SUSTAINABILITY IN THE BALTIC STATES: TOWARDS THE IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT GOALS (SDG)

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Abstract

The main purpose of the study is to analyse and define the position of the Baltic States, i.e. Lithuania, Latvia and Estonia regarding the implementation level of the concept of sustainable development in 2010-2016, measured by the realisation of Sustainable Development Goals (SDG). Moreover, the problems constituting barriers in achieving these goals were identified. The study was based on the indicators monitoring SDG in a global perspective. Eurostat and its Database was the source of data, taking into account their availability and completeness. The synthetic measure of development (SMD) was applied to assess the implementation of the sustainable development concept. The socio-economic situation of the Baltic States was addressed in the introduction. The core part of the study presents the research results showing the position of the Baltic States relative to the implementation level of SDG. The value of SMD in individual years was determined for each of the analysed countries. As a general conclusion, it can be stated that the situation of all countries showed improvement over the analysed period. Nonetheless, the current situation cannot be described as favourable in any of the countries, Estonia was the closest to achieving this status.

Key words: sustainable development, Baltic States, 2030 Agenda, Sustainable Development Goals (SDG), synthetic measure of development (SMD)

JEL Code: O10, Q01, Q50

Introduction

The term Baltic States refers to a group of three countries located in Northern Europe on the east coast of the Baltic Sea, i.e. Lithuania, Latvia and Estonia. These countries cover the total area of about 175,000 km² and are populated by over 6 million inhabitants. The aforementioned term is neither official nor a legally sanctioned one, however, the discussed countries, apart from mutual cooperation at both governmental and parliamentary level, are characterised by certain similarities. As opposed to the countries surrounding the Baltic

States, their inhabitants do not speak Slavonic languages as they have been influenced by e.g. Scandinavian and German culture. The analysed countries represent the former Soviet Republics which declared independence at the beginning of the 1990s. They are perceived as part to the broadly approached "Western culture".

It is worth mentioning that since 2004 all these countries have been the European Union Member States and, moreover, they belong to the OECD, NATO and the Euro area. They are included in the group of countries featuring the highest level of Human Development Index (HDI), Very High Human Development, which value exceeded 0,8 in 2017 (Estonia 0,871, Lithuania 0,858, Latvia 0,847). The World Bank lists them among the countries characterised by a high income level (Human Development Index, 2018; World Bank, 2017).

The sustainable development of the Baltic States is important in terms of their location closely connected with the Baltic Sea, which has a delicate ecosystem and characterized by a relatively high degree of the natural environment degradation. The reasons for this situation are related to the limited connection with the world ocean and the resulting minimal water exchange as well as active, diversified economic activity of the coastal states. In other words, the sustainable development of the Baltic States remains in the interest of all countries in the Baltic region (Poland, Lithuania, Latvia, Estonia, a part of Russia, Finland, Sweden, Denmark and a part of Germany) and, indirectly, also the inland European countries (Ojaveer, 2017; Dargahi et al., 2017).

For the purposes of this introduction, the sustainable development concept can be defined as the process of transformations which ensures meeting the needs of the present generation without diminishing the development opportunities of the future generations, owing to, e.g. performing integrated activities in the area of economic, social and environmental development. The presented definition assumes that both economic and civilization development should not be carried out at the expense of depleting the non-renewable resources and destructing the environment, for the benefit of future generations, who will also have rights for their development. The above understanding of sustainable development was disseminated based on the report of the World Commission on Environment and Development (Our Common Future, 1987).

Among the elements important for sustainable development, the following can be listed: reducing the consumption of renewable resources to the limits defined based on the possibilities of restoring these resources, reducing the consumption of non-renewable resources within the scale allowing their gradual replacement by the respective substitutes.

Furthermore, dangerous and toxic substances should be gradually eliminated from the economic processes and pollutants should be emitted within the limits set by the assimilation capacity of the environment. The level of environmental awareness and education, which determine conducting effective policy in the area of sustainable development principles' promotion, beyond any doubt, have impact on these processes. In addition, it is worth mentioning the pursuit towards ensuring the sense of security and well-being of the population, understood as creating conditions conducive to their physical, mental and social health. Citizens should feel co-responsible for the environment in which they function, influence and develop it in a responsible and thoughtful manner. The subject literature also emphasizes the growing importance of sustainable urban development, perceived as one of the keys opening the way towards the sustainable world (Tupenaite et al., 2017; Kulczyk-Dynowska, Bal-Domańska, 2019; Dokurno et al., 2017).

The 2030 Agenda for Sustainable Development represents a development plan for the world, assuming the elimination of poverty, a decent life for all people and ensuring peace by 2030. It was adopted by all the United Nations Member States based on the Resolution of the General Assembly dated September 25, 2015 in New York. Sustainable development, or rather striving for its fullest achievement, is undoubtedly one of the most important challenges of the modern world. The following Sustainable Development Goals (SDG) were defined in the 2030 Agenda for Sustainable Development: 1. No poverty; 2. Zero hunger; 3. Good health and well-being; 4. Quality education; 5. Gender equality; 6. Clear water and sanitation; 7. Affordable and clean energy; 8. Decent work and economic growth; 9. Industry, Innovation and Infrastructure; 10. Reduce inequalities; 11. Sustainable cities and communities; 12. Responsible consumption and production; 13. Climate action; 14. Life below water; 15. Life on land; 16. Peace, justice and strong institutions; 17. Partnerships for the goals (Transforming Our World, 2015).

The purpose of this study is to analyse and define the position of the Baltic States in the context of the implementation level of the sustainable development concept in 2010-2016, measured by the implementation of SDG[1]. Moreover, the problems constituting barriers in achieving these goals are identified. The study was based on the indicators monitoring SDG in a global perspective. The total of 66 indicators constituting a relatively large set of items which fit into the areas responsible for achieving sustainable development goals were used in

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[1] Full list of 66 indicators used in the analysis is included in the study Raszkowski, A., Bartniczak, B. (2019). Sustainable Development in the Central and Eastern European Countries (CEECs): Challenges and Opportunities. *Sustainability*, *11*(4), 1180, pp. 4-5, available in the *open access* formula on the website: https://www.mdpi.com/2071-1050/11/4/1180

the study. The selection of indicators referring to the individual SDG was based on the availability and completeness of public statistics. Eurostat and its Database: sustainable development indicators was the source of data (Eurostat, 2019). The synthetic measure of development (SMD) was applied to assess the implementation of the sustainable development concept in the Baltic States.

1 Research method

When providing the characteristics of the applied research method, an assumption can be adopted that indicators represent quantitative tools which synthesize and simplify the data relevant for the assessment of specific phenomena. These tools are useful in communication, evaluation and also facilitate making strategic decisions. It is adopted that indicators stand for one of the basic instruments for sustainable development monitoring, because they reflect this concept in a rational and measurable manner. The indicators assigned to SDG were used in the study, as they allow analysing progress in the implementation of the aforementioned development concept in relation to the selected territorial units and in this case the Baltic States.

The synthetic measure of development (SMD) was applied in the study. This measure is used for linear ordering of objects, which are characterized by many diagnostic variables, which are then replaced by one diagnostic value. The procedure of SMD construction was carried out following the below stages (Jajuga et al., 2003):

1) the selection of diagnostic features (indicators) and determining the nature of variables in relation to the implementation of the sustainable development concept, i.e.: stimulant, destimulant, nominant;

2) for the purposes of indicators' comparability the normalization of diagnostic features was conducted using zero unitarisation method in accordance with the below formula:

$$z_{ij} = \frac{x_{ij} - \min\limits_{i} x_{ij}}{\max\limits_{i} x_{ij} - \min\limits_{i} x_{ij}}, \tag{1}$$

where: z_{ij} – value of j-th diagnostic feature (indicator) j = 1, 2,…, k in i-th object i = 1, 2,…, N after unitarisation, x_{ij} – realisation of j-th diagnostic feature in i-th object, min x_{ij} (max x_{ij}) – the lowest (the highest) value of j-th diagnostic feature x_{ij}. Normalisation was carried out for the matrix covering data from the years 2010-2016. It allowed defining the common development pattern. As a result of unitarisation the values of features are included in the

interval <0;1>, with 0 value for the year in which the indicator reached the lowest (minimum) value in the period 2010-2016, and 1 – the highest value. After applying the zero unitarisation method a variable is measured on an interval scale with arbitrary zero at the level of minimum value;

3) defining the coordinates of the object-pattern. The top pattern of development was adopted as the model one, i.e. maximum values were considered the most favourable values of diagnostic features in the case of stimulants and for destimulants – minimum values, whereas for nominants – the lowest absolute value resulting from the difference between the feature value and the optimum value. The object-pattern takes the most favourable values of indicators obtained as the total of the period 2010-2016;

4) determining the distance of objects from the object-pattern using the Euclidean distance and the synthetic measure of development (SMD) for i-th object according to the below formula:

$$SMR_i = 1 - \frac{d_{it0}}{d_0}$$
(2)

where: d_{it0} – Euclidean distance between i-th object in t-th period and 0 object-pattern, d_0 – distance between the pattern and the anti-pattern.

The values of the development measure are normalized in the interval <0;1>, where the value for the pattern equals 1. The higher the phenomenon level, the higher the value of the measure of development. The values of measures of development (SMD) determined on the basis of the Euclidean distance allowed indicating the position in particular years in terms of the sustainable development implementation. The following interpretation of the obtained results was adopted regarding the situation relative to the level of sustainable development concept implementation: <0,0 – 0,2) highly unfavourable; <0,2 – 0,4) unfavourable; <0,4 – 0,6) moderate; <0,6 – 0,8) favourable; <0,8 – 1,0) highly favourable.

It should be noted that the described indicator approach had already been used to study the level of sustainable development in the Russian Federation, Poland, the countries of Central and Eastern Europe, African countries or Asian countries [see: Raszkowski, Bartniczak, 2019; Bartniczak, Raszkowski, 2019; Raszkowski, Bartniczak, 2018; Bartniczak, Raszkowski, 2017].

2   Results

Within the framework of the research results analysis it was observed that all countries made progress towards sustainable development. In this respect Estonia performed the best, whereas the overall result of Lithuania and Latvia is worse, even though over the years they have covered a greater distance in terms of the degree of SDG implantation.

While the situation of Estonia in the entire analysed period can be described as moderate, the situation of Lithuania and Latvia changed in this period from unfavourable to moderate. Moreover, it should be noted that Estonia was the closest to obtaining the position defined as favourable.

Fig. 1: SMD values of the Baltic States regarding the level of SDG implementation in the years 2010–2016
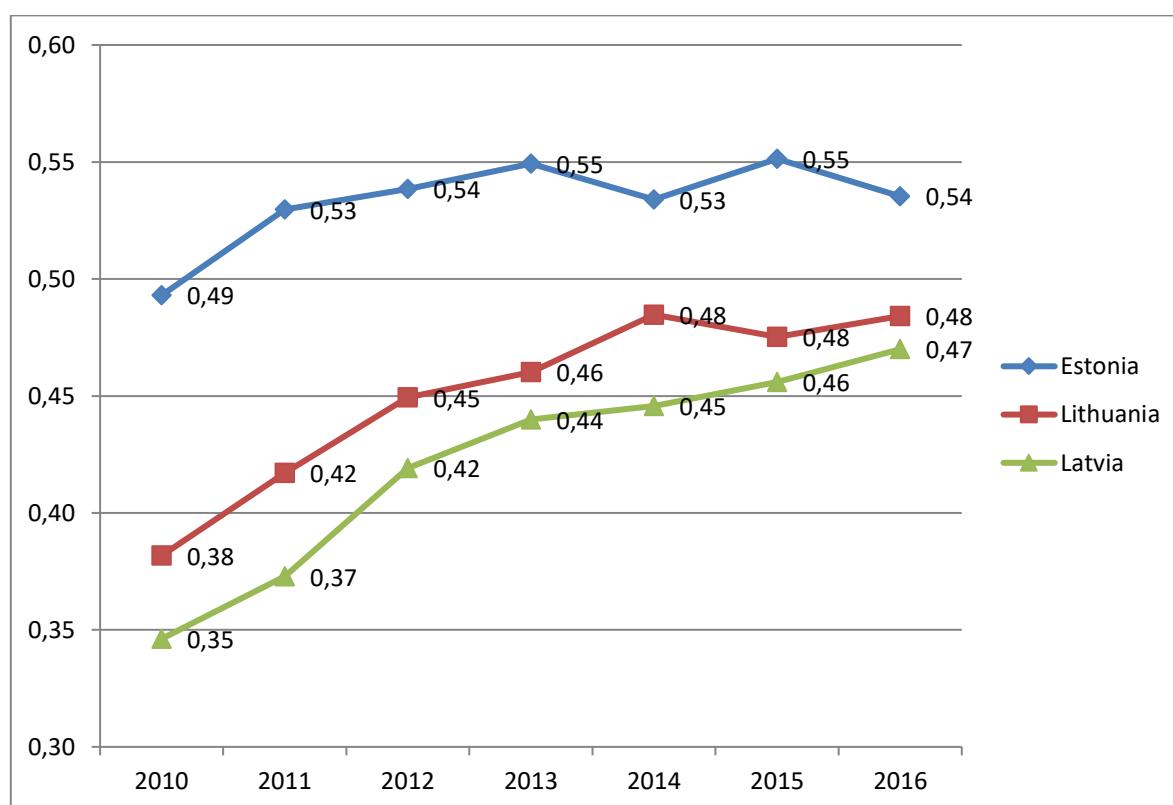
Source: authors' compilation based on (Eurostat, 2019)

Based on the conducted research, the list of problems referring to the Baltic States regarding the implementation of sustainable development goals (SDG) was formulated (Tab. 1). The identified problems were assigned to the five spheres which co-create the discussed development. Such approach to these problems also highlights the multidimensional and complex nature of sustainable development.

Tab. 1: Problems of the Baltic States on the road towards the implemetnation of SDG

Sustainable development dimensions	Selected problems of Lithuania, Latvia and Estonia
Social	- population aging, - emigration to Western European countries, - depopulation of rural areas, - social exclusion level, - relatively low fertility rate, - the need to intensify the promotion of a healthy lifestyle, - lower absorption of innovations in rural areas, - decline of total population in the analysed years.
Economic	- partial energetic dependence on Russia and other countries of the Commonwealth of Independent States, - capitals of countries dominating economically in terms of investment level, - deficits of educated workers, - limited size of internal market, - the need to increase the efficiency of the economy, - partial dependence of the economy development on the support from the European funds, - the need to eliminate wage inequalities between women and men, - imbalance in the purchasing power and income of the society.
Environmental	- the need for effective management of mine waste, - relatively low activity in the area of cross-border waste management initiatives, - the level of ecological awareness, - limited resources and possibilities within the framework of circular economy, - no holistic approach to the Baltic Sea as the environment of both life and diverse economic activities, presenting the same impotence as land, - the need to increase energy efficiency, - the need to reduce CO_2 emissions, - transport partly based on fossil fuels, - limited size of energy markets, - threats in the form of natural disasters (e.g. floods, droughts, intense rainfall or snowfall paralyzing the community functioning, forest fires), - pollution of the Baltic Sea resulting from industrial and agricultural activities, sea transport and sea-dumped chemical substances.
Spatial	- developmental imbalances, including social and technical infrastructure of urban areas in relation to the rural ones, - peripheral location against the main centres of the European socio-economic and cultural activity,

	- in some regions, a noticeable lack of municipal housing as the form of social aid, predominantly private property on the real estate market.
Institutional-political	- the perception of respect for the rights of national minorities, - effective cooperation between the Baltic States and Russia, - cooperation with national minorities for the benefit of sustainable development, - corruption in the public and private sector, - partly divergent political goals of the Baltic States, - the need for higher expenditure on research and development, - the need to strengthen cooperation for sustainability in the Baltic region, - the possibility of legislative changes.

Source: authors' compilation based on (Eurostat, 2019)

Among the diagnosed problems, the major ones are included in the social and environmental sphere. Without underestimating the other aspects of sustainable development, the natural environment, with particular emphasis on the Baltic Sea ecosystem as well as depopulation and population aging seem to be the crucial challenges. The issues of all imbalances in the economic area also raise concerns.

The specificity of the Baltic States' geographical location naturally predisposes the security problems, including energy security, to remain the important components of the current public policies. The issues of national minorities can, paradoxically, be perceived as a competitive advantage, as the element of creative multiculturalism and the factor of endogenous development. Having diagnosed the potential problems on the path of the Baltic States towards the implementation of sustainable development concept measured by progress in the realisation of SDG, it is easier to formulate the respective recommendations and long-term strategies of sustainable development in the national, regional or local dimension. Such knowledge is also helpful for people responsible for creating public policies.

Conclusion

The Baltic States have achieved economic success within the recent three decades. The carried out transformation process, having in mind the complicated history of these countries on their path towards the free market economy, can be indicated as an example for other developing countries. Among the positive aspects and the reasons of economic success the following can be listed: low indebtedness, improved quality of public institutions, policies focused on business and free market as well as the increasing innovation.

The situation of the discussed countries, in relation to the implementation of the sustainable development concept measured by the level of SDG realisation, remains positive

in general terms, therefore it is of utmost importance to keep up this trend in the coming years. The most significant problem in the context of the Baltic Republics' stability seems to be the depopulation of such small political organisms. Since the beginning of the 1990s, the population of the Baltic States declined by approximately 1,85 million inhabitants. A solution to this problem may take the form of activities focused on the intensification of the family-oriented policy and the allocation of child-support benefits. In addition, the promotion of a large family model, supported by the system of discounts and promotions from public and private sector entities may turn out effective. The general popularisation of the sustainable development idea remains in the interest of the Baltic States and, more broadly, the European community. It should result in the cooperation for the benefit of solving ecological, social and economic problems.

References

Bartniczak, B., Raszkowski, A. (2017). Sustainable Development in the Russian Federation – Indicator-based Approach. *Problemy Ekorozwoju – Problems of Sustainable Development*, 12(2), 133-142.

Bartniczak, B., Raszkowski, A. (2019). Sustainable Development in African Countries: An Indicator-Based Approach and Recommendations for the Future. *Sustainability*, *11*(1), 22.

Dargahi, B., Kolluru, V., Cvetkovic, V. (2017). Multi-Layered Stratification in the Baltic Sea: Insight from a Modelling Study with Reference to Environmental Conditions. *Journal of Marine Science and Engineering*, *5*(1), 2.

Dokurno, Z., Fiedor, B. Scheuer, B. (2017). *Contemporary macroeconomics from the perspective of sustainable development*. Warsaw: PWN, Polish Scientific Publishers.

Eurostat. Tables on EU policy. Database: sustainable development indicators. Available online: https://ec.europa.eu/eurostat/data/database (accessed on 20 January 2019).

Human Development Index (HDI). United Nations Development Programme. Available online: http://hdr.undp.org/en/composite/HDI (accessed on 10 April 2019).

Jajuga, K., Walesiak, M., Bąk, A. (2003). On the General Distance Measure. In M. Schwaiger, O. Opitz (Eds.), *Exploratory Data Analysis in Empirical Research*. Berlin/Heidelberg: Springer.

Kulczyk-Dynowska, A., Bal-Domańska, B. (2019). The national parks in the context of tourist function development in territorially linked municipalities on example of Poland. *Sustainability, 11*(7), 1996.

Ojaveer, E. (2017). *Ecosystems and Living Resources of the Baltic Sea. Their assessment and management*. Cham: Springer International Publishing.

Our Common Future (1987). Report of the World Commission on Environment and Development. UN Documents, Gathering a body of global agreements. Available online: http://www.un-documents.net/wced-ocf.htm (accessed on 10 January 2019).

Raszkowski, A., Bartniczak, B. (2018), Towards Sustainable Regional Development. Economy, Society, Environment, Good Governance Based on the Example of Polish Regions. *Transformations in Business & Economics*, vol. 17, *2*(44), 225-245.

Raszkowski, A., Bartniczak, B. (2019). Sustainable Development in the Central and Eastern European Countries (CEECs): Challenges and Opportunities. *Sustainability, 11*(4), 1180.

Transforming our world: the 2030 Agenda for Sustainable Development, United Nations. Available online: https://sustainabledevelopment.un.org/post2015/transformingourworld (accessed on 10 January 2019).

Tupenaite, L., Lill, I., Geipele, I., Naimaviciene, J. (2017). Ranking of Sustainability Indicators for Assessment of the New Housing Development Projects: Case of the Baltic States. *Resources*, *6*(4), 55.

World Bank. The world by income. Available online: http://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html (accessed on 10 April 2019).

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