Infrastructure Funding Gap in Baltic States

Anita MATISONE
Faculty of Engineering Economics and Management, Riga Technical University
Riga, LV-1048, Latvia

Natalja LACE
Faculty of Engineering Economics and Management, Riga Technical University
Riga, LV-1048, Latvia

ABSTRACT

It is wildly acknowledged that the infrastructure level significantly impacts any country's economic growth perspectives and social welfare. The development and even maintenance of the existing infrastructure require high financial investments with a long repayment period. Also, to limit monopoly in the infrastructure networks, there is a line between a free market and a regulated market providing these services. Therefore, infrastructure finance is very complex.

The Baltic States substantially benefitted from EU Cohesion money in improving and maintaining their infrastructure in the last decades. The shift in EU funding priorities (starting from the planning period 2021-2027) from the traditional infrastructure projects to supporting smarter and greener investments, besides other factors, will lead to a substantial funding gap. The study is devoted to assessing the amount of necessary funding in the Baltic States and identifying the factors which could potentially attract more private investors in the infrastructure projects in Baltics.

Keywords: Infrastructure, Private investors, Private-public partnerships, Influencing factors.

1. INTRODUCTION

Infrastructure includes very different types of assets. It provides or should provide that facilities, systems and services necessary for a particular area are encompassed and can work in the best possible way.

The infrastructure's conditions significantly impact a country's economic growth perspectives [1] and social welfare. Studies provide data about the correlation between the development of the infrastructure and GDP growth [2]. The same is evidenced in the Baltic States.

Infrastructure development, in general, is regarded as the country's government or local municipality's responsibility. This is due to regulation that limits private investors' ability to take over the provision of public services without special permission from a state.

The development and even maintenance of the existing infrastructure require high financial investments with a long repayment period. Because of budgetary constraints, only part of the expenses related to infrastructure development and maintenance could be covered by governmental money. The necessity to attract private partners to fund infrastructure projects exists not only in immature markets. Still, for mature markets, it should not be a problem to attract private investors, especially institutional ones [3]. While for other markets, funding infrastructure projects above the budgetary level is problematic due to the inexperience of institutions and also local investors.

Globally in 2022, the resumption of private infrastructure investment commitments after the COVID-19 slowdown was evidenced [4]. Despite the such recovery in total, the real growth happened only in a few countries and was regionally dispersed. World Bank highlights that there is increasing disparity between countries and regions in regard to private investors' commitments, and geopolitical, economic circumstances, and national priorities mostly cause it.

In addition to an already challenging environment for attracting private partners in infrastructure projects, climate change and the necessity to mitigate and adapt to it is impacting this task.

Also, the war increased the necessity to reassess and strengthen the critical infrastructure [5], and it also leads to challenges regarding private investors' responsibilities in such projects and, as a result, the attractiveness of such projects.

For the last decades, Baltic States substantially benefitted from EU Cohesion money supporting local infrastructure. The shift in EU funding priorities (starting from the planning period 2021-2027) from traditional infrastructure projects to supporting smarter and greener investments [6] besides other factors, will lead to the impossibility to fund infrastructure projects or most of them from this money.

Therefore, Baltic States, besides other factors, will partly lose traditional public sources for infrastructure projects. As a result, the involvement of private investors in supporting infrastructure is necessary even more than before. Due to long repayment periods, high uncertainty risks, and little previous experience with infrastructure projects, private investors' willingness to step in is seemingly limited.

ISBN: 978-1-950492-71-8
ISSN: 2771-5914

https://doi.org/10.54808/IMCIC2023.01.162

Existing databases provide data only regarding part of infrastructure investments. Here is no source with complete data regarding infrastructure investments, and as World Bank acknowledges, it is important to provide a complete picture of the global infrastructure space [4] to help to improve status of infrastructure investments globally.

For example, OECD data covers investments in new transport construction and the improvement of the existing network. Table 1 shows the latest available data for Baltic States' investments in the transport infrastructure for 2020.

Table 1

Baltic States investments in the transport infrastructure for 2020

	Rail MEUR	Road MEUR	Air MEUR	Inland waterways MEUR	Sea MEUR	Inland total % of GDP
Latvia	48,52	198	13	0	0	0,84%
Lithuania	174	466	26	7	49	1,31%
Estonia	32	244	4	0	3	1,03%

Source: OECD data for 2020 [7]

Total Baltic transport investments as % of GDP is not below average EU level. Still, it is important to understand the overall quality of the transport infrastructure is lower. Latvia is in 61st place (out of 137), according to the quality of roads, in 107th place (out of 137), according to the quality of railway infrastructure, in 29th place (out of 101), according to the quality of port infrastructure, in 29th place (out of 137), in 37th place (out of 137) in terms of air transport infrastructure quality [8]. Due to the low quality of the transport infrastructure, it should be assumed that Latvia needs a higher share of the total GDP to be invested in renewing and also maintaining the transport infrastructure.

There are not many good examples of private investors' participation in infrastructure projects in Baltic States. Especially it concerns Latvia. Recently Kekava Bypass public-private partnership (PPP) project is the first highway infrastructure PPP project in the Baltic States to be implemented according to Design-Build-Finance-Maintain (DBFM) model. Its objective is to solve the "bottleneck" of the TEN-T network road section entering Riga City with only one lane in each direction [9].

As mentioned above, there are no complete data sources to assess the necessity for additional funding for infrastructure investments precisely.

There are very few recent studies regarding the funding of Baltic States' infrastructure and how to develop it. The existing ones cover only specific infrastructure assets types. As liquefied natural gas infrastructure [10] and the transport sector [2]. These studies don't provide answers on how to increase investments in the infrastructure as an asset class.

Therefore, the study aims to assess the gap in infrastructure funding in Baltic States and, with the help of the content analysis, to determine the factors impacting private investors to invest in the infrastructure.

The article is organized as follows: the next section introduces the latest literature in regard to the infrastructure's investments and its funding with the help of private investors. The third section describes the research design. The results of the content analysis of the literature and assessment of the funding gap are presented in the fourth section. Section 5 outlines the main conclusions.

2. LITERATURE REVIEW

Infrastructure investments are studied in a vast number of scientific articles. As infrastructure includes very different types of assets, many studies only investigate investments in particular sectors. Also, as infrastructure investments are necessary worldwide, the studies provide light on these investments in different regions and countries.

The studies from the last decade assess different forms of private investors' involvement in infrastructure projects or main avenues for governments to mobilize private finance [3], [11]. Also, best practices for the management of the projects are discussed [12], [13]. Different models for infrastructure funding and financing have been created [14]. The return performance of the infrastructure investments also is analysed [15].

In addition to previously studied questions, the studies in recent years investigate the currently identified risks. One of them arises from climate change and other sustainability factors and the necessity to mitigate it. There are contradicting results of the studies regarding sustainability impact on private investors' involvement in infrastructure projects. One part of the studies concludes that it is not easier to attract private finance for green or climate projects than for regular one [3], [11].

The other recently identified risk is related to security issues in the infrastructure projects and the necessity to correctly identify national security interests in them and therefore apply accordingly security obligations to the objects and their managers [5]. Also, possibilities to involve private partners in the industries previously

supposed to be strictly governmental, as for example, nuclear power plants, are analysed [15].

In regards to developing countries, the problem related to the investors potentially unethical behavior also is studied [16], [17].

Rarely estimations of funding gaps in some regions and for some industries are done. Polzin and Sanders tried to match the supply and demand of specific sources of finance for the European energy transition [18]. The results show that a sufficient amount of money is, in principle, available. However, matching investment demand and supply for particular stages and scales of projects is challenging. The study shows that there is a lack of available private funding for small-scale and early-stage projects.

The existing literature shows that factors impacting investors' willingness to invest in infrastructure projects vary depending on the maturity of the market, the development stage of the country, and other factors. The infrastructure in the Baltic states is studied very little.

Therefore, it is necessary to develop a better understanding of factors that could attract more private investors to the Baltic states' infrastructure projects which is the aim of this study. The next section will describe the research design.

3. RESEARCH DESIGN

To assess the funding gap for the infrastructure projects, public sources for Baltic States development plans were searched.

A content analysis of the literature was conducted to determine the factors influencing private investors' willingness to participate in infrastructure projects. Web of Science Core Collection was used to find appropriate studies. The search terms were "infrastructure finance" and "private investors". Bearing in mind that the scientific articles are based on previous research, the publication years of the articles were limited to the recent five years - from 2019 to 2022. The Web of Science search tool identified 107 articles. After preliminary acquaintance with selected studies, 49 articles were recognised as most relevant to the topic of the research and reliable because of the publishing sources. Further, these articles were used for content analysis.

During content analysis, 30 codes were identified. From the codes, nine categories were developed.

As the studies were based on research in countries with very different political stability, macroeconomic features, and market maturity, an analysis of the intensity of the categories by regions was also done. To separate countries by groups, World Bank Country and Lending Groups classification was used. Theoretical studies, not based on direct research in particular countries, were counted based on the secondary sources used in these studies' relationship with particular countries' groups.

The results of the content analysis will be described in the next section.

4. RESEARCH RESULTS

4.1. Infrastructure investments funding gap

To confirm that there is a huge necessity to attract private investments in infrastructure projects, the authors analysed governmental development plans in Baltic states and available assessments of funding gap. As the source for funding gap assessment, the oldest, most experienced, and one of few fund investors specializing in infrastructure investments, BaltCAP data was used. The results of compilation of the data sources are in Table 2.

Table 2

The sources and gap for funding of the Latvian infrastructure 2022-2030

Sectors	Funding sources intended in National Development plan for Latvia 2021-2027		BaltCAP assestment for funding gap for 2022 – 2030
	Governmental Budget and EU funds	Private Investors	
Energy Security	Yes	Yes	16 BEUR
Social infrastructure	Yes	Yes	0,8 BEUR
Transport infrastructure	Yes	Yes	12,5 BEUR
Digital	Yes	No	0,049 BEUR
Total			29,3 BEUR

Authors' compilation from the National Development plan for Latvia 2021-2027 [19] and BalCAP assessment data [20]

As Energy security are counted necessary investments in energy generation, low-carbon energy transition and energy efficiency. As Social infrastructure investments are counted necessary investments in education, sport and culture infrastructure, nature and recreation infrastructure, health care, elderly care. As Transport infrastructure investments are counted local roads, city and intercity public transport, air infrastructure, rail infrastructure. Digital infrastructure is counted the creation of broadband electronic communications network.

The results in Table 2 show that total private investments in Latvia alone necessary for the period up to 2030 is approximately 29,3 BEUR. Private funding is necessary for all sectors. The exception is digital infrastructure, for which development the government believes budgetary resources and available EU funds are

enough. Still, BaltCAP assessed that private funding in the amount of 49 MEUR is necessary.

4.2. **Factors impacting private investors willingness to participate in infrastructure projects**

Nine factors influencing willingness of private investors to participate in the infrastructure projects development were developed after the content analysis. Figure 1 shows the frequency of the factors' appearance in the studies.

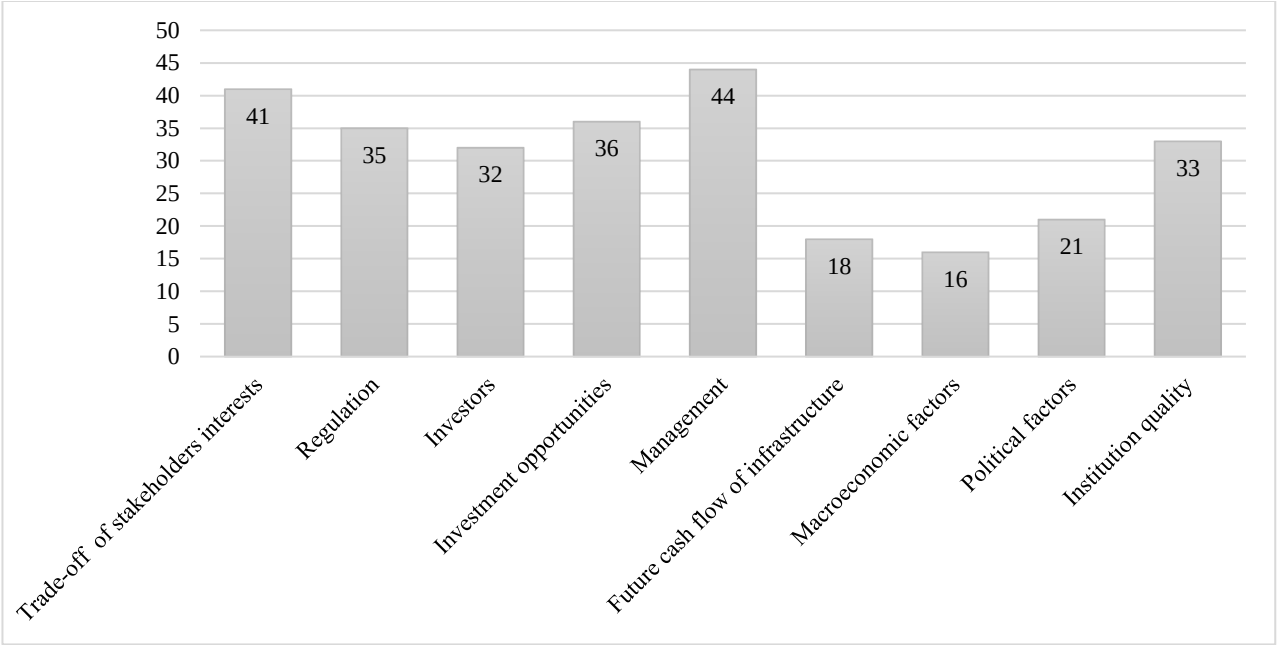

Figure 1 The frequency of the factors' appearance in the studies.

The studies analysed were based on research in countries with very different political stability, macroeconomic features, and the market maturity. A deeper analysis for relationships between factors and the countries groups was done to find out is there a difference in the intensity of the categories by region. To separate countries by groups World Bank Country and Lending Groups classification was used: i) High-income economies, ii) Upper-middle income economies, ii) Lower-middle income economies and Lower income economies. Theoretical studies, not based on direct research in particular countries, were counted based on the secondary sources used in these studies' relationship with particular countries' groups.

Table 3 shows the frequency of the categories' appearance in studies related to particular countries groups.

Table 3

The intensity of the categories in studies related to particular countries groups (Created by the authors)

	Trade-off of stakeholders interests	Regulation	Investors	Investment opportunities	Management	Future cash flow of infrastructure	Macroeconomic factors	Political factors	Institution quality
High-income economies	81,0%	71,4%	47,6%	71,4%	81,0%	38,1%	14,3%	23,8%	57,1%
Upper-middle income economies	75,0%	58,3%	83,3%	83,3%	91,7%	25,0%	33,3%	50,0%	83,3%
Lower-middle and Lower income economies	87,5%	81,3%	68,8%	75,0%	93,8%	43,8%	50,0%	56,3%	68,8%

The results of the analysis of the intensity by countries' groups are not surprising. As could be assumed, political and macroeconomic factors have a substantially bigger impact on investors' attitude to infrastructure projects in lower-income countries. Macroeconomic factors were mentioned as important for high-income countries only in 14 % of analysed sources. While in 50% of studies related to lower-middle and lower-income countries, the

macroeconomic factors were between impactful ones. Similarly, for Political factors. In high-income economies, they were mentioned in 23,8 % of analysed articles. While in studies related to lower-middle and lower-income countries, political stability and predictability appeared as important in twice more studies or in 56% of all studies.

The components of categories in order of total significance for high-income economies and whether they are drivers or barriers for involvement of private investors in the infrastructure projects are explained in subsection 4.1. The significance for high-income economies is used because Baltic countries belong to this group.

4.2.1. The category "Trade-off of stakeholders interests" includes such subcategories as:

- Risks;
- Returns on the investments;
- Control mechanisms.

All subcategories are interrelated. High risks if balanced by higher return possibilities and well-shaped mechanisms to control the investments are not mandatory barrier for and investment.

4.2.2. The category "Management" includes such subcategories as:

- Models for financing

There are different ways how private investor can invest in the infrastructure. The analysed studies mention public private partnerships (PPPs), different kinds of bonds, asset securitization [3] approaches, municipal borrowing, land value capture instruments [11] and different models as: Build-Operate-Transfer, Transfer-Operate-Transfer, and Asset- Backed Securitization models[21];

- Local practices;
- Existence of good examples.

4.2.3. The category "Regulation" includes such subcategories as:

- General regulation;
- Investor rights protection;
- Security obligations related to particular investment category;
- Sustainability norms.

4.2.4. The category "Investment opportunities" includes such subcategories as:

- Project's attractiveness or bankability;
- Project's scale;
- Project's stage;
- Industries;
- Matching between available possibilities and investors interested.

4.2.5. The category "Institution quality" includes such subcategories as:

- Experience;
- Practices;
- Bureaucracy.

4.2.6. The category "Investors" includes such subcategories as:

- Experience;
- Practices;
- Bureaucracy.

4.2.7. The category "Future cash flow of infrastructure" includes such subcategories as:

- Fees for services;
- Demand for services;
- Government subsidies.

4.2.8. The category "Political factors" includes such subcategories as:

- Stability;
- Country's governance standart.

4.2.9. The category "Macroeconomic factors".

5. CONCLUSIONS

The available sources don't provide the possibility of correctly assessing the infrastructure investment needs. Still, even a very preliminary assessment shows that to achieve the aims stated by Baltic Countries, there is a huge necessity to attract private investments.

The content analysis provides a better understanding of the factors influencing private investors' willingness to participate in infrastructure projects. The results of the content analysis should be used to work on government policy papers related to infrastructure projects.

For more usefulness of the results from the content analysis, it would be necessary to approve them by Baltic market expert opinions. The authors are working on the experts' survey results currently and intend later to publish the results.

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