



# BIOECONOMY INVESTMENT ENVIRONMENT IN THE BALTIC STATES

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**Introduction.** Investment environment is important, in order to attract funding, to help economy to thrive and to increase value added. It is significant for Baltic States as a small region in the European Union (EU), but it is rich in bioresources. Efficient use of bioresources, due to their scarcity, is crucial for economic development. Bioeconomy traditional sectors in this case are: agriculture, fisheries and forestry. Bioproducts are what is obtained partially or completely from biological origin materials. Positive image for local and foreign investors allows to attract to the region funding to maintain and ensure efficient use of bioresources and increase their value added.

**The research aim** is to analyze the investment environment and bioeconomy situation in the Baltic States. To achieve the aim, the following **specific tasks** were set: 1) to analyze macroeconomic indicators to evaluate investment environment trends in the Baltic States in 2010-2020E\*; 2) to analyze the added value of the bioeconomy in the Baltic States in 1995-2018.

**Methodology.** Heatmaps indicator change calculation in %:  $YZ = (Y1 - Y0) / Y0 * 100$ , where Y1 – actual macroeconomic data for period Y+1; Y0 – actual macroeconomic data for period Y. Data is taken as of the end of the period. **Heatmaps construction method:** After to the particular line of the indicator change was calculated, contrasting colors during all 10 years interval were applied, based on the scale of 3 color components, where red assumed slowdown or deterioration of the indicator, white – no change and green – an improvement of the indicators, unless an “\*” marks where inverse color scheme used, since deterioration in number is more positive and increase in number – a slowdown. Data: information on macroeconomic indicators and forecasts were retrieved from International Monetary Fund database, added value data was compiled from statistical office. \*E-forecasted values

Indicator/Year	2011	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E
Real GDP growth in %	-26.2%	-3.7%	-4.0%	-2.4%	6.0%	-2.6%	10.6%	-1.8%	-1.0%	-8%
Total investment as % of GDP	30%	4%	-7%	-7%	-2%	-12%	10%	8%	3%	1%
Inflation average, percent change	-4.45%	-4.6%	-10.0%	6.173%	-6.9%	-5.4%	28.23%	-6%	-12%	1%
Unemployment rate, % of total labour force*	-17%	-7%	-2.1%	-9%	-9%	-2%	-10%	-9%	-1%	-1%
General government net lending/borrowing, % of GDP	-51%	-10.5%	-4.20%	200%	-9%	-7.4%	10.5%	41%	-11%	-4.4%
General government structural balance, % of potential GDP	-19%	-10.5%	-117.1%	32%	-20%	-10.2%	-34.72%	36%	-13%	-4.7%
General government net debt, % of GDP*	15%	-4%	6%	4%	7%	-4%	1%	-3%	-1%	-3%
General government gross debt, % of GDP*	-7%	-2%	-2%	7%	-9%	7%	-3%	-4%	-2%	-3%

Fig. 2. Macroeconomic Indicator Heatmaps in Latvia in the 2010-2020E

**In Latvia** (Fig.2): in 2011 compared to 2010 macroeconomic indicators did not show as strong recovery when compared to in Estonia and in Lithuania. Recovery in real GDP growth over previous period was first observed in 2015, that is from 1.9% in 2014, to almost 3% or 60% increase, then again only increase seen in 2017 to 4.5%, while in 2018E-2020E GDP real growth is forecasted to have a decreasing trend and slowdown of economy, reaching 3.1%. Overall this number is higher when compared to moderate growth in Estonia reaching 3% in 2020E. It also indicates that Latvia is seeing now a more rapid growth compared to Estonia, and despite the slowdown ahead, its pace of GDP growth could be faster. In terms of total investment growth in 2018E, it is 23.3% of GDP, which is a lower number when compared to in Estonia. Positive trends are expected in government data for Latvia, showing that investment environment will remain more positive when compared in 2015-2016, and its forecasted recovery, which started in 2017 should continue according to IMF forecasts for upcoming years

Indicator/Year	2011	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E
Real GDP growth in %	2.69%	-3.7%	-9%	1%	-4.2%	1.5%	6.5%	-8%	-1.8%	-6%
Total investment as % of GDP	21%	-11%	0%	-2%	8%	-1.6%	0%	6%	1%	2%
Inflation average, percent change	2.46%	-2.3%	-6.3%	-7.9%	-3.80%	-2.00%	4.48%	-3.4%	-1.0%	3%
Unemployment rate, % of total labour force*	-14%	-13%	-12%	-9%	-1.5%	-1.4%	-1.0%	-8%	-4%	-2%
General government net lending/borrowing, % of GDP	30%	-6.5%	-1.7%	-7.5%	-6.9%	-2.26%	10.2%	2.1%	2.4%	1%
General government structural balance, % of potential GDP	-7%	-4.4%	-3.1%	-4.7%	-7.0%	-3.63%	1.9%	-2.5%	-3%	-5%
General government net debt, % of GDP*	2.6%	1%	2%	-4%	7%	-6%	1%	-7%	-8%	-8%
General government gross debt, % of GDP*	3%	7%	-3%	5%	5%	-6%	-1%	-7%	-7%	-7%

Fig. 3. Macroeconomic Indicator Heatmaps in Lithuania in the 2010-2020E

**In Lithuania** (Fig.3): along with in Estonia, Lithuania has seen the most positive trends in 2011 recovery in terms of investment environment and commonly with all Baltic States 2014 – 2016 was a slowdown period. 2017 has been also a positive period for Lithuania, where in terms of real GDP growth, it saw already in 2016, and reaching its height in 2017 – 3.9% p.a. Comparatively in Latvia GDP growth is the fastest, when compared to in Estonia and in Lithuania. Investments as % of GDP saw a positive growth from 2016, reaching 17.3%. This number is the lowest among all 3 Baltic States. Government numbers are expected to see positive improvement in upcoming years compared to 10 year trends in Lithuania. Government structural balance since 2016 was positive, with 0.68 of potential GDP and despite the drop is forecasted to be still positive 0.56% of potential GDP in 2020E. In Latvia structural balance is negative (-1.2% in 2018E), despite seeing positive trend. In Estonia is negative (-0.8% in 2018E) and is forecasted to be negative in 2020E as well.

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Indicator/Year	2011	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E
Real GDP growth in %	23.6%	-4.3%	-5.5%	4.9%	-4.2%	2.3%	13.5%	-2.4%	-1.3%	-8%
Total investment as % of GDP	18%	16%	-8%	1%	-8%	-3%	5%	4%	2%	3%
Inflation average, percent change	8.5%	-1.7%	-2.3%	-8.5%	-8.6%	10.76%	3.56%	-1.8%	-1.7%	-8%
Unemployment rate, % of total labour force*	-2.6%	-1.9%	-1.4%	-1.5%	-1.6%	9%	-1.5%	1.6%	3%	1%
General government net lending/borrowing, % of GDP	51.9%	-12.2%	-3.4%	-4.99%	-9.0%	-5.14%	-1%	6.4%	-3.2%	-1.6%
General government structural balance, % of potential GDP	-3.9%	4.7%	-4.4%	8.6%	-1.5%	-5.9%	-1.66%	2.42%	-1.6%	-1.3%
General government net debt, % of GDP*	-2.0%	-2.8%	-1.0%	-1.0%	-4.3%	2.1%	-2.2%	-10.1%	11.03%	7.2%
General government gross debt, % of GDP*	-7%	6.0%	4%	5%	-6%	-6%	-5%	-2%	-2%	-2%

Fig. 1. Macroeconomic Indicator Heatmaps in Estonia in the 2010-2020E

**Main macroeconomic indicators set stage for country's attractiveness to investors, international and local businesses:**

**In Estonia**(Fig.1) real GDP growth is expected to slowdown in 2018-2020E when compared to previous period and growth in 2017, when it reached almost 4.9%. In 2011 it had the largest increase showing the exit of recession, when the GDP growth reached 7.5% or 236% increase over 2010. 2011 was a positive year almost in all indicators, with exception of government structural balance, the most hit and negative trend years were 2013-2016 for Estonia, while in 2017 it showed positive trends and despite slowing down is ahead, it overall maintains a positive trend for Estonia.

Total investments also is slowing down, with the highest value had seen in 2011, 2012 and 2017, reaching almost 28% of GDP. In 2018 government structural balance and net debt as % of GDP is forecasted to show the most significant improvement over previous period.

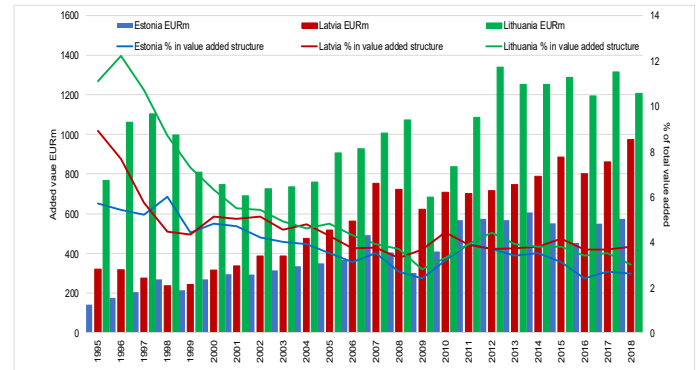


Fig.4. Bioeconomy Value Added In EURm and as % in Total Value Added in Baltic States in the 1995-2018

**Value added in bioeconomy trends** (Fig.4): added value of bioeconomy in absolute numbers are the highest in Lithuania, where it was 1205 mill.EUR, or 3% from GDP measured by total value added in 2018. Overall the trend is that value added of bioeconomy share in total value added has dropped significantly in 1995-2018, dropping the most from 11% in 1995 Lithuania to 3% in 2018, while Estonia and Latvia also saw a drop, which was moderate compared to one in Lithuania. In the meantime absolute number of value added of bioeconomy has seen significant increase in all 3 Baltic States in 1995-2018.

**In Estonia** value added of bioeconomy saw a 4 times increase from 141 mill.EUR in 1995 to 572 mill.EUR in 2018. This is the sharpest and most increase seen among three Baltic States. While its share in total value added in GDP has decreased from 5.7% in 1995 to 2.6% in 2018. This is the smallest drop, among all Baltic States, while in 2018 it represents the lowest share in GDP value added when compared with in Latvia and in Lithuania.

**In Latvia** value added of bioeconomy has increased 3 times in analyzed period, from 321 mill.EUR in 1995 to 974 mill.EUR in 2018. As a share in total value added in Latvia, it dropped from 8.9% of GDP value added to 3.8% in reviewed period. In 2018 added value of as % of total value added comprised the highest share among Baltic States.

**In Lithuania** added value of bioeconomy in absolute numbers increased the least only 1.6 times when compared to in Estonia and in Latvia, in 1995-2018 period, while it was and remained the highest value in absolute numbers, from 767 mill.EUR in 1995 to 1205 mill.EUR in 2018. Its share in overall GDP added value is 3% in 2018.

## Conclusions

1. In Estonia investment environment has seen recovery from recession, though in 2018-2020E is forecasted to experience a slow down in growth, while still overall macroeconomic indicators are displaying positive trends.
2. In Latvia investment environment is showing that improvement which started in 2017, will continue, while the pace would be slower than in 2017.
3. In Lithuania economic growth is expected to maintain positive trends while growth pace will slow down as well in upcoming years compared to 2017.
4. Despite value added of bioeconomy is dropping as % of total value added among Baltic States it is increasing significantly in total monetary contribution, thus its management and efficient use is becoming more and more important.