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Strategic Development of Aviation in Latvia

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ABSTRACT

Objective – The current paper investigates the role of creating public and private goods through aviation to determine state policy priorities and analyse the aviation industry's impact on the national economy in Latvia.
Methodology – The current paper involves a multi-factorial approach, combining legal, economic, and social impact assessment elements. The quantitative analysis applies an input-output model to assess the aviation industry's direct, indirect, inducted, and catalytic effects.
Findings – The assessment of multi-factorial indicators assumes paramount importance in ascertaining the contribution of the Latvian aviation sector to the nation's gross domestic product (GDP). Despite its immersion within an intensely competitive market environment, the aviation sector continues to witness substantial government interventions on a global scale. Thus, it becomes imperative to delineate the considerations that delineate public goods, ensuring their alignment with the tenets of equitable competition.
Novelty – Compared to previous studies, the input-output analysis in the aviation industry is extended to evaluate the public and private goods created by the aviation industry to determine favourable state aid policies.
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1. Introduction

Significant transformations have transpired in European and, consequently, Latvian aviation since the onset of the Covid-19 pandemic. The importance of this paper is linked to the pragmatic necessity of investigating the factors that have continued influence on aviation development. The adjustment of these factors is vital for anticipating developmental trends and formulating managerial decisions related to the evolution of the aviation sector. The liberalization of air transport, as seen in the Western world, is one of the most important drivers of business based on people's mobility and the movement of goods. In Europe, 144 new airlines entered the market between 1992 and 2000, and 64 were still operational by the end of the last decade (Abate & Christidis, 2020).

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This indicates a high level of competition between airlines. Also, the expansion of low-cost carriers in the European aviation market should be highlighted. Internal European traffic fostered by the Single European Sky initiative and other related legislative frameworks boosted connections of city pairs served by three or more carriers by 256%. Economic prosperity more than ever depends on global logistics chains. However, the aviation industry remains dependent on the availability of public intervention and various types of state support, which may raise concerns about market failures. This is especially relevant to the consequences of the impact of the pandemic and the geopolitical processes affecting the aviation industry in Latvia and the Baltic region.

With the European Green Deal, a new European Union strategy was launched with the aim of transforming the EU into a fair and prosperous society with a modern, resource-efficient, and competitive economy. It reaffirms the Commission's intention to increase its climate targets and make Europe the first climate-neutral part of the world by 2050.

Responding to the need for urgent climate action, the EU increased the scope of its intentions in the climate field with Regulation No 2021/1119 (hereinafter – the Climate Act), adopted in 2021. The Climate Act sets a binding target to reduce net greenhouse gas emissions in the EU by at least 55% compared to 1990 levels by 2030, and to achieve climate neutrality of the bloc by 2050 at the latest. The EU has also increased its initial contribution under the Paris Agreement on climate change from at least a 40% reduction in greenhouse gas emissions to be achieved by 2030 to at least a 55% net reduction in greenhouse gas emissions. To achieve these goals and to keep the global average temperature increase within 1.5 °C, all the instruments essential for the decarbonisation of the EU economy must be strengthened.

Introduction of sustainable aviation fuel (SAF) with the gradient increase starting from 2025 is essential to meet European aviation strategy goals. It should be noted that Roland Berger's 2022 study, presented at the Toulouse High-Level Aviation Summit in the year 2022, indicates that biological resources on the European continent are insufficient to meet the forecasted fuel consumption. Consequently, there is an urgent need for the development of synthetic fuel from CO2 and hydrogen in the foreseeable future.

Aviation infrastructure needs to meet carbon emissions neutrality by 2050. Although the aviation infrastructure is not the main polluter, the European strategy envisages a significant investment for the reconstruction of the energy supply of inclusive aviation infrastructure. It will be the responsibility of the end consumer to justify compliance of the energy source with the green certificate throughout its entire production and delivery chain.

Aviation fuel tax with a gradient increase by 2030 is intended to be implemented. The proposal of the European Commission is to present a minimum tax rate of €10.75 / GJ. This initiative is in place to level out price differences in favour of SAF consumption. European institutions are also forcing a waiver of the free quota until 2027. This means that in the future, airlines will have to purchase CO2 allowances on the free market.

As can be seen from the above, flight costs will increase in the foreseeable future, and it can be said with confidence that 2019 was the point of the lowest costs in the aviation industry globally. The Brussels-based consulting company, SEO Amsterdam Economics & Royal Netherlands Aerospace Centre Amsterdam for Airport Council International has calculated that the price of a flight within 3,000 km inside the EEA will increase by approximately 45 euro per passenger in 2030 and by 65 euro in 2035, and by a long-distance route, by 50 euro per passenger in 2030 and 105 euro in 2035. However, the prognosis remains uncertain, as there is still a lot of doubt about SAF's future prices; forecasts are conservative and may, therefore, be

underestimated. The implementation of SAF in the markets of third countries is also unclear, which may promote unfair competition and CO2 diversion (carbon leakage). It is important to recognise that, during the development of SAF regulations, concerns have arisen regarding not only its production process and cost but also its overall effectiveness in addressing environmental issues. Simultaneously, aircraft manufacturers are actively pursuing hydrogen-based technologies, which raises apprehension that SAF technology may become outdated before the investments made in its development can be recuperated. It can be concluded that the aviation industry is facing changes, but the technological and technical leadership of change management is not yet sufficiently structured.

Governments need to be clear about their connectivity objectives and consider the country's connectivity needs across all modes of transport. Connectivity needs should be considered in the context of how improved connectivity can support local, regional, and national socio-economic strategies (OECD, 2018).

2. Literature Review

The study employs a multi-factorial approach to public governance theories, utilizing an input-output model to assess the direct, indirect, inducted, and catalytic effects of the aviation industry, with a focus on evaluating the aviation role in the nation's GDP. In accordance with Samuelson's Theory of Public Goods, collective consumption can be determined as non-rival and non-excludable (Samuelson, 1954). The theory of public goods persists as a justification for government production in situations where private businesses are unable to meet social needs. Given that empirical data demonstrates efficiency of government output does not meet the criteria for investments as defined by economists, public goods theory cannot serve as a foundation for explaining or justifying public expenditures (Holcombe, 1997). The divergence in these viewpoints substantiates the notion that the private sector consistently outperforms as a producer or service provider. As a result, it is not surprising to see private capital investors increasingly participating in the aviation industry, while the government focuses on fulfilling its social responsibilities.

Social aspects of state aid within the European Union are legally and socially determined by the concept of public service obligations (PSO). Molde University professor Svein Bråthen in his study justifies that scheduled air services serving a peripheral region should be vital for the economic and social development of the region served by the airport. Suppose no airline is willing to provide a service under the conditions imposed. In that case, the government may restrict access to the route to a single carrier and award financial compensation to the carrier in return for compliance with the PSO (Bråthen & Eriksen, 2018). This illustrates the government's capacity to intervene in order to fulfill a social function while still relying on private service providers to deliver public goods. This approach maintains competition in the selection of service providers but restricts competition for services that are funded through state aid.

Within the research of the National Bureau of Economic Research (Blonigen, B. A., & Cristea, 2012), a clear exogenous increase in air service is related to statistically and economically significant increases to regional growth, which is equivalent to 11.7 percent of the average annual rate of population growth observed over a 23-year sample period. Moreover, air service exhibits similar magnitudes of growth to per-capita income and employment.

Multi-sectoral dynamic models of economic growth capture the interdependence between sectors and provide an opportunity to assess the importance of these relationships. Input-output analysis (I-O) is a type of macroeconomic analysis based on the interdependence of different sectors or industries in the economy (Leontief, 1986). This method can be effectively used to assess the positive or negative economic impact on individual sectors or regions. This model of economic analysis was originally developed by Vasily Leontiev (1906–1999), who later won the Nobel Prize in Economic Sciences for his work in this area.

United Nations sustainability goals and the concept of a stakeholder economy presented first by a German economist, and founder of the World Economic Forum, Klaus Martin Schwab, gives us a solid frame to understand the transformation from a shareholder to stakeholder economy. Within this pattern, sustainable aviation means a balanced approach to society, environment and the economy (Shwab & Vanham, 2021). Therefore, if one of the groups' interests are affected, it may result in a worsening of all business indicators. To explain this global transformation framework more precisely, at the World Economic Forum, which took place in 2021, Peter Vanham presented the following illustration that outlines the transformation to sustainable business.

Type of capitalism	**State capitalism**	**Shareholder capitalism**	**Stakeholder capitalism**
Decision-makers	Government	Owners	Selected stakeholders
Main frame	State-regulated business	Corporate responsibility	Creation of social welfare
Ground for existence	The interests of the company are aligned with the interests of the state	Profit and value of shares	Orientation to long-term value creation

Table 1: An illustration of the transformation of capitalism by Peter Vanham presented at WEF

Institutional theory states that social norms and values shape organisational behaviour (Schwab, 2021). Consumer behaviour contributes to an organisation's need to meet societal expectations to gain legitimacy, which is essential for long-term operations (Carroll, 1991). Thus, organisations adopt social responsibility practices as a necessary tool to gain competitive advantages.

In aviation, the influence of public opinion on various, even unrelated, groups of society has been expressed in the second decade of the 21st century with the concept 'flygskam' (flying shame) created by the environmental activist Greta Thunberg and her associates. Linköping University scientist Aneta Kulanovic, in her 2021 study of sustainable aviation development in Sweden, has concluded that three political discourses characterise the public's attitude towards the aviation industry: 1) The neoliberal approach that emphasises the importance of transport infrastructure in economic development, but insists that state aid is only allowed for projects with a positive impact on the environment; 2) Adherents of the Keynesian economic model, who believe that aviation, among other things, also fulfills a social function, therefore the support should be limited only to the implementation of these functions; 3) The dogmatism of environmentalists who defend the idea that the government should not support aviation at all in the face of the climate crisis (Kulanovic & Nordensvärd, 2021).

To assess how society's expectations do influence corporate behaviour, the Hunt-Vitell theory of ethical decision-making can be applied, which emphasises that the attitude towards any process is formed by the external environment, the corporate system and the individual's personal characteristics, which depend on the following interactions of the factors listed in Table 2 (Hunt & Vitell, 1986). As a result, the norms of behaviour that form both the individual's and the society's perception of the processes are marked.

Area of leverage	**Factors affecting behaviour**	**Manifestation of norms**
External environment	Paradigms Legal system Political system	

Area of leverage	Factors affecting behaviour	Manifestation of norms
Professional environment	Customs Rules and standards Levers of influence	Judgments on proceedings Theological perception of the surroundings Interpretation of ethics Acceptance or rejection of the consequences Socialising
Corporate environment	Customs Rules and standards Levers of influence	
Personal qualities	Confessional affiliation Cognitive development Belonging to a group of society Scale of values Level of empathy	

Table 2: Matrix of perception of the processes taking place in society (author's compilation based on Hunt-Vitell model)

This approach is useful for the analysis of social aspects in the context of an ethical dilemma, as it helps to identify the relationships between the judgment and the intention to accept an ethical alternative if the implementation of the intention does not lead to the desired consequences.

3. Research Methodology

The research methodology is founded upon the examination of multifactorial processes within aviation, conceived as a sequence of activities involving numerous participants. All contributors to the production processes in aviation maintain a degree of independence, each possessing distinct goals and strategies. To recognise the trends inherent in aviation, it is imperative to dissect the comprehensive landscape into economic, legal, and social interactions among the primary participants. The subsequent analysis involves identifying dependencies and synthesizing all ascertained factors into coherent policy decisions.

Following Schwab's concept on the principles of sustainable business, stakeholders must determine the direction of corporate action that is beneficial to society, based on the optimal implementation of processes, since none of the participants can freely use the efforts of others to dominate. But stakeholder capitalism fundamentally differs from other forms of economic activities in a way that eliminates many of its shortcomings, such as concern for the environment or public welfare. As a result, a wide range of interested parties with a stake in the community can influence decision-making by the broad meaning of this definition (see Table 3), ensuring that the indicators optimised through economic activities correspond to wider public interests.

Corporate	**Social**
- Buyers - Employees and unions - Investors - Financial institutions - Owners - Partners - Suppliers	- NGOs - Residents - Media - Opinion leaders - Beneficiaries of charity
State	**Other**
- Lawmakers - Supervisory institutions - Tax administration - Professional organisations	- Competitors - Environmental organisations - Haters and protesters (spontaneous or organised)

Table 3: Stakeholders by groups (authors compilation)

In addition, there is a system of counterweights and balances so that individual stakeholders cannot become or remain dominant. As result, the objectives of the company are broader than just profit. In the author's view, the parties of influence of aviation can be structured in the following groups, which balance the directions of the corporate strategy.

Sustainability reporting standards allow an organisation to publicly disclose its most significant impacts on the economy, environment and society, including impacts on human rights and how the organisation manages those impacts. According to the Global Sustainability Standards Board method, sector program improves the transparency of the organisation's activities and increases the organisation's accountability. These standards are divided into several sectoral programs. A standardised approach to airline operations has been developed in the aviation industry. Development of a standardised sustainability report is recommended in four steps. The first three steps involve identifying topics relevant to the company in order to identify the relevant standards that will be applied in the report (418 standards defined in total). In the second stage, these standards must be related to the identification and evaluation of the impact of the ongoing processes of the organisation. In contrast, in the third evaluation stage, the organisation must determine and evaluate its impact within the framework of daily activities while cooperating with external and internal stakeholders and experts. These activities enable the organisation to proactively identify and manage its social and environmental impacts, including in circumstances where the organisation is rapidly developing, and new impacts are emerging.

It has been concluded that airlines are focused more on aspects of community engagement, but far fewer reports provided detailed information on well-defined initiatives implemented to promote sustainable development goals (Cowper-Smith & De Grosbois, 2011). Applying the evaluation gradation of sustainability engagement developed by Cowper in Latvia, it needs to be admitted that sustainability reporting is not widely represented in Latvia. This is mainly based on the voluntary application of such reporting and explains the low public involvement in environmental processes. However, the Corporate Sustainability Reporting Directive, which amends Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU will strengthen the obligation to include non-financial reporting in their annual reports. Primarily, the requirements of the directive will be implemented in their operations by large and medium size enterprises whose indicators exceed at least two of these criteria: 250 employees; EUR 40 million turnover per year; EUR 20 million asset value.

Each sovereign state seeks to maintain a national carrier to obtain maximum economic benefits from greater connectivity with external economic and social centres. The main reason for that is that aviation contributes directly to the money multiplier effect. Other factors are also important in determining the economic impact of aviation. It creates added value for the import and export of goods and services. In this case, the data on cross-border payments, which the countries' central banks usually maintain, can be used. Aviation improves the income of the state budget. It generates tax revenue both from its direct operation and from related industries. Aviation is labour intensive as well, with high wages and high qualifications required for their services. In this case, a value chain with high added value is formed as well. It must be considered that aviation also depends on the capability of the infrastructure, which provides work and investment in both technology and the construction sector. Therefore, key performance indicators such as share of GDP, connectivity index, statistics of movements (flights, passengers, cargo, mail), share of paid taxes, share of labour intensity, multiplier effect on other industries, imports and exports should be distinguished, which characterise a healthy aviation industry. Additional parameters may be determined according to the specific strategic priorities.

Intersectoral dependencies can be determined based on influence weight coefficients, which allow measurements of a separate region or sector. In the matrix, it is important to identify the main sectors in the relevant research region and analyse their numerical dependencies and connections. Measuring these quantities by determining their dependencies from the smallest to the largest is possible, allowing for drawing policy planning conclusions and improving future performance.

An important aspect in assessing the macroeconomic impact of the industry is the availability of macroeconomic statistical data. Regulation (EC) No 1893/2006 of the European Parliament and of the Council of December 20 2006 establishes the statistical classification of economic activities NACE Revision 2 (NACE2) and amends Council Regulation (EEC) No 3037/90 establishing a common classification of economic activities. Commonly accepted codification of economic activity gives a comparable data set for the assessment of economic activity. This system uses a coding system of data of 4 levels, which are divided into 21 sections, 88 departments, 272 groups and 615 classes. This code at the higher level of detailing is four characters long.

The main assumption of this model is that economic sectors are interconnected and interdependent. For example, if one comparable unit is air transportation, which is Passenger air transportation (51.10) in the NACE2 classification, then using statistical data it is possible to calculate how many units it contributes to the hotel sector (55.10) or supply services at the airport (52.23). Respectively, the codification of company data allows structuring the information in the I-O tables accordingly.

$$\begin{array}{cc} Industry & 1,2,3,\ldots,n \\ 1 \\ \vdots \\ N \end{array} \begin{bmatrix} X_{11} & \cdots & X_{1n} \\ \vdots & \ddots & \vdots \\ X_{n1} & \cdots & X_{nn} \end{bmatrix}$$

(1) input–output matrix

The indicators mentioned above are relatively easy to determine, as they contain direct industry indicators such as the direct performance of aviation industry companies, resulting from structured statistical data. For example, airlines, airports, and other related service companies are included in this aviation cluster. This model is effective in determining direct and indirect economic relationships, but it is difficult to apply it directly to the determination of induced and catalytic effects. For example, the postal operations under the universal service obligation (H53.10) are provided both by road transport and air freight. These services are not interdependent. Therefore, part of this statistical indicator should be attributed to indirect effects. As it is observed below in Table 4, part of these services do not have a connection with the aviation industry. Therefore, the uncertainty is what relevant coefficient can be applied in this case. As a result, when new parameters are inserted into the cluster model, the reliability of the data is proportionally lost, unless these data are sufficiently verified already at the micro level, by analysing the balance sheet of the given data subject.

4. Results & Discussion

To determine the impact of the aviation industry in Latvia, it should be viewed in a broader context than the H51 sector' Air transport' defined in the NACE2 classification of economic activity, as it includes not only air transport but, according to the cluster approach, should cover all services related to the provision of air transport. For example, the relevant training and education services as well. However, as it is revealed by analysing the information of the state company register, the information voluntarily declared by merchants on the types of activity is incomplete. Therefore, both the State Revenue Service and the Statistical Office probably create their own data clusters, which increase the deviations in the quality of the input data and complicate the analysis. Therefore, when structuring the approach to data collection, manual work is required to create a representative list of companies with a significant contribution, which is further structured into the I-O table. As defined in Table 4, according to a single European standard, group H of the NACE2 industry classification includes air transport (H51) and auxiliary activities (H52.10, H52.21, H52.23, H52.24., H52.29).

	NACE2	Coefficient	I-O value (M/EUR)	% of GDP
Direct	H51.10	1	84.1	0.4
	H51.21; H51.22	1	52.8	0.2
Indirect	H52.10; H52.21; H52.29	Variable	91.6	0.4
	H52.23	1		
	F41.10; F42.99; F43.2; F43.99	Variable		
	C33.16; C27.90; C30.30	Variable		
	G46.14; G46.69; G46.71	Variable		
	H53.10; H53.20	Variable		
	I56.29	Variable		
	J62; J63	Variable		
	N78	Variable		
	N71	Variable		
	P85.32; P85.41	Variable		

Table 4: Direct and indirect impact on the aviation industry by NACE2 for 2017 (Source: Latvian Aviation Association)

It should be noted that providing NACE2 codes when registering a company is not mandatory and, at least at the level of the State company register in Latvia, is not a suitable data source. In order to determine the coefficient applicable to the determination of GDP from the I-O tables, it is initially necessary to identify the companies operating in the selected NACE2 codes and to carry out an analysis of balance sheet data and, if necessary, expert interviews to determine the turnover related to aviation activities. Structural indicators of a business include a breakdown of the main indicators of sectoral activity in four-digit codes. This data on the added value of companies is calculated according to the concept of micro-indicators and is slightly different from the approach of calculating macro-indicators but can serve as additional information for the calculation of macro-indicators of the aggregated aviation industry for a selected year. In addition, the Structural Indicators data is defined in four-digit codes, where it is possible to divide it, and generalise in a group where there is a lower possibility of data analysis, which allows obtaining more detailed information about the activity indicator and structure of the specific companies in the relevant industry.

Giving to the statistical codification mentioned above in Table 4, the following areas of impact determination can be distinguished to express the monetary contribution of aviation to GDP. First is the share of total income (added value and GDP) obtained by Latvian businesses. Second, is the number of employees in the sector in relation to the total number of employees in the national economy. At the same time is the

accounting of the industry's payments to the income of Latvia's general budget and the share of services in Latvia's exports. Therefore, to use the I-O data tables more accurately, it is necessary to identify the merchants that are included in the statistical analysis. It uses companies' annual reports available in the Register of Enterprises of Latvia. Unfortunately, this data cannot be filtered according to their reference to NACE2 four-digit codes. Manual data selection is required. As a result, indirect and induced aviation correlations require proper adjustments to the I-O matrix. As can be seen in Table 5 below, the aviation industry in Latvia has a significant impact on the national economy.

Impact on GDP	**M/EUR**	**% Share of GDP**
Direct	136.9	0.6
Indirect	91.6	0.4
Induced	73.5	0.3
Catalytic (without FDI)	283.0	1.2
TOTAL	584.9	2.5
Employment	Thousands	% Share of total
Direct	3.5	0.4
Indirect	3.4	0.4
Induced	2.8	0.3
Catalytic	10.6	1.2
Total	20.3	2.3
TAXES	M/EUR	% Share of total
Direct	34.7	0.5
Indirect	25.9	0.4
Induced	20.8	0.3
Catalytic	80.1	1.2
TOTAL	161.5	2.4

Table 5: The impact of Latvian aviation on the main indicators of the national economy in 2017

Although, there are various approaches to clustering direct and indirect impacts affecting airport operations and the extent of related supply services, indirect contribution is linked to the use of supplies of goods and services arising from air transport, but still directly linked to the air transport industry and therefore is difficult to separate.

Adding new parameters to the cluster model proportionally reduces the reliability of the data. Induced contribution is related to the consumption of the employees in the aviation industry, which can be derived from the wages paid in industry and labour taxes, while the catalyst effect is related to the availability of quality aviation services. This would include tourism, postal services, and non-directly related business arising from connectivity. Consequently, indicators that determine one or another multiplier effect resulting from connectivity indicators should also be applied to this group. Factors such as time savings and hourly costs, access to the export and import markets, and centres of economic activity should be listed here.

Aviation connectivity is an important factor affecting peripheral regions' economic development and quality of life. There is a clear correlation between regional countries' purchasing power level and the time required to get to economic centers, such as the sales market for goods. This assumption reinforces the role of CSOs in economic development. The essential role of aviation in the national economy is confirmed by the

fact that in 2015, only 2% of the EU's active market was accessible within 8 hours of Latvian residents who use road transport, which indicates a low ability to access economic centres by land or water transport. For comparison, in Central Europe, this indicator was around 40%. As a result, improving aviation connectivity facilitates a faster flow of people and goods between countries and regions, creating opportunities for economic cooperation, growth, cultural exchange and knowledge transfer.

The relationship between the generated public good and the number of transported passengers can be measured. Analysing public and private goods from the aviation industry, it is concluded that in the context of state aid policies, public benefit cannot be separated from private good, and these are mutually dependent. Public good is expressed in the added value generated by the industry, which can be measured through its direct, indirect, induced, and catalytic impact on GDP. For this reason, public benefits shall be deducted according to the individual's private consumption level. However, market failure incentivizes the state to fulfil its duty of abiding by a social contract.

In the tense geopolitical situation, the three Baltic states focus on their connectivity to Central Europe and Scandinavia. Notably, Latvia's neighbouring countries, Estonia and Lithuania, have a significant gap in between public and private benefits from aviation as they have lost their national flag carriers. At the same time, Latvia and Lithuania are in a comparable capacity of serving private interests of travellers, but Estonia has low aviation connectivity due to highly influence by Helsinki and Riga airport catchment areas.

Riga Airport has become the main Baltic air traffic hub in recognition of the business model of Latvia's base airline, airBaltic, which is based on transit and transfer passenger flow. The steadily growing volume of passengers before Covid-19 crisis enabled Riga Airport to become one of the fastest growing airports in a European capital, with the number of passengers reaching almost 7.8 million. About 20 airlines operating at the airport ensured Riga's connectivity with more than 100 European and Asian destinations. Thus, Riga Airport managed to operate in the entire Northern European region's catchment area, with a market presence of around 32 million.

Applying the qualitative analysis of social aspects affecting Latvian aviation policy strategies in accordance with the Hunt-Vitell model, it can be concluded that the public's expectations towards what is happening in the industry greatly influence the policy-making processes. The scale of social values and the level of empathy towards the aviation industry is gradually decreasing, even though the society is not ready to give up safe and comfortable air transportation. As a driver of the industry, external technological development and innovations are marked for successful implementation of environmental policies. However, there is a social trend that the development of these innovations is too slow. As a result of such public perception, social pressure on the industry and policymakers increases, creating both positive and negative effects on the opportunities of the industry and the correlated social mobility. The responsibility for the development of the industry is shifted onto the shoulders of entrepreneurs. It is significant that the Latvian society does not see its co-responsibility in reducing the polluting activity of the industry. It is concluded that industry participants must strictly comply with international standards and legal norms to ensure sustainable operation, protect passengers' rights, and improve the industry's reputation. It is also necessary to expand the industry's communication about environmental aspects because society is greatly interested in what is happening in the industry. This approach justifies two types of sustainable strategy guidelines for Latvian aviation defined in Table 6.

Performance-based indicators	Baseline scenario	Pessimistic scenario
Network structure	Multimodal transit centre	Direct connections to European

Performance-based indicators	Baseline scenario	Pessimistic scenario
	maximised for transit/transfer traffic supply	aviation centres and seasonal tourist destinations
Investment	State aid, financial markets, PPPs, resources of capital companies	Resources of capital companies
Sectoral indicative indicators	Direct, indirect, induced, and catalytic contribution to the economy	Profitability of individual projects (CBA)
Dominant carriers	Base airlines	Low-cost carriers
Infrastructure development	Pre-emptive capacity provision	Focus on cost control
Market area of influence	Northern Europe (~32 million inhabitants)	Baltics (~6 million inhabitants)

Table 6: Policy indicators for development scenarios (Source: author's development, based on BCG's 2015 presentation and Hunt-Vitell model analysis)

In accordance with the predefined policy indicators, strategic air traffic forecasts have been developed for two development scenarios: a base scenario and pessimistic scenario (Figure 1). These scenarios are each subdivided into a medium-term phase spanning until 2027, and a long-term phase from 2028 through 2050. The baseline scenario, extending until 2027, is based on Riga International Airport's 2021–2027 mid-term operational strategy and is considered the most likely. Conversely, the projection until 2050 is grounded in the International Civil Aviation Organization's (ICAO) medium scenario long-term growth rate forecast for the European sector's recovery from the Covid-19 pandemic, as well as the European nations' air traffic growth rate prediction for the period up to 2050, as presented by EUROCONTROL on June 29 2022.

Until the COVID-19 pandemic, the air traffic growth rate in the European region, including Latvia, was higher than the GDP growth rate. This trend is expected to continue without significant global geopolitical changes (pandemics, military conflicts, etc.). Therefore, the growth rate of air traffic has been adjusted in accordance with the numerical value of the Macroeconomic Assumptions and Forecasts of the Ministry of Finance (at actual prices, an average of 2% per year) and the long-term demographic forecast of the International Monetary Fund for Latvia, which foresees a further decrease in the country's population (an average of 0.6% per year). The air traffic growth rate after 2027 is calculated as the combined mean of the four data sources.

In the base scenario, the proportion of transit and transfer traffic planned to be around 25% until 2027 but will increase to 30% after 2027, is very cautiously assessed. Although the share of transit and transfer traffic at Riga Airport exceeded 50% until 2019, after the Covid-19 pandemic and closed airspace in Russia, Belarus, and Ukraine, which partly prevents European carriers from accessing the Asian air transport market, there is no reason to use the 2019 passenger flight destination structure and traffic indicators as a reference for future forecasting. The pessimistic scenario assumes that transit and transfer passenger traffic may possibly be interrupted at Riga Airport. In addition to the above, it should be considered that more than 20% of the flight destinations are not replaceable without transit flow, and the future execution of these routes would be economically impossible.

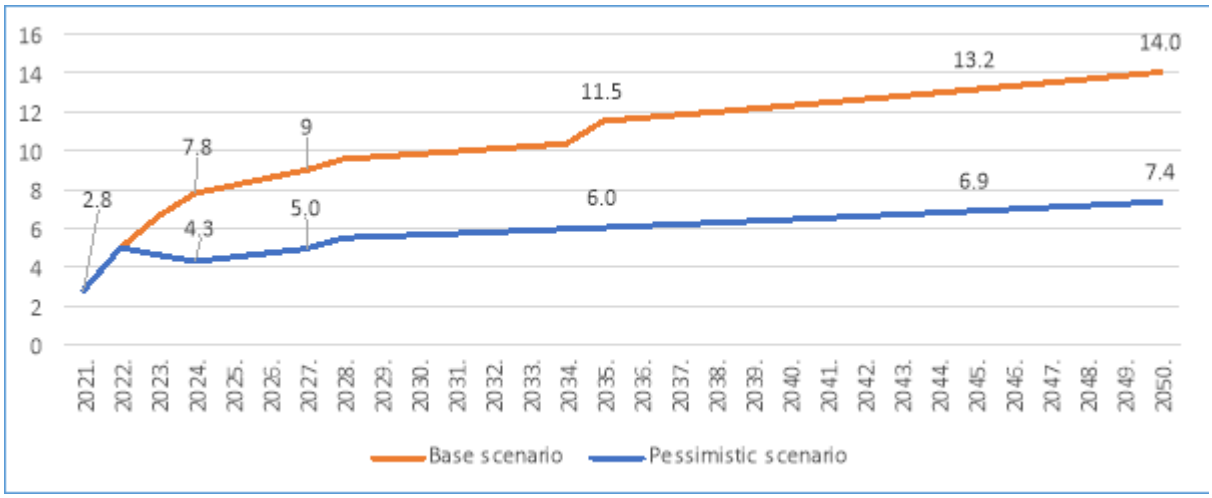

Figure 1: Riga airport traffic scenario

5. Conclusions

Latvia seeks to maintain a national carrier to obtain maximum economic benefits from greater connectivity with external economic and social centres. Therefore, the dominant role of Latvian aviation in the Baltic aviation market is largely related to the operation of the national carrier Air Baltic Corporation's base at Riga Airport. Instituting state policy priorities is a vital foundation for the industry's sustainable growth. It is necessary to determine the scope of the public good, which can be strengthened within the state aid policy.

Simultaneously, aviation service providers' non-financial reporting and stakeholder engagement appear to be underdeveloped. As a result, despite the significant influence on the national economy, there is limited public engagement in outlining environmental objectives.

To realise the greatest possible contribution of aviation to the national economy, the policy objectives of the sector must be based on the general contribution of the aviation sector to the national economy (GDP). Although the profitability of individual projects is important, it is necessary to realise the overall social and economic benefit of aviation activities.

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