU investments on the main macroeconomic indicators and economic sectors in Lithuania

SUMMARY OF THE ASSESSMENT RESULTS



Creating the
future of Lithuania
2014-2020 Operational
Programme for the
European Union Funds
Investments in Lithuania



MINISTRY OF FINANCE
of the Republic of Lithuania

The service contract is financed from the European Social Fund, the services were commissioned by the Ministry of Finance of the Republic of Lithuania.

SCOPE, PURPOSE AND TASKS OF THE ASSESSMENT

The **purpose of the assessment** was to determine the projected impact of the 2014-2020 and 2021-2027 EU investments on Lithuania's macroeconomic indicators, individual public policy areas and economic sectors.

In order to achieve this purpose, three **tasks** were implemented:

- 1) The **impact** of the 2014-2020 EU investments on Lithuania's economy has been assessed, by determining the changes in **macroeconomic indicators** as a result of the EU funds (impact on gross domestic product (GDP), employment level, unemployment rate, etc.);
- 2) The **impact** of the 2014-2020 EU investments on **public policy areas** (taking into account the priorities of the 2014-2020 Operational Programme¹ (2014-2020 OP)) and economic sectors has been assessed, by analyzing in detail at least 2 economic areas (construction sector; employment and labor market);
- 3) The **impact** of the planned 2021-2027 EU investments at the **national level**, as well as by **public policy areas** and **economic sectors** has been assessed, by determining the changes in macroeconomic indicators as a result of the EU funds (impact on GDP, employment level, unemployment rate, etc.) (including detailed analysis of the construction sector)).

The scope of the assessment consists of **three investment packages**:

- EU investments of the programming period 2014-2020 (**volume - 7.3 billion EUR**);
- REACT-EU investments implemented in accordance with the priorities 13 and 14 of the 2014-2020 OP (**volume - 273.7 million EUR**);
- planned EU investments of the programming period 2021-2027 (**volume - 6.2 billion EUR**).

INVESTMENTS IN INDIVIDUAL PUBLIC POLICY AREAS

For the purpose of assessing the impact of investments in individual public policy areas (PPAs), PPAs analyzed in this assessment were equated to the policy areas identified in the Law on Strategic Management of the Republic of Lithuania². The proportions of the distribution of the 2014-2020 EU investments among different PPAs were determined on the basis of the information provided in the Annex to the 2014-2020 OP and factual data on expenditure from the EU Structural Funds Management and Monitoring Information System (SFMIS).

The proportions of the distribution of the 2021-2027 EU investments among different PPAs were determined on the basis of preliminary indications provided by the specialists of the Ministry of Finance of the Republic of Lithuania, data on distribution of the 2014-2020 EU investments among different PPAs, as well as findings from comparative analysis of investments of the programming period 2014-2020 and planned investments of the programming period 2021-2027.

DETAILED ANALYSIS IN DIFFERENT AREAS

In the case of all three financial packages analyzed, the detailed analysis of construction sector was carried out. Moreover, in the case of the 2014-2020 investment package and REACT-EU investments, the field of

¹ Operational Programme for the European Union Funds' Investments in 2014-2020, 2014 (as of 12 April, 2021, approved by the Decision No C (2021) 2603)

² Law on Strategic Management of the Republic of Lithuania, No XIII-3096, 25 June, 2020, Vilnius

employment and labor market was analyzed in more detail. In the case of the 2014-2020 EU investment package, detailed analysis in the field of employment and labor market encompassed 5 projects implemented under two measures of the 2014-2020 OP:

Measure No. 07.3.1-EFA-V-401 Integration of the Unemployed into the Labour Market

- Supporting the employment of the long-term unemployed (07.3.1-ESFA-V-401-01-0001);
- Increasing the competencies of unskilled persons (07.3.1-ESFA-V-401-03-0001);
- Get the desirable profession (07.3.1-ESFA-V-401-03-0001);
- Supporting the employment of the elderly unemployed (07.3.1-ESFA-V-401-02-0001).

Measure No. 07.3.1-ESFA-V-402 Professional Rehabilitation of the Disabled

- Assistance for the disabled (07.3.1-ESFA-V-402-01-0001).

EVALUATION CRITERIA AND METHODS APPLIED

The assessment was carried out on the basis of **impact, investment efficiency and investment sustainability criteria**.

IMPACT CRITERION

The assessment according to the impact criterion encompassed analysis on two different levels – **macro level and meso / micro level**. Analysis of macro-level impact sought to determine changes in macroeconomic indicators such as **GDP, including its components, employment level, unemployment rate, general government revenue, foreign direct investment (FDI), GVA of individual economic sectors, general government balance and price levels**, as a result of the investments of the three financial packages analyzed.

The main method applied for assessing macro-level impact was macroeconomic modeling. In particular, **HERLIT model** of computable equilibrium, dividing Lithuania’s economy in sixteen economic sectors, was employed. Economic development of economic sectors included in the model in the short term is affected by short-term aggregate demand effects, while in the long term - by structural supply-side effects, resulting from improved factors of production - **human capital, physical infrastructure and R&D base**, due to the investments analyzed.

The impact of the 2014–2020 and 2021–2027 investment packages was modelled on the basis of **four scenarios - most likely, optimistic, pessimistic and even-investing**. In the case of the 2014-2020 EU investments, the most likely scenario reflected the actual implementation rates, while in the case of the 2021-2027 EU investments, it reflected the most likely scenario of investing, in accordance with the actual implementation rates of the 2014-2020 EU investments. Modelling of optimistic and pessimistic scenarios in both programming periods relied on the assumption that, in the long term, supply-side factors will generate respectively 33 percent larger and 33 percent smaller impact. Modelling of even-investing scenario relied on the assumption that, in both 2014-2020 and 2021-2027 programming periods, the investments are evenly injected in the economy, by equally distributing them among the years of implementation.

The impact of the 2014-2020 EU investments and 2021-2027 EU investments in individual PPAs, as well as the impact of the 2014-2020 EU investments on regional level was modelled on the basis of the most likely scenario. The modelling results regarding the impact of the 2014-2020 EU investments in individual PPAs are additionally explained using **theory of change schemes**.

The assessment of **meso- / micro-level impact** of the EU investments encompassed a more detailed analysis of the construction sector, as well as the field of employment and labor market. In the case of the construction sector, analysis on the basis of statistical data and secondary sources, semi-structured

interviews and expert evaluation sought to determine the factors, besides the EU investments analyzed, affecting the development of the construction sector, the level of sector's dependence on the investments analyzed, as well as types of infrastructure that has been developed as a result of the 2014-2020 investments.

The assessment of meso- / micro-level impact in the field of employment and labor market, based on the **counterfactual impact assessment method**, encompassed the impact of active labor market policy (ALMP) measures, funded by 5 projects implemented under two measures of the 2014-2020 OP, on employment opportunities and wages of their participants. The counterfactual impact assessment was carried out in two stages. First of all, based on the **coarsened exact matching method** the treatment and control groups of each project were formed, that were **statistically significantly identical** in terms of the main demographic characteristics and labor market history 12 months prior registration in the Employment Service under the Ministry of Social Security and Labour of the Republic of Lithuania (ES). Secondly, based on the **analysis of average impact of interventions on the treatment group**, the impact of the projects analyzed on the treatment group's **share of months worked per year** and **average wage, expressed in relation to the national average wage**, one, two and three years after the termination of the projects, was calculated.

EFFICIENCY AND SUSTAINABILITY CRITERIA

For the purpose of assessing the investments according to the **efficiency criterion**, by employing macroeconomic modelling, investment composite multipliers (or return coefficients) were calculated, allowing to estimate how much one invested euro of each investment package and investments in individual PPAs generated additional euros in the economy during the period analyzed. This, in turn, made it possible to determine which investments were relatively most efficient.

For the purpose of assessing the investments according to the **sustainability criterion**, by employing macroeconomic modelling, long-term impact of each investment package and investments in individual PPAs on macroeconomic indicators was calculated, i. e. an assessment of how long and to what extent the impact evident during the implementation of the investments will persist after the termination of the investments.

The links between the investment packages analyzed and the evaluation criteria applied are presented in detail in the Figure 1, showing the theoretical model of the assessment performed.

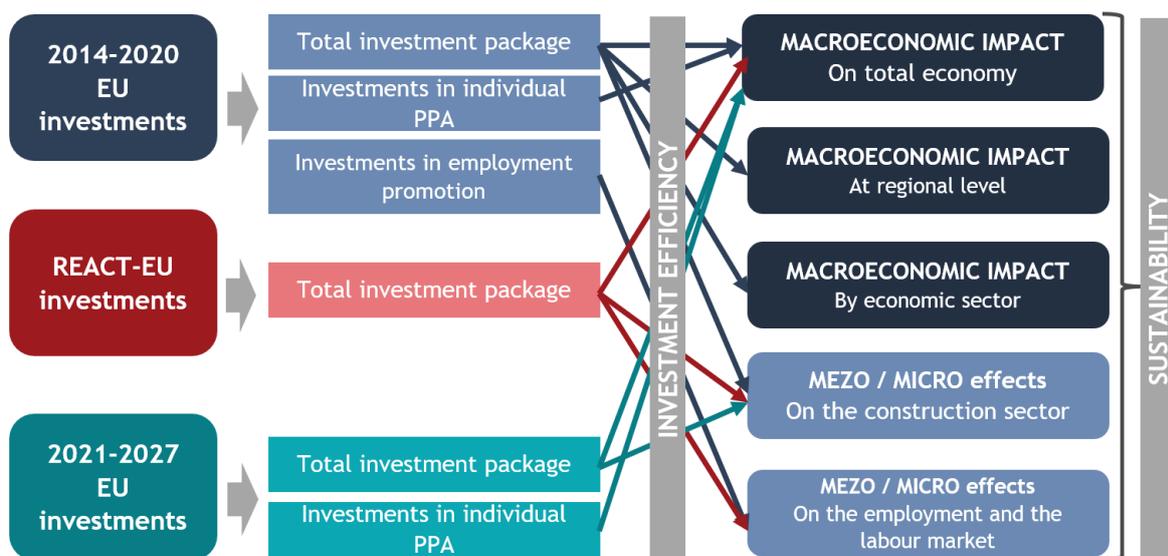


FIGURE 1. THEORETICAL MODEL OF THE ASSESSMENT

Source: compiled by BGI Consulting, based on the Terms of Reference of the assessment

MAIN FINDINGS OF THE ASSESSMENT

ASSESSMENT OF THE 2014-2020 INVESTMENTS

Impact of the 2014-2020 investment package on real GDP

The results of macroeconomic modelling show that the EU investments of the programming period 2014-2020 have significant impact on the GDP of the country. Over the whole period analyzed (2014-2035), the 2014-2020 EU investments are forecast to generate 15,953.74 million EUR of additional real GDP (out of which 481.65 million EUR will be generated due to REACT-EU investments). Taking into account inflation, the additional GDP generated as a result of the investments would amount to 20,236.99 million EUR over the whole period analyzed.

The largest impact of the investments on GDP is forecast during their implementation period (2014-2023). In 2021, when the largest financial injection is foreseen, due to the on-going demand-side impact, real GDP is modelled approximately 6.06 percent higher, compared to the scenario without investments (out of which 0.49 percent is attributed to the impact of REACT-EU investments). During the implementation period of the investments, an annual real GDP of the country is modelled on average 2.8 percent higher, compared to the scenario without investments.

Due to continuous benefits generated as a result of the investments - improved physical infrastructure, as well as improved conditions of human resources and R&D base - the impact on real GDP will likely be sustainable, i. e. will likely persist in the long term (2024-2035), after the termination of the investments. In the long term, on average 0.75 percent increase in annual real GDP is forecast, compared to the scenario without investments.

In the optimistic scenario, the impact of the investments, both during and after their implementation, could be even larger, compared to the most likely scenario. In case of distributing the investments equally among years of implementation, the impact of the investments during their implementation period would be slightly smaller, however, in the long term, their impact would be larger than in the most likely scenario. Moreover, in the even-investing scenario, there would not be large fluctuation of demand, while more significant impact would be already visible in the first years of the 2014-2020 OP implementation.

Impact of the 2014-2020 investment package on other indicators

The assessment has revealed that previously described impact of the investments on real GDP will manifest through impact on its components - gross fixed capital formation, household consumption and net trade surplus. Taking into account that the financial injections analyzed are mostly of investment nature, their largest impact will most likely be visible on gross fixed capital formation. During the implementation period of the investments, an average annual 10.83 percent increase in gross fixed capital formation is projected, compared to the scenario without investments. Since the interventions of the 2014-2020 investment package are not oriented towards direct stimulation of consumption and, thus, household consumption only increases due to indirect impact, when investments result in higher income of the increased numbers of employed, the modelled impact of investments on household consumption is slightly smaller but still significant. During the implementation period of the investments, the projected annual household consumption is 3.19 percent higher, compared to the scenario without investments. The impact on these components of GDP is likely to be sustainable - in the long term (2024-2035), after the termination of the investments, it will annually amount to on average 0.52 percent and 0.28 percent, respectively (out of which, 0.02 percent and 0.01 percent, respectively, is attributed to the impact of REACT-EU investments).

During the implementation period of the investments, their impact on the third component of GDP - net trade surplus - is forecast to be negative (up to -2.08 percent in the peak year (2021)). It is due to the impact of expenditure during the implementation period, when growing EU-funded investment activity increases the demand for imported products and related services but the overall positive impact on country's

production capacity has not manifested yet. However, due to increased production capacity and business competitiveness as a result of the investments, in the long term (2024-2035), an average annual net trade surplus is modelled 0.38 percent points higher (out of which 0.01 percent points are attributed to the impact of REACT-EU investments), compared to the scenario without investments.

Due to growing economy and, in turn, tax base as a result of the investments, the 2014-2020 EU investments will likely also increase general government revenue. During the implementation period of the investments, an average annual general government revenue is modelled 445.16 million EUR higher, compared to the scenario without investments. The impact on general government revenue is projected to be sustainable - even after the termination of the investments until as long as 2035, the average annual general government revenue is modelled 204.92 million EUR higher, compared to the scenario without investments (out of which 6.55 million EUR is attributed to the impact of REACT-EU investments). In the period analyzed, general government revenue will mostly grow due to increased volume of net social contributions. Higher general government revenue will, in turn, result in decreased budget deficit.

Improving economic situation as a result of the investments will likely encourage foreign investors to sell their products in the growing economy, in turn, conditioning significant increase in FDI. During the implementation period of the investments, an average annual FDI level is projected 4 percent higher. Even though increasing wage inflation during rapid economic growth signals to investors about rising labor costs in the country and decreases FDI level in the long term, improved physical infrastructure, human resources and R&D base as a result of the investments and, consequently, improved business environment in the country will likely still condition higher FDI level after the termination of the investments, compared to the scenario without investments. In the post-intervention period until as long as 2035, the annual FDI level is projected to remain 1.58 percent higher, compared to the scenario without investments (out of which 0.06 percent is attributed to the impact of REACT-EU investments).

Impact of the 2014-2020 investment package on regional level

The results of macroeconomic modelling show that the EU investments of the programming period 2014-2020 will contribute to the economic convergence of the Capital Region of Lithuania and the Central and Western Lithuania Region (CWLR). The impact of these investments on nominal GDP, household consumption and gross fixed capital formation is projected larger in the CWLR, than in the Capital Region.

Over the whole period analyzed, as a result of the investments, an increase in nominal GDP in the Capital Region is modelled to amount to 8,106.45 million EUR, while in the CWLR - to 12,130.54 million EUR, compared to the scenario without investments. During the implementation period of the investments (2014-2023), an average annual impact on nominal GDP will amount to 2.98 percent in the CWLR and 2.7 percent in the Capital Region, compared to the scenario without investments. In the post-intervention period (2024-2035), an average annual increase in GDP will likely also be larger in the CWLR than in the Capital Region (constituting 0.84 percent and 0.68 percent, respectively).

During the implementation period of the investments, an average annual increase in nominal household consumption and nominal gross fixed capital formation in the CWLR is projected to amount to 551 million EUR and 173 million EUR, respectively, while in the Capital Region - to 295 million EUR and 118 million EUR, respectively. This impact is forecast to be sustainable. In the post-intervention period until 2035, the average annual increase in household consumption and gross fixed capital formation in the CWLR is modelled to constitute 252 million EUR and 80 million EUR, respectively, while in the Capital Region - 134 million EUR and 54 million EUR, respectively, compared to the scenario without investments.

Presuming that the population trends in the CWLR and in the Capital Region remain similar to the current ones (i. e. population decline in the CWLR and population growth in the Capital Region), it is likely that the impact of the 2014-2020 EU investments on the afore-mentioned indicators, expressed per capita, will also be larger in the CWLR than in the Capital Region. It is important to note that, on county level, divergence is still likely to occur both within the CWLR and the Capital Region. Nevertheless, based on the aggregated

data of the CWLR and the Capital Region, due to EU investments, the convergence of these regions in terms of GDP and other macroeconomic indicators is projected.

As a result of the EU investments, improving economic situation in the regions will likely cause significant increase in FDI. However, unlike in the case of other indicators, larger impact on FDI is modelled in the Capital Region than in the CWLR. In the CWLR, an average annual increase in FDI is projected to constitute 1.63 percent during the implementation period of the investments and 0.72 percent in the post-intervention period, while in the Capital Region it is modelled to amount to 1.93 percent during the implementation period and 0.86 percent in the post-intervention period. Even though various economic indicators in the CWLR are improving as a result of the investments, currently in the Capital Region the conditions of human resources and infrastructure are better, local market of goods and services is deeper due to higher purchasing power, thus, creating more favorable conditions for investors. However, it is projected that in the future differences in additional FDI among regions will decrease as a result of economic convergence caused by the EU investments.

Impact of the 2014-2020 investment package on individual economic sectors

During the implementation period of the investments, the largest impact of the 2014-2020 EU investments is foreseen on gross value added (GVA) of construction and mining and quarrying sectors which respond the most flexibly to the increase in aggregate demand by increasing production volumes. During the implementation period, an average annual impact on the development of these sectors is modelled to amount to 11 percent, while in the post-intervention period - to 0.75 percent, compared to the scenario without investments.

However, in the long term, after the termination of the investments (2024-2035), the interventions implemented are modelled to mostly stimulate the growth of market services sector's GVA. It is projected that the impact of the investments on this economic sector will be positive both during the implementation period of the investments and in the post-intervention period. During the implementation period, an average annual impact on both the whole sector and its sub-sectors is modelled to constitute 2.92 percent, while in the post-intervention period - approximately 1 percent, compared to the scenario without investments.

During the implementation period of the investments, an average annual impact on manufacturing sector is modelled to amount to -0.2 percent, while in the post-intervention period - to 0.81 percent, compared to the scenario without investments. Negative impact of the investments on this sector's GVA during the implementation period is likely to be caused by the temporary decrease in the sector's international competitiveness.

Impact of the investments in individual PPAs on macroeconomic indicators

In the case of all PPAs, the largest impact on macroeconomic indicators is foreseen during the implementation period of the investments (2014-2023). In this period, an average annual impact on real GDP is modelled to vary between 0.09 percent in Culture PPA to 0.58 percent in Transport and communications PPA, compared to the scenario without investments. In the post-intervention period (2024-2035), the average annual impact on GDP is projected to vary between 0.01 percent in State governance, regional policy and public administration PPA to 0.2 percent in Education, science and sport PPA, compared to the scenario without investments. In terms of all indicators, in the period analyzed, the largest average impact is foreseen in Transport and communications, Economic competitiveness and state's IT resources, and Education, science and sport PPAs.

ASSESSMENT OF THE 2021-2027 INVESTMENTS

Impact of the 2021-2027 investment package on real GDP

The results of macroeconomic modelling show that the EU investments of the programming period 2021-2027 have significant impact on the country's GDP. Over the whole period analyzed (2021-2042), the 2021-2027 EU investments are projected to generate 11,023.67 million EUR of additional real GDP. Taking into account inflation, over the whole period analyzed the additional GDP generated as a result of the investments would amount to 16,345.40 million EUR.

The largest impact on GDP is projected during the implementation period of the investments (2021-2030), when the implementation of the 2021-2027 investment package is modelled to annually result in on average 1.69 percent higher GDP level, compared to the scenario without investments. In 2028, when the largest financial injection is foreseen, due to the on-going demand-side impact, real GDP is modelled approximately 3.41 percent higher, compared to the scenario without investments.

Due to continuous benefits generated as a result of the investments - improved physical infrastructure, as well as improved conditions of human resources and R&D base - the impact on real GDP will likely be sustainable, i. e. will likely persist in the long term (2031-2042), after the termination of the investments. In the long term, on average 0.45 percent increase in annual real GDP is projected, compared to the scenario without investments.

Even though both short-term demand-side and long-term supply-side impact of the 2021-2027 EU investments on real GDP (and, accordingly, other indicators analyzed) is modelled smaller than that of the 2014-2020 investments, it is important to note that these differences are conditioned by the smaller overall investment volumes in the period of 2021-2027 and every programming period growing GDP base, rather than peculiarities of investment planning and implementation. Taking into account growing GDP in every new programming period, generating the same-size impact on GDP as with the previous investments becomes relatively harder.

As in the case of the 2014-2020 investments, in the optimistic scenario, the impact of the 2021-2027 investments, both during and after their implementation, would be larger, compared to the most likely scenario. In case of distributing the investments equally among years of implementation, the impact of the investments during their implementation period would be slightly smaller, however, in the long term, their impact would be larger than in the most likely scenario. In addition, in the even-investing scenario, there would not be large fluctuation of demand, while more significant impact would be already visible in the first years of the 2021-2027 OP implementation.

Impact of the 2021-2027 investment package on other indicators

As in the case of the 2014-2020 EU investment package, the impact of the 2021-2027 EU investments on real GDP will manifest through impact on its components - gross fixed capital formation, household consumption and net trade surplus. Also, as in the 2014-2020 programming period, due to investment nature of planned financial injections, the largest impact of the 2021-2027 EU investments is modelled on gross fixed capital formation, while household consumption will likely be affected indirectly, through increased employment rate and wages.

During the implementation period of the investments (2021-2030), an average annual increase in gross fixed capital formation and household consumption is projected to amount to 6.41 percent and 2.09 percent, respectively. This impact is likely to be sustainable - in the long term (2031-2042), the impact on gross fixed capital formation and household consumption is modelled to annually constitute 0.3 percent and 0.12 percent, respectively, compared to the scenario without investments.

As in the 2014-2020 programming period, due to increased demand for imported products, the impact of the 2021-2027 EU investments on net trade surplus is forecast to be negative (up to -1.35 percent in the peak year (2028)). However, due to increased production capacity and business competitiveness, after the

termination of the investments, their impact is modelled to result in on average 0.24 percent points higher net trade surplus, compared to the scenario without investments.

Due to growing economy and, in turn, tax base as a result of the investments, the 2021-2027 EU investments will likely also increase general government revenue. During the implementation period of the investments, an average annual general government revenue is modelled 445.16 million EUR higher, while in the post-intervention period - 204.92 million EUR higher, compared to the scenario without investments. As in the previous programming period, higher general government revenue as a result of the 2021-2027 EU investments will likely cause decreased budget deficit.

Improving economic situation as a result of the EU investments will likely also condition a significant increase in FDI. During the implementation period of the investments, an average annual FDI level is projected to be 2.02 percent higher, while in the post-intervention period - 0.87 percent higher, compared to the scenario without investments.

Impact of the 2021-2027 investment package on individual economic sectors

As in the previous programming period, the largest on-going demand-side impact of the 2021-2027 EU investments during their implementation is foreseen on GVA of construction and mining and quarrying sectors which respond the most flexibly to the increase in aggregate demand. During the implementation period of the investments, an average annual impact on these sectors will likely amount to 6.5 percent, while in the post-intervention period - to 0.45 percent, compared to the scenario without investments.

Relatively large impact of the 2021-2027 EU investments during their implementation is modelled on GVA of market services sector. During the implementation period of the investments, an average annual impact on both the whole sector and its sub-sectors is modelled to constitute 1.88 percent, compared to the scenario without investments. However, during the implementation period, the impact of the investments on manufacturing sector's GVA is forecast to be negative, due to temporary decrease in this sector's international competitiveness. During the implementation period of the investments, an average annual impact on this sector and its sub-sectors is modelled to amount to -0.14 percent, compared to the scenario without investments.

In the long term, after the termination of the investments (2031-2042), their impact is projected as large on GVA of both market services and manufacturing sectors. In the post-intervention period, the impact of the investments on manufacturing sector's GVA is projected to constitute on average 0.49 percent, while the impact on market services sector's GVA - on average 0.48 percent, compared to the scenario without investments.

Relatively smaller impact of the 2021-2027 EU investments, compared to that of the 2014-2020 EU investments, is modelled as a result of smaller general investment volumes.

Impact of the investments in individual PPAs on macroeconomic indicators

In the case of all PPAs, the largest impact on macroeconomic indicators is projected during the implementation period of the investments (2021-2030). In this period, an average annual impact on real GDP is modelled to vary between 0.03 percent in Culture PPA to 0.28 percent in Social security and employment PPA, compared to the scenario without investments. In the post-intervention period (2031-2042), the average annual impact on GDP is forecast to vary between 0.01 percent in Culture PPA to 0.12 percent in Education, science and sport PPA, compared to the scenario without investments.

Regarding investments generating the largest impact in the case of all indicators, the results differ from those of the 2014-2020 programming period. The largest impact of the 2021-2027 EU investments is projected in Transport and communications, Economic competitiveness and state's IT resources, Education, science and sport, as well as Social security and employment PPAs. Due to increased investment volumes in the period of 2021-2027, Social security and employment PPA emerges among PPAs generating

the largest impact. Especially significant impact of this PPA (compared to that of other PPAs) is modelled on employment and unemployment indicators.

ASSESSMENT OF THE IMPACT ON EMPLOYMENT

Impact of the 2014-2020 investments on labor market macroeconomic indicators

The assessment of the 2014-2020 EU investment package has revealed that EU investments will have a significant social effect, manifesting through the impact on employment level and unemployment rate indicators. It is modelled that, during their implementation period (2014–2023), EU investments will generate on average 28 thousand new jobs annually, while after the termination of the investments until as long as 2035, due to the continued impact of the investments, about 2 thousand jobs created will remain annually, compared to the scenario without investments. It is projected that increased employment level will also result in decreased unemployment rate, which, during the implementation period of the investments (2014-2023), will likely be on average 1.89 percent points lower annually, while in the post-intervention period (2024-2035), it will likely be on average 0.14 percent points lower annually.

REACT-EU investments are projected to have an impact on employment level and unemployment rate only during the implementation period of the investments (2021-2022). It is modelled that, in 2021, REACT-EU investments will generate as many as 60 thousand of new jobs and will lead to 0.41 percent points lower unemployment rate in the country. However, in the long term, these investments will have virtually no impact on employment level and unemployment rate. Nevertheless, it is important to note that the main goal of REACT-EU investments was to mitigate the negative impact on the Lithuania's economy of the COVID-19 pandemic and measures taken to manage it. Since it is projected that the short-term impact of REACT-EU investments will allow the labor market to return to pre-pandemic levels and avoid the consequences of hysteresis, which would increase long-term unemployment rate, these investments are likely to achieve their main goal.

It is projected that the tense situation in the labor market will boost wage growth and inflation. During the implementation period, as a result of the 2014-2020 EU investments, an average annual wage level will be 4.63 percent higher, while average annual inflation will be 0.2 percent points higher. After the termination of the investments, due to productivity growth as a result of the EU investments, part of which is transferred to work force, an average annual impact of the investments on wages will remain high - will likely amount to 1.15 percent, compared to the scenario without investments. Meanwhile, the impact of the investments on inflation will be short-term. In the long term, the investments will even have a slightly negative impact on inflation.

Additional modeling of the investments' impact under the assumptions of the optimistic, pessimistic and even-investing scenarios has shown that in the optimistic scenario (i. e. if the investments were planned and implemented with a stronger focus on generating continuous benefits) the impact of the investments could be even larger. It would also be beneficial to distribute the investments implemented more evenly among different years of the programming period. Although this would lead to a lower number of new jobs created during the implementation period of the investments, the jobs created would be more sustainable - more of them would be maintained in the long run, after the termination of the investments. It would also help to avoid fluctuations in the labor market, when during the peak years of the investments there is a shortage of workforce but after the peak years an additional group of jobseekers emerges, requiring assistance in retraining and career change or financial support.

Taking into account the identified impact on the labor market indicators in the Capital Region and the CWLR, the 2014-2020 EU investments are projected to contribute to the convergence of these regions in terms of living standards. It is modelled that, during their implementation period, the investments analyzed will annually generate on average 16.5 thousand new jobs in the CWLR and 11.12 thousand new jobs in the Capital Region, compared to the scenario without investments. In the post-intervention period, the impact

of the investments is expected to annually result in 1.21 thousand more employed in CWLR and 0.87 thousand more employed in the Capital Region.

However, a larger increase in the number of employed in the CWLR is not projected to create preconditions for larger decrease in the unemployment rate, compared to the Capital Region. It is modelled that, during the implementation period of the investments, as a result of the investments, the unemployment rate in the CWLR will be 1.8 percent points lower, while in the Capital Region - 1.99 percent points lower. In the long run (2024–2035), as a result of the investments, an average annual unemployment rate in the CWLR is projected to be 0.13 percent points lower, while in the Capital Region - 0.15 percent points lower. This will be conditioned by the historically high unemployment rate in the CWLR, which is unlikely to be offset even by the higher increase in the number of employed. Nevertheless, tense situation in the labor market, as a result of the EU investments, is projected to boost wage growth. In the implementation period of the investments, an average annual wage is likely to be 4.94 percent higher in the CWLR and 4.33 percent higher in the Capital Region, compared to the scenario without investments. In the post-intervention period, the average annual wage increase in the CWLR is projected to amount to 1.26 percent and in the Capital Region - to 1 percent.

The counterfactual impact of the 2014-2020 investments on the labor market indicators

The results of the counterfactual impact analysis confirmed the results of the macroeconomic modelling. The counterfactual impact assessment of 5 ALMP projects, funded by the 2014-2020 EU investments and at least partially targeted at socially vulnerable groups, revealed that the project activities had a statistically significant impact on participants' employment and wage levels in both short and long term. The relatively largest impact of participating in these projects was identified for the elderly (over 54 years) and the long-term unemployed, the relatively smallest - for the unskilled unemployed and the disabled.

The analysis revealed that the impact of participating in the project: "Supporting the employment of the elderly unemployed" (07.3.1-ESFA-V401-02-0001) on the participants' employment (share of months worked per year) one and two years after participating in the project amounted to 31 percent points and 27 percent points, respectively. The impact on wages (expressed in relation to the national average wage) constitutes 16 percent points and 14 percent points, respectively. In the long run, three years after participating in the project, the impact on participants' employment amounted to 20 percent points, the impact on wages - to 12 percent points.

The analysis of the project "Supporting the employment of the long-term unemployed" (07.3.1-ESFA-V-401-01-0001) revealed that, in the short term, one and two years after participating in the project, the impact on the participants' employment constituted 33 percent points and 25 percent points, respectively. The impact on wages constituted 14 percent points and 10 percent points, respectively. In the long run, the impact on the employment amounted to 22 percent points, the impact on wages - to 10 percent points.

The analysis of the project "Get the desirable profession" (07.3.1-ESFA-V-401-03-0001) revealed that, in the short term, one and two years after participating in the project, the impact on the participants' employment constituted 24 percent points and 14 percent points, respectively. The impact on wages constituted 8 percent points and 7 percent points, respectively. In the long run, the impact on the employment amounted to 11 percent points, the impact on wages - to 5 percent points.

The analysis of the project "Increasing the competencies of unskilled persons" (07.3.1-ESFA-V-401-03-0001) revealed that in the short term, one and two years after participating in the project, the impact on the participants' employment constituted 20 percent points and 13 percent points, respectively. The impact on wages constituted 9 percent points and 8 percent points, respectively. In the long run, the impact on the employment amounted to 10 percent points, the impact on wages - to 7 percent points.

The analysis of the project "Assistance for the disabled" (07.3.1-ESFA-V-402-01-0001) revealed that in the short term, one and two years after participating in the project, the impact on the participants' employment constituted 8 percent points and 7 percent points, respectively. The impact on wages constituted 3 percent

points and 3 percent points, respectively. In the long run, the impact on the employment amounted to 6 percent points, the impact on wages - to 2 percent points.

These results show that the ES, during the implementation of the projects, has been quite successful in selecting the most relevant set of ALMP measures for each participant. The selection of a set of measures has been particularly successful in the case of elderly and long-term unemployed. However, while working with the unskilled unemployed and the disabled, it would be reasonable to analyze the needs of these groups in more detail and to supplement or adapt the applied set of ADRP measures, according to the results of such analysis.

Impact of the 2021-2027 investments on macroeconomic indicators of labor market

The assessment of the 2021-2027 investment package has revealed that the EU investments of this programming period are also likely to have a significant social impact. It is modelled that, as a result of the 2021-2027 EU investments, during their implementation period (2021-2030), on average 16.27 thousand new jobs will be created, while in the post-intervention period (2031-2042), on average 0.91 thousand new jobs will be created each year. This, in turn, will lead to a lower unemployment rate. It is projected that, during the implementation period of the investments, the unemployment rate will be on average 1.13 percent points lower, while in the post-intervention period, it will be on average 0.06 percent points lower annually, compared to the scenario without investments. Also, more tense situation in the labor market will likely boost wage growth and inflation. During the implementation period of the investments, the average annual increase in wages and inflation is projected to amount to 2.71 percent points and 0.11 percent points, respectively. It is modelled, that in the post-intervention period, the average annual impact on wages will remain at 0.6 percent points, while the impact on inflation will likely even be slightly negative.

As in the 2014-2020 programming period, implementing the 2021-2027 investments according to the optimistic scenario (i. e. if the investments were planned and implemented with a stronger focus on generating continuous benefits), instead of the most likely scenario, could lead to even larger impact. Moreover, implementing the 2021-2027 investments according to the even-investing scenario could lead to a slightly higher long-term impact (i. e. higher sustainability of the investments). It could also help to avoid fluctuations in the labor market, when during the peak years of the investments there is a shortage of workforce but after the peak years an additional group of jobseekers emerges, requiring assistance in retraining and career change or financial support.

ASSESSMENT OF THE IMPACT ON THE CONSTRUCTION SECTOR

Impact of the 2014-2020 investments on the development of the construction sector

The assessment results show that the 2014-2020 investments have a significant impact on the development of the construction sector - investments in infrastructure of the whole package amounts to 4,510 million EUR or 62.05 percent of the total modelled investments.

Macroeconomic modelling of the 2014-2020 investment package on the development of the construction sector has revealed that this sector is one of the most cyclical economic sectors and, in turn, develops mostly during the implementation period of the investments. During the implementation period of the investments (2014-2023), an annual increase of the construction sector's GVA is projected to be significantly higher than that of other economic sectors and amount to 11 percent. However, in the post-intervention period, the average annual increase in this sector's GVA is projected to be smaller than that of other economic sectors and constitute 0.75 percent, compared to the scenario without investments.

It is expected that REACT-EU investments will also have a significant impact on the sector's development. During the implementation period of REACT-EU investments (2021-2022), as a result of these investments, an average annual GVA of the sector is modelled to be 1.45 percent higher, compared to the scenario without investments. Nevertheless, this impact will be short-term and will most likely dissipate in the post-intervention period (2023-2035).

Although the contribution of the 2014-2020 EU investments to the growth of the construction sector is significant, it is important to note that investments in infrastructure are declining with each programming period. Thus, even though EU investments, including those of the 2021-2027 programming period, still significantly contribute to the development of the construction sector, declining investments in infrastructure, in turn, result in lower dependence of the sector on these funds and smaller impact on its development. Nevertheless, declining EU investments are compensated by increasing investments from the national budget, therefore it can be concluded that the construction sector's dependence on public sector's investments stayed roughly the same over the last decade, albeit with declining dependence on EU investments.

Impact of the 2021-2027 investments on the development of the construction sector

The 2021-2027 investments are also likely to significantly contribute to the development of the construction sector during their implementation period (2021-2030). During this period, the GVA of the construction sector is projected to be on average 6.5 percent higher, while in the post-intervention period (2031-2042) - 0.45 percent higher each year. The projected impact of the 2021-2027 investment package on the sector's development is notably smaller than that of the 2014-2020 investments package both during the implementation period of the investments and in the post-intervention period. Smaller impact of the 2021-2027 investments can be explained by smaller volumes of investments in infrastructure in this programming period. Investments in infrastructure amounted to 4,510 million EUR in the 2014-2020 investment package and 3,535 million EUR in the 2021-2027 investment package.

Factors affecting the development of the construction sector

The assessment results show that the construction sector's development is mostly affected by credit growth, financial situation of households, construction costs, real estate prices, technological progress and public sector's investments. Credit growth affects the construction sector mainly through real estate sub-sector. Credit growth increases demand for real estate and, in turn, boosts the construction sector's development. Financial situation of households also affects the construction sector through real estate sub-sector. Improvements in financial situation of households induces demand for real estate and this way boosts the overall development of the construction sector. A byproduct of increasing demand for real estate is increased construction costs and real estate prices. When construction costs and real estate prices increase, contractors face difficulties in completing their planned projects (including public ones). This, in turn, results in reduced production of the construction sector and poses risks for implementing planned interventions. Meanwhile, technological progress positively affects the construction sector, by allowing to increase this sector's productivity and competitiveness, and providing access to new markets. Public sector's investments also positively affect the construction sector's development, by increasing demand for the production of this sector.

ASSESSMENT OF THE INVESTMENT EFFICIENCY

Efficiency of the 2014-2020 investment package

Modelling results indicate that the efficiency of the 2014-2020 EU investments is high. From the beginning of the investment period, GDP gains exceed investment costs. Over the whole period analyzed until 2035, GDP gains as a result of the investments are expected to exceed investments costs more than two times (to be more precise, by 2.21 times).

Over the period analyzed (2014-2035), one invested euro of the 2014-2020 EU investment package will generate on average 1.72 additional euros annually. These investment gains correspond to or even exceed those observed in other EU countries, structurally similar to Lithuania. During the implementation period of the investments, one invested euro of REACT-EU investments will generate on average 1.61 additional euros annually, while at the end of the investment period, GDP gains as a result of REACT-EU investments will exceed investment costs by 1.92 times.

Implementing the 2014-2020 investments according to the optimistic scenario, instead of the most likely scenario, could lead to even higher investment efficiency - it is modelled that, in the optimistic scenario, over the period analyzed (2014-2035), GDP gains would exceed investment costs by an average of 2.26 times annually, due to relatively larger long-term supply-side impact. In the even-investing scenario, investment efficiency is projected to be slightly higher than in the most likely scenario (until 2035, GDP gains would on average exceed investment costs by 2.26 times annually). Moreover, in the even-investing scenario, there would not be large fluctuation of demand during the implementation period of the investments, while more significant impact would be already visible in the first years of the 2014-2020 OP implementation. Average investments gains would also be higher in this scenario - one invested euro would generate on average 1.76 additional euros annually.

Efficiency of the 2014-2020 investments in individual PPAs

It is modelled that, over the period analyzed, the investments in Education, science and sport PPA will be characterized by the highest investments efficiency (GDP gains will exceed investments costs by 3,11 times). Also, high efficiency is attributed to the investments in Transport and communications, Economic competitiveness and state's IT resources, Culture, as well as Social security and employment PPAs (GDP gains will exceed investment costs by 2.59, 2.53, 2.12 and 1.95 times, respectively).

Efficiency of the 2021-2027 investment package

Over the whole period analyzed (until 2042), GDP gains generated as a result of the 2021-2027 EU investment package are projected to exceed investments costs by 2.17 times. Although the overall investment efficiency of the 2021-2027 EU investments is modelled as slightly lower than that of the 2014-2020 investments, an average annual efficiency of the 2021-2027 investments is the same and amounts to 1.72.

Slightly smaller efficiency of the 2021-2027 investments can be explained by diminishing marginal returns on investments in the context of improving economic situation, as well as somewhat different investments allocations among PPAs and factors of productions. Nevertheless, it is important to note that investments volumes of 2021-2027 are smaller than those of 2014-2020, meaning that almost the same GDP gains are generated in 2021-2027 but with less investments. Taking this into account, the 2021-2027 investments can be considered to be very efficient.

As in the 2014-2020 programming period, implementing the 2021-2027 EU investments according to the optimistic or even-investing scenario would lead to even higher investment efficiency.

Efficiency of the 2021-2027 investments in individual PPAs

As in the previous programming period, in 2021-2027, the highest efficiency is attributed to the investments in Education, science and sport, Transport and communications, Economic competitiveness and state's IT resources, Culture, as well as Social security and employment PPAs (GDP gains will exceed investment costs by 3.45, 2.7, 2.38, 2.16 and 1.97 times, respectively).

Compared to the programming period of 2014-2020, efficiency of the investments in Education, science and sport, Transport and communications, Culture and Social security and employment PPAs is modelled to increase. These changes might be attributed to increased focus of the 2021-2027 investments on economic reform in the country, implementation of long-term reforms, improving management of the investments (administrative system and competence of specialists in charge of managing the investments improve with every new programming period), and better planning and implementation of the investments (taking into account the planned results of the ongoing Strategic Planning and Budgeting reform).

STRATEGIC PROPOSALS AND RECOMMENDATIONS

RECOMMENDATIONS AND STRATEGIC PROPOSALS FOR IMPROVING THE IMPACT OF EU INVESTMENTS AND EFFICIENCY OF THEIR IMPLEMENTATION IN THE FUTURE

Strategic proposals

- EU investments should be planned in a way that allows for investments to be disbursed into the economy as evenly as possible throughout their implementation period. This should increase returns on investment, investment sustainability and help avoid investment imbalances which may harm the economy and make it more difficult for market participants to adapt to economic conditions;
- Planned EU investments should aim to meet the needs of market participants. Therefore, when possible, investment planning process should encompass conduct of cost-benefit analysis and other micro-level assessments that would allow to calculate possible investment gains, identify alternative investment strategies and select investments generating the relatively largest benefits. This would increase investment absorption potential and ensure higher continuous benefits;
- Expediency and socio-economic benefits generated by investments in each PPA should be assessed. In order to maximize potential for economic growth, investments in PPAs that generate small investment returns or no returns at all should be reallocated to PPAs generating high investment returns;
- Policy makers should further ensure adequate funding for all PPAs, as different types of investments allow for sustainable economic growth;
- Investments in infrastructure should be planned and implemented more evenly across time. This should prevent construction sector from overheating and improve private sector's adjustment to the investment cycle of EU funds;
- Policy makers should consider implementing measures (i. e. macroprudential policies constraining purchases of second homes, increasing property taxes, etc.) that would slow down rapid development of the construction sector and minimize the risk that infrastructure projects of strategic importance could be postponed or not finished as a result of rapid development of the construction sector and increasing production costs;
- Given that investments in infrastructure are declining with each programming period, it is recommended for policy makers to look for alternative sources of funding public infrastructure (other than EU funds), in order to maintain high quality of this infrastructure.

Recommendations

- It is recommended to carry out additional analysis of ALMP measures, analyzed in this assessment, evaluating the efficiency of the projects implemented by the ES (i. e. identifying the cost-benefit ratio of these projects). This, in turn, would indicate whether these projects pay off and whether their impact correspond to the labour market needs and goals of policy makers;
- It is also recommended for policy makers to carry out a study allowing to identify ALMP measures or their groups generating the largest impact on employment, as well as the most efficient measures.