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# METHODOLOGY FOR THE ESTIMATION OF COMPONENTS OF SOCIO-ECONOMIC IMPACT OF INVESTMENT (BENEFIT/COST) IN THE FIELD OF CULTURE, AND THE CALCULATION AND APPLICATION OF THE ESTIMATES OF COMPONENTS

Drawn up as part of

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Union Investment in Cultural Heritage and Cultural  
Infrastructure for 2014–2020 and Pertaining to the  
Economic Analysis of the Investment

To:  
the Ministry of Culture of the Republic of Lithuania



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## I. The Proposed Benefit (Cost) Components, Estimates and Arguments for their Selection

The selection of socio-economic (cost and benefit) components was based on the types of projects typical of the field of culture. A Program for Actualization of Cultural Objects for 2014–2020 setting up the objectives, goals, priorities and general as well as special requirements for state investment in the cultural heritage and cultural infrastructure objects was used as a primary source of information for the purposes of identification of the typical types of projects. According to this program, investment planned in the field of culture can be broken down into two main groups:

- Investment in the cultural heritage objects;
- Investment in the cultural infrastructure.

A more detailed analysis of the provisions of the program and the relevant documents (eg., descriptions of program measures) allows identifying the following examples of key types of projects in each group of typical projects:

**Table 1. Types of Common Projects in the Field of Culture**

Type of Project	Examples of Projects
1. Investment in the cultural heritage objects	1.1. Cultural heritage objects (eg., objects of a castle or mansion ensemble) 1.2. Sacred heritage objects (eg., objects of a monastery ensemble or a church complex)
2. Investment in the cultural infrastructure	2.1. Libraries 2.2. Museums 2.3. Theatres and concert establishments 2.4. Cultural centers

*Source: drawn up by BGI Consulting on the basis of information contained in the planning documentation.*

The assessment of the benefits of cultural heritage objects and cultural infrastructure should be based on the experience of foreign countries. There are numerous studies and methodological documents assessing socio-economic benefits of various objects of visit<sup>1</sup>. The aforesaid documents reveal the standard practice for the assessment of benefits offered by objects of visit, where the willingness of the society to pay for services provided by such objects is used as a basis for the assessment.

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<sup>1</sup> Eg.: Guidance Manual for Cost Benefit Analysis (CBAs) Appraisal in Malta. - May 2013; Economics for the Environment Consultancy (eftec) (2005), Valuation of the Historic Environment: The scope for using results of valuation studies in the appraisal and assessment of heritage-related projects and programmes. Final Report.

**The Concept of Willingness to Pay**

The concept of willingness to pay is often connected with the assessment of project outcomes. According to this concept, the overall value of benefits offered by the project is assessed by adding up maximum amounts that people are willing to pay to gain outcomes that they view as desirable. Categories of such outcomes may include goods and services that are and are not actually sold on the market. In the first case, even if consumers pay the fee, it may be distorted and fail to reflect the overall production costs or the potential added social benefits generated when producing the specific product or providing the specific service. A standard example could be public or publicly available goods for which consumers pay a subsidized rate (eg., a museum unable to cover investment and operating costs from income from the sale of tickets due to a relatively low ticket price). In such situations, willingness to pay serves as a better estimate of the social value of such good than the monitored rate.

*Source: Development of a Methodology and Model for the Assessment of Socio-economic Impact of Investment Funded from the European Union Structural Funds and Lithuanian National Budget. Final Report.*

When assessing the willingness to pay for a visit to a cultural heritage object or the use of cultural infrastructure, stated preference or revealed preference methods can be used<sup>2</sup>. Stated preference methods are based on survey of potential visitors aimed at identifying the extent to which they are willing to pay for a public good characterized by specific characteristics (in this case, an object of visit). Stated preference method would not be useful for developing a unified methodology for investment in the field of culture. It would be more expedient to use the travel cost method (attributable to the group of revealed preference methods) recommended in the European Commission Guide (2014)<sup>3</sup>.

**Travel Cost Method**

The value of a good is estimated on the basis of overall travel costs incurred for the purposes of using the good: fuel costs and other vehicle operating costs, bus or train tickets, time costs of travel, time costs of visiting the object, costs of buying a ticket to the object of visit, other monetary costs (for example, accommodation and meals). To include other monetary costs (such as accommodation and meals), only costs directly associated with the visit of the object should be taken into account.

*Source: Development of a Methodology and Model for the Assessment of Socio-economic Impact of Investment Funded from the European Union Structural Funds and Lithuanian National Budget. Final Report.*

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<sup>2</sup> Eg., see Guidance Manual for Cost Benefit Analysis (CBAs) Appraisal in Malta. - May 2013.

<sup>3</sup> European Commission (2014), Guide to Cost-benefit Analysis of Investment Projects: Economic appraisal tool for Cohesion Policy 2014-2020.

The appropriateness of the travel cost method is also supported by the outcome of investment in the field of culture provided for in the national documents. The Program for Actualization of Cultural Objects for 2014–2020 and descriptions of measures stress out the need to increase the number of hours spent by visitors in the objects of visit, i.e. this is the outcome, which the planned investment is aimed at. Meanwhile, time costs expressed in monetary value are the key component of travel costs.

As it was mentioned above, travel costs comprise several components:

- fuel and other vehicle operating costs, bus or train tickets,
- time costs of travel, time costs of visiting the object,
- ticket for the entry into the object of visit,
- other monetary costs (for example, accommodation and meals).

The existing experience shows that it is possible to calculate a single time cost estimate as well as an estimate reflecting vehicle operating costs applicable to cars, while other costs, such as ticket for the entry into the object of visit, should be identified by the project promoter taking into account characteristics of the specific object and location.

The proposed estimates and basis for their selection are listed in Table 2.

**Table 2. Arguments for the Selection of Estimates**

Estimate	Arguments for the Selection
Component of willingness to pay No. 1 (value of time applicable to the residents of Lithuania)	<p>In its Guide of 2008 and 2014, the European Commission recognizes time costs as the key component of travel costs used to measure willingness to pay for a visit to an object of interest.</p> <p>It is proposed to apply a single estimate of the value of time to adults, children and seniors. The proposal is based on the desire to avoid discrimination and the fact that the estimate does not reflect the value of working time.</p> <p>Statistical data necessary to calculate the estimate are published by the Statistics Department of Lithuania and Eurostat.</p>
Component of willingness to pay No. 2 (value of time applicable to non-residents of Lithuania)	<p>A separate estimate applicable to non-residents of Lithuania is proposed in view of the fact that the value of time of persons arriving from abroad is different from that of the residents of Lithuania.</p> <p>This estimate is considered to be a better estimate than the daily/travel cost estimate of a tourist or single-time visitor, because it better matches the desired outcomes of the projects (increasing the number of hours spent by the visitors in the object) and the methodology applicable to the residents of Lithuania.</p> <p>Statistical data necessary to calculate the estimate are published by</p>

Estimate	Arguments for the Selection
	Eurostat.
Component of willingness to pay No. 3 (vehicle operating costs)	<p>In its Guide of 2008 and 2014, the European Commission recognizes vehicle operating costs as an important component of travel costs used to measure willingness to pay for a visit to an object of interest. The estimate reflects vehicle operating costs applicable to a car.</p> <p>Statistical data necessary to calculate the estimate are collected by State Enterprise Road and Transport Research Institute.</p>

*Source: drawn up by BGI Consulting.*

In view of the fact that it is proposed to assess all cultural heritage objects and cultural infrastructure objects using the travel cost methodology, the estimates listed above are applicable to all types of projects.

## II. Methodology for the Calculation and Update of Estimates

Methodology for the calculation and update of estimates is presented broken down into individual components (estimates) of the impact.

### 2.1. Component of Willingness to Pay No. 1 (Value of Time Applicable to the Residents of Lithuania)

The value of time spent in a cultural heritage object or cultural infrastructure object is one of the main components of travel costs.

#### Calculation Methodology, Data Source and Calculated Estimate

Cultural heritage objects and cultural infrastructure objects are usually visited outside the working hours. Based on the established practice, the value of non-working time is two and a half times lower than the value of working time<sup>4</sup>. Below are the instructions for the calculation of the value of working time and the value of non-working time applicable to the residents of Lithuania.

Cost-saving approach is normally applied when determining the value of working time. The main assumption behind such approach is that time costs of employees are borne by the employer who is able to direct employees towards the performance of alternative productive activities.

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<sup>4</sup> See, for example: Guidance Manual for Cost Benefit Analysis (CBAs) Appraisal in Malta. - May 2013.

Labour cost levels (indicator code: lc\_lci\_lev), an indicator published in the Eurostat database<sup>5</sup>, can be used to calculate the value of working time. In 2013, in Lithuania, the total labour costs of one working hour in the group of economic activities “B\_TO\_S Industry, Construction and Services” were EUR 6.2.

**Table 3. Total Labour Costs of One Working Hour, EUR**

2008	2009	2010	2011	2012	2013
5.9	5.6	5.4	5.5	5.8	6.2

*Source: drawn up by BGI Consulting on the basis of information published by Eurostat.*

This value should be converted into alternative social costs of labour, by eliminating distortions existing in the labour market. To this end, a conversion factor equal to a simple average of the conversion factor of a skilled workforce (0.991) and the conversion factor of unskilled workforce (0.907) is used<sup>6</sup>. The resulting estimate is EUR 5.8838 (= 6.2 \* (0.991 + 0.907) / 2).

Based on the predicted rate of increase in salaries<sup>7</sup>, this value was recalculated for 2015:

**Table 4. Recalculated Estimate of the Value of Time for 2015**

	2013	2014	2015
Value of the working time, EUR/h	5.8838		6,5553 [5.8838 * 2486.4 / 2231.7]
Average gross monthly earnings, LTL (predicted by the Ministry of Finance)	2231.7	2350.1	2486.4

*Source: drawn up by BGI Consulting on the basis of information of Eurostat and the Ministry of Finance of the Republic of Lithuania.*

**Therefore, with prices applicable in 2015, the value of working time is 6.5553 EUR/h.**

To determine the value of time of unemployed persons, the established practice can be employed and the value of working time can be considered two and a half times higher than the value of non-working time<sup>8</sup>. Thus, **the value of non-working time with prices applicable in 2015 is EUR 2.62 EUR/h.**

This estimate applies to **local and regional** visitors arriving by **buses** receiving lower income, compared to that of visitors who arrive by cars.

It is rather **usual** to consider that **the value of time** of visitors arriving by **cars** is **higher**, because not only do they spend more on transportation; normally, they earn more as well. Data about the average consumption

<sup>5</sup> <http://ec.europa.eu/eurostat/data/database>

<sup>6</sup> Values of conversion factors for 2015 are presented in the Methodology for Preparing Investment Projects for Funding from the European Union Structural Funds and/or the State Budget drawn up by the CPMA.

<sup>7</sup> Wages forecast is published by the Ministry of Finance of the Republic of Lithuania, see Projections of Lithuanian Economic Indicators ([http://www.finmin.lt/web/finmin/aktualus\\_duomenys/makroekonomika](http://www.finmin.lt/web/finmin/aktualus_duomenys/makroekonomika)).

<sup>8</sup> See, for example: Guidance Manual for Cost Benefit Analysis (CBAs) Appraisal in Malta. - May 2013.

expenditure in income quintiles published by the Statistics Department of Lithuania can be used to obtain at least approximate value of the necessary correction<sup>9</sup>. To obtain the value of the correction factor, the following calculations should be made (*Table 5*):

- Table “Average Consumption Expenditure in Income Quintiles” prepared by the Statistics Department of Lithuania presents data about monetary consumption expenditure and consumption expenditure in kind per each quintile. The data presented in the table were used to calculate the average consumption expenditure per one household member (A);
- The aforesaid table presents data about transport costs per one household member in each cost quintile group; consumption expenditure in each cost quintile group was assigned a certain weight depending on the transport costs in that quintile group, thereby calculating the weighted average of consumption expenditure (B);
- (B) was divided by (A), and the estimate of 1.19 was obtained.

**Table 5. Calculations of the Correction Factor**

Year	Average consumption expenditure per one household member per month, LTL	Average transport costs per one household member per month, LTL	Weight assigned to consumption expenditure in each quintile group, depending on transport costs in that quintile group [the value in the relevant box of the previous column is divided by the sum of values of all boxes in the column]	Weighted consumption expenditure in each cost quintile group, LTL [the value in the relevant box of the second column is multiplied by the value in the relevant box of the fourth column]
Quintile 1	474.3	38.5	0.088	41.51
Quintile 2	674.6	56.3	0.128	86.34
Quintile 3	789.1	74.6	0.170	133.82
Quintile 4	953.6	94.4	0.215	204.64
Quintile 5	1 379.0	176.1	0.400	552.04
	Average consumption expenditure per one household member (A) [average value of all values in the column]:			Weighted average of consumption expenditure (B) [sum of all values in the column]:
	854.1			1018.34
Correction factor (B/A)				1.19

Source: drawn up by BGI Consulting on the basis of information of the Statistics Department of Lithuania.

<sup>9</sup> Publication “Namų ūkių biudžetai / Household budgets 2012”.



The previously obtained value of time was multiplied by this correction factor and the estimate of non-working time of **3.12 EUR/h** was obtained (with prices that applied in 2015), applicable to persons travelling by **cars**. The higher estimate should also be applied to national visitors arriving by buses, who travel greater distances and, most likely, receive higher income. In view of the existing uncertainties, simple average of both estimates should apply to local visitors who arrive on foot.

### Instructions for the Update of the Estimate

It is recommended to update the estimates of benefit component on a yearly basis.

It is first necessary to update the value applicable to the first year of analysis, by recalculating it on the basis of the latest statistical data using the formula above. For example, if the analysis is carried out in 2016, the reference point is the estimate expressed using prices applicable in 2016.

Values applicable to the future years of the SNA analysis are calculated by increasing the values of the first year of the SNA analysis in proportion to the growth of actual GDP per capita (on the basis of forecasts by the International Monetary Fund<sup>10</sup>), as shown in the table below:

- the annual average growth rate is calculated on the basis of the data on the actual GDP per capita (LTL) published by the IMF, for example, in 2016, the growth rate is  $32631 / 31326 = 1.0417$  times;
- the forecast of the IMF does not cover the entire period of the economic analysis; therefore, in view of the existing uncertainties, the annual growth rate for the remaining period is calculated as the average growth rate of the annual GDP per capita for the last five years of the forecast. In 2019 (the last year of the forecast), compared with 2014, the actual GDP per capita (LTL) shall grow  $36908 / 30160 = 1.2237$  times; the average annual growth is  $1.2237^{(1/5)} = 1.0412$  times; this rate is attributed to all years falling outside the period of the forecast;
- The value applicable to the specific period of the analysis is calculated by multiplying the growth rate of the actual GDP per capita by the estimate for the previous year, for example, the estimate for 2016 is  $\text{EUR } 2.62 * 1.0417 = \text{EUR } 2.73$ , and the adjusted estimate is  $\text{EUR } 3.12 * 1.0417 = \text{EUR } 3.25$ .

**Table 6. Calculation of Estimates of the Value of Time for the Future Years**

Year	Actual GDP per capita, LTL (forecast by the IMF)	Actual growth of GDP per capita, times	Value of non-working time, EUR/h	Adjusted value of non-working time, EUR/h
2012	28074			
2013	29142	1.0380		
2014	30160	1.0349		
2015	31326	1.0387	2.62	3.12
2016	32631	1.0417	2.73	3.25
2017	34008	1.0422	2.84	3.38
2018	35424	1.0416	2.96	3.53
2019	36908	1.0419	3.09	3.67

<sup>10</sup> Source: <http://www.imf.org/external/ns/cs.aspx?id=28>, indicator "Gross domestic product per capita, constant prices (National currency)".

Year	Actual GDP per capita, LTL (forecast by the IMF)	Actual growth of GDP per capita, times	Value of non-working time, EUR/h	Adjusted value of non-working time, EUR/h
2020		1.0412	3.21	3.82
2021		1.0412	3.35	3.98
2022		1.0412	3.48	4.15
2023		1.0412	3.63	4.32
2024		1.0412	3.78	4.50
2025		1.0412	3.93	4.68
2026		1.0412	4.10	4.87
2027		1.0412	4.26	5.07
2028		1.0412	4.44	5.28
2029		1.0412	4.62	5.50
2030		1.0412	4.81	5.73
2031		1.0412	5.01	5.96
2032		1.0412	5.22	6.21
2033		1.0412	5.43	6.47
2034		1.0412	5.66	6.73
2035		1.0412	5.89	7.01
2036		1.0412	6.13	7.30
2037		1.0412	6.39	7.60
2038		1.0412	6.65	7.91
2039		1.0412	6.92	8.24
2040		1.0412	7.21	8.58

Source: drawn up by BGI Consulting.

## 2.2. Component of Willingness to Pay No. 2 (Value of Time Applicable to Non-residents of Lithuania)

The estimate of time costs applicable to the residents of Lithuania is not appropriate for the assessment of the willingness to pay of visitors arriving from abroad, because the value of time is based on the opportunity costs of labour, which are in the case of foreign residents different from the opportunity costs in case of the residents of Lithuania. Therefore, it is expedient to calculate the more appropriate value applicable to visitors arriving from abroad.

### Calculation Methodology, Data Source and Calculated Estimate

To calculate the value applicable to visitors arriving from abroad, it is necessary to identify countries, from which the majority of potential visitors arrive. According to the data of the Statistics Department of Lithuania (indicator “Annual Number of Travels of Visitor Flows | Thousands”), over a period from 2011 to 2013, the annual number of the arriving foreigners increased from 4,504.3 thousand to 5,263.5 thousand. About 85 percent of all foreigners arrive from 6 countries: 4 EU Member States (Estonia, Latvia, Poland and Germany), Belarus and Russia. In 2011–2013, the average of 51 percent of all foreigners arrived from the aforesaid 4 EU Member States, while the remaining 31 percent arrived from Belarus and Russia (taken together).

As it was mentioned above, cost-saving approach is normally applied to determine the value of working time. In case of the EU Member States, all the necessary statistical information on the labour costs used to calculate the value of time is available, while with Russia and Belarus, it is difficult to collect the statistics required for the calculations, including uncertainties associated with fluctuating exchange rates and high levels of inequality in the society of these countries in terms of income. Moreover, statistical data show that, even though visitors from Russia and Belarus accounted for about 34 percent of all single-day visitors in 2011–2013, they accounted for only 14 percent of those who arrived for the purposes of leisure, relaxation and holidays.

Therefore, it was decided to relate a typical visitor visiting the cultural heritage objects and using the cultural infrastructure with the 4 EU Member States above, accounting on average for as many as 51 percent of all arriving foreigners. The table below presents the distribution by country:

**Table 7. Arriving Foreigners, thousands**

	2011	2012	2013	Average share of each country
Single-day visitors <sup>11</sup>				
Estonia	203.1	240.1	221.3	
Latvia	1012.3	1091.6	1066.6	
Poland	582.3	566.3	511.6	
Germany	40.7	59.9	70	
Tourists <sup>12</sup>				
Estonia	53.5	54.1	55.6	
Latvia	178.6	190.1	198.8	
Poland	215.6	190.5	182.9	
Germany	151.3	161.7	166.3	
Single-day visitors and tourists	2437.4	2554.3	2473.1	
Estonia	256.6	294.2	276.9	<b>0.111</b>
Latvia	1190.9	1281.7	1265.4	<b>0.501</b>
Poland	797.9	756.8	694.5	<b>0.301</b>
Germany	192	221.6	236.3	<b>0.087</b>

*Source: drawn up by BGI Consulting on the basis of information of the Statistics Department of Lithuania.*

Labour cost levels (indicator code: lc\_lci\_lev), an indicator published in the Eurostat database<sup>13</sup>, can be used to calculate the value of working time. The total labour costs of one working hour in the group of economic activities “B\_TO\_S Industry, Construction and Services” by individual countries for 2013 are presented in the table below. To calculate the values of labour costs for 2015, the values for 2013 are increased in proportion to the change of salaries (to this end, indicator “7.4. Nominal compensation per employee: total

<sup>11</sup> Indicator “Number of Travels of the Arriving Single-day Visitors | thousands” published by the Statistics Department of Lithuania

<sup>12</sup> Indicator “Number of Travels of the Arriving Tourists | thousands” published by the Statistics Department of Lithuania

<sup>13</sup> <http://ec.europa.eu/eurostat/data/database>

economy"<sup>14</sup> published in the database of the Directorate General for Economic and Financial Affairs (AMECO)<sup>15</sup> of the European Commission can be used).

**Table 8. Calculation of Labour Costs of a Working Hour of the Arriving Foreigners**

	Total labour costs of one working hour (EUR), 2013	Nominal compensation per 1 employee (thousand EUR)			Total labour costs of one working hour (EUR), 2015
		2013	2015	Growth	
Estonia	9.0	16	17.7	1.1063	9.9563
Latvia	6.3	12.3	13.6	1.1057	6.9659
Poland	7.6	12.1	12.6	1.0413	7.9140
Germany	31.3	37.7	39.8	1.0557	33.0435

Source: drawn up by BGI Consulting on the basis of information of Eurostat and the Directorate General for Economic and Financial Affairs of the European Commission.

The calculated values should be converted into alternative social costs of labour, by eliminating the distortions existing in the labour market. In view of the fact that it is impossible to determine the conversion factor applicable to individual countries within the scope of this study, it is assumed that the distortions are similar to those existing in the case of Lithuania. Therefore, conversion factor equal to the simple average of the conversion factor of a skilled workforce (0.991) and the conversion factor of unskilled workforce (0.907) applicable to Lithuania is used<sup>16</sup>, or 0.949. Labour costs (EUR) of one working hour of the arriving foreigner with prices applicable in 2015 are calculated as the weighted average of values of individual countries for 2015 (taking shares of the foreigners arriving from each country as a reference weight).

**Table 9. Calculation of the Value of Time of the Arriving Foreigner**

	Total labour costs of one working hour (EUR). 2015	Conversion factor	Converted total labour costs of one working hour	Weight of individual country	Calculation of the weighted average
1	2	3	4	5	6 = (4) * (5)
Estonia	9.9563	0,949	9,4485	0,111	1,0470
Latvia	6.9659	0,949	6,6106	0,501	3,3098
Poland	7.9140	0,949	7,5104	0,301	2,2643
Germany	33.0435	0,949	31,3583	0,087	2,7290
<b>Labour costs (EUR) of one working hour of the arriving foreigner at prices applicable in 2015 (sum of values in column 6)</b>					<b>9.3500</b>

<sup>14</sup> Indicator code: HWCDW.

<sup>15</sup> [http://ec.europa.eu/economy\\_finance/ameco/user/serie/SelectSerie.cfm](http://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm)

<sup>16</sup> Values of conversion factors for 2015 are presented in the Methodology for Preparing Investment Projects for Funding from the European Union Structural Funds and/or the State Budget drawn up by the CPMA.

*Source: drawn up by BGI Consulting on the basis of information of Eurostat and the Directorate General for Economic and Financial Affairs of the European Commission.*

**Therefore, with prices applicable in 2015, the value of working time is 9.3500 EUR/h.**

To calculate the value of time for unemployed persons, the established practice can be employed and the value of working time can be considered two and a half times higher than the value of non-working time<sup>17</sup>. Therefore, **the value of non-working time, calculated using prices applicable in 2015, is 3.74 EUR/h.**

However, it can be considered that this value fails to adequately reflect the actual value of time, because persons travelling abroad not only spend more on transportation; they usually earn more as well. In case of Lithuanian visitors, the correction factor based on the total consumption expenditure of households and transport costs in individual income quintiles was used. To determine the correction factor applicable to a foreign visitor, indicator "S80/S20 income quintile share ratio"<sup>18</sup> that reflects the income ratio between the quintile of the highest income and that of the lowest income published by Eurostat can be used. Inequality is lower in the analyzed foreign countries: income in the quintile of the highest income and that of the lowest income differs by 5.64 times, compared with 6.1 times in the case of Lithuania (*Table 10*). Correction factor applicable to a foreign visitor is calculated by adjusting the correction factor applied to Lithuanian visitor (1.19) in proportion to the ratio of income inequality indicators:  $1.19 * 5.64 / 6.1 = 1.10$ .

**Table 10. Calculation of the Correction Factor applicable to a Foreign Visitor**

	Single-time visitors and tourists. share of individual countries	Indicator "Inequality of income distribution (income quintile share ratio)"
Estonia	0.111	5.5
Latvia	0.501	6.3
Poland	0.301	4.9
Germany	0.087	4.6
<b>Weighted average</b>		<b>5.64</b>
Lithuania		6.1
Correction factor applied to Lithuania		1.19
<b>Correction factor applicable to foreigners</b>		<b>1.10</b>

*Source: drawn up by BGI Consulting on the basis of information of Eurostat and the Statistics Department of Lithuania.*

The previously calculated estimate of the value of time is multiplied by the determined factor. **Accordingly, the final estimate of the value of time applicable to the foreign visitor is 4.12 EUR/h** at prices that applied in 2015.

<sup>17</sup> See, for example: Guidance Manual for Cost Benefit Analysis (CBAs) Appraisal in Malta. - May 2013.

<sup>18</sup> Eurostat table "S80/S20 income quintile share ratio by sex and selected age group (source: SILC) [ilc\_di11]"; indicator: "INDIC\_IL Inequality of income distribution (income quintile share ratio)"; by: AGE: Total; SEX: Total.

### Instructions for the Update of the Estimate

It is recommended to update the estimates of benefit component on a yearly basis.

It is first necessary to update the value applicable to the first year of analysis, by recalculating it on the basis of the latest statistical data using the formula above. For example, if the analysis is carried out in 2016, the reference point is the estimate expressed using prices applicable in 2016.

Values applicable to the future years of the SNA analysis period are calculated in view of the growth of the actual GDP per capita of the analyzed countries (on the basis of forecasts by the International Monetary Fund<sup>19</sup>). The forecast of the IMF does not cover the entire period of the economic analysis; therefore, in view of the existing uncertainties, the annual growth rate for the remaining period is calculated as the average growth rate of the annual GDP per capita for the last five years of the forecast (algorithm for the calculation of the average is discussed in detail in the paragraph discussing the estimate applicable to the residents of Lithuania).

**Table 11. Growth of the Actual GDP Per Capita**

	2014	2015	2016	2017	2018	2019	2020
Actual GDP per capita in the national currency							
Estonia	12861.85	13186.86	13647.9	14134.39	14643.96	15178.43	
Latvia	10598.12	10968.15	11373.65	11871.88	12374.35	12897.85	
Poland	35903.77	37092.09	38394.2	39728.34	41161.24	42676.03	
Germany	31102.56	31510.99	32060.62	32572.3	33033.36	33470.75	
Growth							
Estonia	1.0025	1.0253	1.0350	1.0356	1.0361	1.0365	1.0337
Latvia	1.0297	1.0349	1.0370	1.0438	1.0423	1.0423	1.0401
Poland	1.0324	1.0331	1.0351	1.0347	1.0361	1.0368	1.0352
Germany	1.0122	1.0131	1.0174	1.0160	1.0142	1.0132	1.0148

*Source: drawn up by BGI Consulting on the basis of information of the Statistics Department of Lithuania.*

The converted labour costs of a working hour recalculated for the current year for individual countries presented in Table 9 were increased on the basis of the calculated growth rate. The value of working time of the arriving foreigner was calculated as the weighted average (taking shares of the foreigners arriving from each country as a reference weight). The value of non-working time was obtained by dividing the value of working time by 2.5. The final (corrected) value of non-working time obtained using the correction factor reflects the fact that those who travel more earn more.

<sup>19</sup> Source: <http://www.imf.org/external/ns/cs.aspx?id=28>, indicator "Gross domestic product per capita, constant prices (National currency)".

**Table 12. Calculation of the Value of Time of the Arriving Foreigner for Future Years**

	Converted labour costs, EUR				Value of working time, EUR	Value of non-working time, EUR	Corrected value of non-working time, EUR
	Estonia	Latvia	Poland	Germany			
2015	9.4485	6.6106	7.5104	31.3583	9.3500	3.74	4.12
2016	9.7788	6.8550	7.7741	31.9053	9.6361	3.85	4.24
2017	10.1274	7.1553	8.0442	32.4145	9.9508	3.98	4.38
2018	10.4925	7.4581	8.3344	32.8733	10.2703	4.11	4.52
2019	10.8755	7.7736	8.6411	33.3086	10.6010	4.24	4.67
2020	11.2417	8.0850	8.9449	33.8010	10.9320	4.37	4.81
2021	11.6203	8.4089	9.2595	34.3007	11.2744	4.51	4.96
2022	12.0116	8.7458	9.5850	34.8079	11.6287	4.65	5.12
2023	12.4161	9.0961	9.9221	35.3225	11.9954	4.8	5.28
2024	12.8343	9.4605	10.2710	35.8447	12.3748	4.95	5.45
2025	13.2665	9.8394	10.6321	36.3747	12.7674	5.11	5.62
2026	13.7132	10.2336	11.0060	36.9124	13.1738	5.27	5.80
2027	14.1751	10.6435	11.3930	37.4582	13.5944	5.44	5.99
2028	14.6524	11.0699	11.7936	38.0120	14.0297	5.61	6.17
2029	15.1459	11.5133	12.2083	38.5740	14.4803	5.79	6.37
2030	15.6559	11.9745	12.6376	39.1443	14.9468	5.98	6.58
2031	16.1832	12.4542	13.0820	39.7230	15.4297	6.17	6.79
2032	16.7282	12.9531	13.5420	40.3103	15.9297	6.37	7.01
2033	17.2915	13.4720	14.0182	40.9063	16.4474	6.58	7.24
2034	17.8738	14.0117	14.5111	41.5110	16.9833	6.79	7.47
2035	18.4758	14.5729	15.0213	42.1248	17.5383	7.02	7.73
2036	19.0980	15.1567	15.5495	42.7476	18.1130	7.25	7.98
2037	19.7411	15.7639	16.0963	43.3796	18.7081	7.48	8.23
2038	20.4059	16.3953	16.6623	44.0209	19.3243	7.73	8.51
2039	21.0931	17.0521	17.2482	44.6717	19.9626	7.99	8.79
2040	21.8035	17.7352	17.8547	45.3322	20.6236	8.25	9.08

Source: drawn up by BGI Consulting.

### 2.3. Component of Willingness to Pay No. 3 (Vehicle Operating Costs)

Vehicle operating costs are yet another important component of travel costs. These are attributed to monetary costs.

#### Calculation Methodology, Data Source and Calculated Estimate

Vehicle operating costs (VOC) are defined as costs incurred by the vehicle operator while operating the vehicle.

A study by HEATCO<sup>20</sup> defines the VOC as costs “comprising the standing costs, which are invariant with distance, and operating costs, which vary with distance, of the transport vehicle”. The same study recommends considering several components, when calculating the VOC:

- Standing cost components: depreciation (time dependent share), interest on capital, repair and maintenance costs, material costs, insurance, overheads, administration;
- Operating cost components: depreciation (distance related share), fuel and lubricants, maintenance costs (distance related share).
- Cruising speed in the relevant section(s) of road, which, in turn, depends on a number of factors, including traffic;
- Condition of the road surface, which is usually measured by the International Roughness Index (IRI);
- Other road characteristics (longitudinal gradient, etc.).

According to the data presented by the State Enterprise Road and Transport Research Institute, the value of the vehicle operating costs (VOC) applicable to cars in Lithuania (with prices of 2013) is 0.2404 EUR/km<sup>21</sup> (including fees and charges).

It is likely that the growth of the VOC will be close to inflation. This can be expected due to gradual renewal of the fleet and improvement of vehicle engines. Thus, the value of the VOC with prices of 2015 can be calculated by increasing the value calculated for 2013 in proportion to the growth of average consumer prices (on the basis of the statistics published by the International Monetary Fund<sup>22</sup>):

**Table 13. Recalculation of the Value of the VOC to Obtain the Value for 2015**

	2013	2014	2015
Growth of average consumer prices	139.747	140.114	141.93
VOC, EUR/km	0.2404	0.2410	0.2448 [= 0.2404 * 141.93 / 139.747]

*Source: drawn up by BGI Consulting on the basis of data of the State Enterprise Road and Transport Research Institute and the IMF.*

Therefore, the **value of the VOC applicable to cars (with prices of 2015) is 0.2448 EUR/km.**

To determine the VOC per one visitor, vehicle operating costs should be divided by the average number of persons travelling by the car. Even though the average number of persons travelling by car in Lithuania is

<sup>20</sup> The study by HEATCO offers harmonized guidelines for project assessment for trans-national projects in Europe. This includes the provision of a consistent framework for monetary valuation based on the principles of welfare economics, contributing in the long run to consistency with transport costing. These guidelines were developed within the EC funded research project HEATCO, based on latest research results on the different aspects of transport project appraisal and on an analysis of existing practice in the EU countries and Switzerland. See <http://heatco.ier.uni-stuttgart.de/>.

<sup>21</sup> The value presented is before indirect taxes, because in this case, the VOC reflects the willingness to pay.

<sup>22</sup> Source: <http://www.imf.org/external/ns/cs.aspx?id=28> (indicator: Inflation, average consumer prices).



1.2 passengers per car<sup>23</sup>, Section III “Instructions for the Application of Estimates” proposes estimates of the number of persons travelling by car that better correspond to the specific features of the analyzed field.

### Instructions for the Update of the Estimate

Growth of the VOC is likely to be close to inflation. This can be expected due to gradual renewal of the fleet and improvement of vehicle engines. Therefore, the same VOC value is used throughout the SNA analysis period; however, it has to be updated over time. For example, if the analysis is carried out in 2016, the reference point should be the estimate expressed in prices of 2016.

It is recommended to update the VOC value on a yearly basis. The new value is calculated by increasing the value calculated for 2013 in proportion to the growth of average consumer prices (on the basis of the statistics published by the International Monetary Fund<sup>24</sup>), as demonstrated above.

## III. Instructions for the Application of Estimates

When assessing the visitors’ willingness to pay using the travel cost method, it is common to apply the **zonal travel cost method**. The term “zonal” indicates the level of the analysis focusing on zones, from which visitors arrive to visit the object.

Like with other cost and benefit analyses, the application of the determined estimates using the zonal travel cost method requires sufficiently reasoned demand forecast. In this case, the forecast should include:

- distribution of the visitors into residents and non-residents of Lithuania;
- distribution of the visitors by zones, from which they arrive (i.e. distribution by the travel distance);
- distribution of the visitors by the type of means of transport that they use to arrive to the object as well as the average number of visitors arriving by a single car;
- distribution of the visitors by the number of destinations and the share covered by the analyzed object within the scope of the visitor’s travel.

### 3.1. Calculating the Estimates of Willingness to Pay Applicable to Individual Groups of Visitors

To facilitate the calculation of return and limit the opportunities for project promoters to manipulate the results of such calculations, the Ministry of Culture asked to **set up recommendatory** estimates of **travel distance and travel time** for the visits to the object.

This would allow suggesting **recommendatory** values reflecting the **benefit of a 1-hour visit** for:

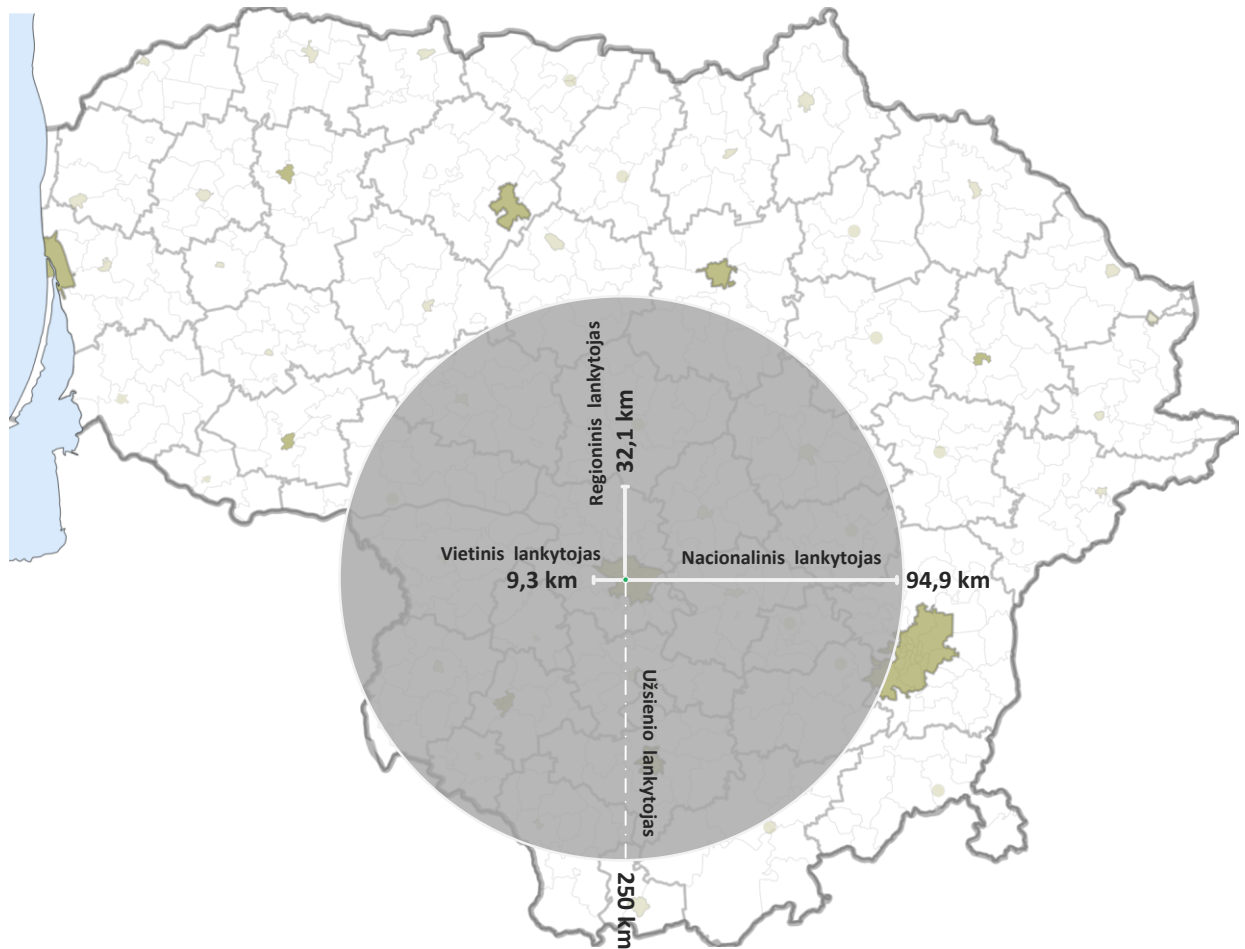
- one visitor (reference point: boundaries of a municipality);

<sup>23</sup> In accordance with the data of the State Enterprise Road and Transport Research Institute.

<sup>24</sup> Source: <http://www.imf.org/external/ns/cs.aspx?id=28> (indicator: Inflation, average consumer prices).

- visitor from the remaining part of the region (reference point: boundaries of a district);
- visitor from the remaining part of Lithuania;
- visitor from abroad.

The group of experts prepared a behaviour model and found that a local visitor travels to the analyzed object of visit 9.3 km, regional visitor – 32.1 km, national visitor – 94.9 km, and foreign visitor – 250 km (Figure 1).



Vietinis lankytojas	Local visitor
Regioninis lankytojas	Regional visitor
Nacionalinis lankytojas	National visitor
Užsienio lankytojas	Foreign visitor

**Figure 1. Distance travelled by individual groups of visitors to the object of visit**

*Source: drawn up by BGI Consulting.*

As the travel distance increases, the number of destinations increases as well; therefore, only part of travel budget and time costs is attributed to the willingness to pay for a visit to the object. Below are the

aggregated data describing the visitors of the analyzed object of visit (detailed assumptions are presented in *Annexes 1 and 2*).

**Table 14. Visitors of the Cultural Object Arriving by Car**

Group of visitors	1-hour visit to the analyzed object		2-hour visit to the analyzed object	
	Total time attributable to the object (travel and visit time), h	VOC value attributable to the object, multiplied by the unit estimate of the VOC	Total time attributable to the object (travel and visit time), h	VOC value attributable to the object, multiplied by the unit estimate of the VOC
Local	1.67	16.12	2.67	16.12
Regional	1.89	24.61	3.11	30.76
National	2.50	41.62	4.00	55.50
Foreign	3.50	73.10	5.75	109.65

Source: drawn up by BGI Consulting.

**Table 15. Visitors of the Cultural Object Arriving by Bus**

Group of visitors	1-hour visit to the analyzed object		2-hour visit to the analyzed object	
	Total time attributable to the object (travel and visit time), h	Transport costs attributable to the object*	Total time attributable to the object (travel and visit time), h	Transport costs attributable to the object*
Local	2.67	1.70	3.67	1.70
Regional	2.44	3.40	3.81	4.25
National	3.08	6.80	4.78	9.07
Foreign	4.00	13.33	6.50	20.00

Source: drawn up by BGI Consulting.

\*In case of a foreign visitor, part of the accommodation costs is included here as well.

**Table 16. Visitors of the Cultural Object Arriving on Foot**

Group of visitors	Total time attributable to the object (travel and visit time), h	
	1-hour visit to the analyzed object	2-hour visit to the analyzed object
Local	1.80	2.80

Source: drawn up by BGI Consulting.

The willingness of individual visitors to pay for a visit was calculated on the basis of these data and previously calculated unit estimates.

For example, in case of a national visitor arriving by car and spending 1 hour in the object, the total travel and visit time attributable to the object is 2.5 h (of which 1 h is for the visit and 1.5 h for the travel). Conditional distance travelled of 41.62 km is also attributed, multiplied by the VOC estimate.

Therefore, time costs are  $2.5 \text{ h} * 3.12 \text{ EUR/h} = \text{EUR } 7.7945$ .

While the attributable vehicle operating costs are  $41.62 \text{ km} * 0.2448 \text{ EUR/km} = \text{EUR } 10.1885$ .

Thus, such visitor's willingness to pay for the visit is EUR 17.98.

*Source: drawn up by BGI Consulting.*

Below is a table presenting estimates applicable to individual groups of visitors. For the purposes of simplification, it is suggested that the project promoters refrain from dividing the visitors into those travelling by car and those travelling by bus, i.e. values corresponding to the average of both values should be used (values applicable to individual types of means of transport are presented in *Annex 3*). Visitors travelling on foot are additionally distinguished, since they may be relevant for objects focused on local visitors.

**Table 17. Willingness to Pay of Individual Groups of Visitors for a 1-hour Visit to the Analyzed Object**

	Local visitor	Regional visitor	National visitor	Foreign visitor	Local visitor arriving on foot
2015	8.91	10.86	17.20	31.05	5.16
2016	9.17	11.11	17.56	31.50	5.38
2017	9.44	11.38	17.94	32.04	5.61
2018	9.71	11.66	18.34	32.58	5.84
2019	10.00	11.95	18.75	33.11	6.08
2020	10.30	12.25	19.17	33.65	6.33
2021	10.60	12.56	19.61	34.23	6.60
2022	10.92	12.89	20.07	34.80	6.87
2023	11.26	13.22	20.55	35.42	7.15
2024	11.61	13.57	21.04	36.04	7.45
2025	11.97	13.94	21.56	36.70	7.75
2026	12.34	14.32	22.10	37.36	8.07
2027	12.74	14.72	22.66	38.06	8.40
2028	13.15	15.13	23.24	38.77	8.75
2029	13.57	15.56	23.85	39.51	9.11
2030	14.01	16.00	24.48	40.29	9.49
2031	14.47	16.47	25.14	41.08	9.88
2032	14.95	16.95	25.83	41.90	10.28
2033	15.45	17.46	26.54	42.77	10.71

	Local visitor	Regional visitor	National visitor	Foreign visitor	Local visitor arriving on foot
2034	15.98	17.98	27.29	43.64	11.15
2035	16.52	18.53	28.06	44.58	11.61
2036	17.08	19.10	28.87	45.53	12.09
2037	17.67	19.69	29.71	46.48	12.59
2038	18.28	20.31	30.58	47.51	13.10
2039	18.92	20.95	31.49	48.59	13.64
2040	19.58	21.62	32.44	49.66	14.21

Source: drawn up by BGI Consulting.

1-hour visit to the analyzed object is used as a reference point. However, if a longer or shorter time of visit is planned, the willingness to pay should be corrected using the values presented below for every additional hour of visit (*Table 18*). These correction values were calculated as a difference between the willingness to pay of a visitor who spends 2 hours and a visitor who spends 1 hour in the object.

**Table 18. Correction (EUR) of the Willingness to Pay, by Correcting the 1-hour Visit Time by 1 h**

	Local visitor	Regional visitor	National visitor	Foreign visitor	Local visitor arriving on foot
2015	2.87	4.87	7.81	17.58	2.87
2016	2.99	5.02	8.02	17.87	2.99
2017	3.11	5.18	8.24	18.21	3.11
2018	3.24	5.35	8.46	18.55	3.24
2019	3.38	5.52	8.70	18.89	3.38
2020	3.52	5.70	8.94	19.23	3.52
2021	3.66	5.89	9.19	19.59	3.66
2022	3.82	6.08	9.45	19.96	3.82
2023	3.97	6.29	9.73	20.35	3.97
2024	4.14	6.50	10.01	20.74	4.14
2025	4.31	6.71	10.31	21.16	4.31
2026	4.48	6.94	10.62	21.58	4.48
2027	4.67	7.18	10.94	22.03	4.67
2028	4.86	7.43	11.27	22.47	4.86
2029	5.06	7.69	11.62	22.94	5.06
2030	5.27	7.95	11.98	23.44	5.27
2031	5.49	8.23	12.36	23.93	5.49
2032	5.71	8.52	12.75	24.46	5.71
2033	5.95	8.83	13.16	25.01	5.95

	Local visitor	Regional visitor	National visitor	Foreign visitor	Local visitor arriving on foot
2034	6.19	9.14	13.58	25.55	6.19
2035	6.45	9.47	14.03	26.16	6.45
2036	6.72	9.81	14.49	26.76	6.72
2037	6.99	10.17	14.97	27.36	6.99
2038	7.28	10.54	15.47	28.01	7.28
2039	7.58	10.92	15.99	28.69	7.58
2040	7.89	11.33	16.53	29.37	7.89

Source: drawn up by BGI Consulting.

### 3.2. Updating the Estimates of Willingness to Pay Applicable to Individual Groups of Visitors

The estimates of willingness to pay applicable to individual groups of visitors should be updated after updating the estimates of the value of time and VOC.

### 3.3. Practical Example

An example could be used to demonstrate the application of the determined estimates of willingness to pay. The project is used to invest in the modernization of an infrastructure of a national concert establishment. Project costs are EUR 2,000,000 excluding VAT (fiscal distortions such as VAT should be eliminated from the economic analysis). When carrying out the economic analysis, investment and operating costs of the project must be converted into socio-economic value (i.e. economic prices)<sup>25</sup>. Let us suppose that after applying conversion factors to individual investment items, the economic value of investment of EUR 1,950,000 was obtained.

The implementation of the project, compared to the current “proceed as usual” situation, will require additional operating costs: in the sixth year of analysis, the economic<sup>26</sup> value of such costs will reach EUR 13,455.

In the sixth year of analysis, additional visitors attracted due to the modernization of the infrastructure will increase the income of the concert establishment by EUR 95,025 per year.

The number of additionally attracted visitors in the sixth year of analysis will reach 12,838 visitors; in view of the importance of the concert establishment, it is expected that 30 percent of the visitors will not be locals (15 percent of the visitors – regional, 10 percent – national, and 5 percent – foreign).

<sup>25</sup> Such conversion is performed using conversion factors presented in the Methodology for Preparing Investment Projects for Funding from the European Union Structural Funds and/or the State Budget of the State Enterprise Central Project Management Agency.

<sup>26</sup> i.e. the amount of costs converted into economic prices using conversion factors.

Output data of the analysis used in the example are summarized in the table below.

**Table 19. Output Data of the Analysis used in the Example**

	2015	2016	2017	2018	2019	2020	2021
Project investment	1 950 000	0	0	0	0	0	0
Additional operating costs	0	11 505	11 993	12 578	13 163	13 455	13 455
<b>TOTAL ADDITIONAL COSTS</b>	<b>1 950 000</b>	<b>11 505</b>	<b>11 993</b>	<b>12 578</b>	<b>13 163</b>	<b>13 455</b>	<b>13 455</b>
Additional income from the sale of tickets		15 405	30 810	46 215	61 620	77 025	77 025
Additional income from rent		9 000	12 000	15 000	18 000	18 000	18 000
<b>TOTAL ADDITIONAL INCOME</b>	<b>0</b>	<b>24 405</b>	<b>42 810</b>	<b>61 215</b>	<b>79 620</b>	<b>95 025</b>	<b>95 025</b>
<b>NUMBER OF ADDITIONAL VISITORS</b>		<b>2 568</b>	<b>5 135</b>	<b>7 703</b>	<b>10 270</b>	<b>12 838</b>	<b>12 838</b>
Local visitors		1 797	3 595	5 392	7 189	8 986	8 986
Regional visitors		385	770	1 155	1 541	1 926	1 926
National visitors		257	514	770	1 027	1 284	1 284
Foreign visitors		128	257	385	514	642	642

*Continued table*

	2022	2023	2024	2025	2026	2027	2028	2029
Project investment	0	0	0	0	0	0	0	0
Additional operating costs	13 455	13 455	13 455	13 455	13 455	13 455	13 455	13 455
<b>TOTAL ADDITIONAL COSTS</b>	<b>13 455</b>	<b>13 455</b>	<b>13 455</b>	<b>13 455</b>	<b>13 455</b>	<b>13 455</b>	<b>13 455</b>	<b>13 455</b>
Additional income from the sale of tickets	77 025	77 025	77 025	77 025	77 025	77 025	77 025	77 025
Additional income from rent	18 000	18 000	18 000	18 000	18 000	18 000	18 000	18 000
<b>TOTAL ADDITIONAL INCOME</b>	<b>95 025</b>	<b>95 025</b>	<b>95 025</b>	<b>95 025</b>	<b>95 025</b>	<b>95 025</b>	<b>95 025</b>	<b>95 025</b>
<b>NUMBER OF ADDITIONAL VISITORS</b>	<b>12 838</b>	<b>12 838</b>	<b>12 838</b>	<b>12 838</b>	<b>12 838</b>	<b>12 838</b>	<b>12 838</b>	<b>12 838</b>
Local visitors	8 986	8 986	8 986	8 986	8 986	8 986	8 986	8 986
Regional visitors	1 926	1 926	1 926	1 926	1 926	1 926	1 926	1 926
National visitors	1 284	1 284	1 284	1 284	1 284	1 284	1 284	1 284
Foreign visitors	642	642	642	642	642	642	642	642

Income from the sale of tickets does not properly reflect the benefit of the project to the society; however, it is one of the components of the visitors' willingness to pay for a visit. Values of the willingness to pay suggested in the methodology for individual groups of visitors (which do not include the price of the ticket) should be added to this component. Below are the calculated values of the willingness to pay for the visit.

**Table 20. Willingness to Pay for the Visit of Additional Visitors (Excluding the Ticket Price Component)**

	2015	2016	2017	2018	2019	2020	2021	2022
<b>Value of the willingness to pay per 1 visitor for a 2-hour visit, EUR</b>								
Local visitors	11.78	12.16	12.55	12.96	13.38	13.81	14.27	14.74
Regional visitors	15.73	16.13	16.57	17.01	17.48	17.96	18.45	18.97
National visitors	25.01	25.58	26.18	26.80	27.45	28.11	28.80	29.52
Foreign visitors	48.63	49.37	50.25	51.12	52.00	52.88	53.82	54.76





	2022	2023	2024	2025	2026	2027	2028	2029
TOTAL ADDITIONAL COSTS	13 455	13 455	13 455	13 455	13 455	13 455	13 455	13 455
Additional income from the sale of tickets	77 025	77 025	77 025	77 025	77 025	77 025	77 025	77 025
Additional income from rent	18 000	18 000	18 000	18 000	18 000	18 000	18 000	18 000
Willingness to pay (excluding income from the sale of tickets)	242 035	249 097	256 424	264 070	272 002	280 276	288 860	297 811
Local visitors	132 453	136 866	141 461	146 245	151 226	156 413	161 813	167 436
Regional visitors	36 529	37 567	38 648	39 773	40 945	42 165	43 435	44 757
National visitors	37 901	38 864	39 866	40 910	41 997	43 128	44 306	45 533
Foreign visitors	35 152	35 801	36 450	37 142	37 834	38 570	39 305	40 084
TOTAL SOCIO-ECONOMIC BENEFIT	337 060	344 122	351 449	359 095	367 027	375 301	383 885	392 836

### 3.4. Recommendations for Avoiding Over-valuation of Costs and Benefits in the Calculations

To avoid over-valuation of costs and benefits in the calculations, it is necessary to keep in mind that in the financial analysis, financial benefit of the project to the investor is reflected by financial income generated by the object, for example, income from the sale of tickets. In the economic analysis, this financial income should be replaced with the society's willingness to pay for using the public good, which better reflects the increase of the welfare of the general public. Moreover, in view of the applied method, such financial income as income from the sale of tickets will be reflected by the estimated willingness to pay. Therefore, the item covering such financial income should be eliminated from the economic analysis and replaced with the value of the willingness to pay (as an alternative, the item reflecting income from the sale of tickets can be presented, while additionally including items reflecting the remaining components of the willingness to pay).

Part of the financial income can be received from other than cultural activities, for example, rent of premises. After assessing the occurring uncertainties and lack of information, it has been suggested to assume that such income from rent corresponds to the society's willingness to pay for the increased availability of the premises.

## Annexes

## Annex 1. Assumptions (Average Time of Visit – 1 h)

Table 1. Visitors of the Cultural Object Arriving by Car

Group of visitors	Distance travelled by car, km	Travel time, h	Travel time, min	Number of destinations (where the object is one of them)	Travel time attributable to the object, h	Visit time of the object	Total time attributable to the object	Number of passengers per car	VOC correction (speed)	VOC attributable to the object
1	2	3	4	5	6 (3) / (5)	7	8 (6)+(7)	9	10	11 (2) / ((5) * (9)) * (10)
Local	18.6	0.67	40.0	1	0.67	1.00	1.67	1.5	1.30	16.12
Regional	64.2	1.33	80.0	1.5	0.89	1.00	1.89	2	1.15	24.61
National	189.8	3.00	180.0	2.0	1.50	1.00	2.50	2.28	1.00	41.62
Foreign	500	7.50	450.0	3.0	2.50	1.00	3.50	2.28	1.00	73.10

Source: drawn up by BGI Consulting.

**Table 2. Visitors of the Cultural Object Arriving by Bus**

Group of visitors	Distance travelled by bus, km	Travel time, h	Travel time, min	Number of destinations (where the object is one of them)	Travel time attributable to the object, h	Visit time of the object	Total time attributable to the object	Ticket (including the attributable share of the accommodation price), EUR	Ticket price attributable to the object, EUR
1	2	3	4	5	6 (3) / (5)	7	8 (6)+(7)	9	10 (9) / (5)
Local	18.6	1.67	100	1	1.67	1.00	2.67	1.70	1.70
Regional	64.2	2.17	130	1.5	1.44	1.00	2.44	5.10	3.40
National	189.8	4.17	250	2.0	2.08	1.00	3.08	13.60	6.80
Foreign	500.0	9.00	540	3.0	3.00	1.00	4.00	40.00	13.33

Source: drawn up by BGI Consulting.

**Table 3. Visitors of the Cultural Object Arriving on Foot**

Group of visitors	Distance travelled, km	Travel time, h	Travel time, min	Number of destinations (where the object is one of them)	Travel time attributable to the object, h	Visit time of the object	Total time attributable to the object
1	2	3	4	5	6 (3) / (5)	7	8 (6)+(7)
Local	4	0.80	48	1	0.80	1.00	1.80

Source: drawn up by BGI Consulting.

## Annex 2. Assumptions (Average Time of Visit – 2 h)

Table 1. Visitors of the Cultural Object Arriving by Car

Group of visitors	Distance travelled by car, km	Travel time, h	Travel time, min	Number of destinations (where the object is one of them)	Travel time attributable to the object, h	Visit time of the object	Total time attributable to the object	Number of passengers per car	VOC correction (speed)	VOC attributable to the object
1	2	3	4	5	6 (3) / (5)	7	8 (6)+(7)	9	10	11 (2) / ((5) * (9)) * (10)
Local	18.6	0.67	40.0	1	0.67	2.00	2.67	1.5	1.30	16.12
Regional	64.2	1.33	80.0	1.2	1.11	2.00	3.11	2	1.15	30.76
National	189.8	3.00	180.0	1.5	2.00	2.00	4.00	2.28	1.00	55.50
Foreign	500	7.50	450.0	2.0	3.75	2.00	5.75	2.28	1.00	109.65

Source: drawn up by BGI Consulting.

Table 2. Visitors of the Cultural Object Arriving by Bus

Group of visitors	Distance travelled by bus, km	Travel time, h	Travel time, min	Number of destinations (where the object is one of them)	Travel time attributable to the object, h	Visit time of the object	Total time attributable to the object	Ticket (including the attributable share of the accommodation price), EUR	Ticket price attributable to the object, EUR
1	2	3	4	5	6 (3) / (5)	7	8 (6)+(7)	9	10 (9) / (5)
Local	18.6	1.67	100	1	1.67	2.00	3.67	1.70	1.70

Group of visitors	Distance travelled by bus, km	Travel time, h	Travel time, min	Number of destinations (where the object is one of them)	Travel time attributable to the object, h	Visit time of the object	Total time attributable to the object	Ticket (including the attributable share of the accommodation price), EUR	Ticket price attributable to the object, EUR
1	2	3	4	5	6 (3) / (5)	7	8 (6)+(7)	9	10 (9) / (5)
Regional	64.2	2.17	130	1.2	1.81	2.00	3.81	5.10	4.25
National	189.8	4.17	250	1.5	2.78	2.00	4.78	13.60	9.07
Foreign	500.0	9.00	540	2.0	4.50	2.00	6.50	40.00	20.00

Šaltinis: sudaryta BGI Consulting.

**Table 3. Visitors of the Cultural Object Arriving on Foot**

Group of visitors	Distance travelled, km	Travel time, h	Travel time, min	Number of destinations (where the object is one of them)	Travel time attributable to the object, h	Visit time of the object	Total time attributable to the object
1	2	3	4	5	6 (3) / (5)	7	8 (6)+(7)
Local	4	0.80	48	1	0.80	2.00	2.80

Source: drawn up by BGI Consulting.

## Annex 3. Willingness to Pay for the Visit of Individual Groups of Visitors

Table 1. Willingness to Pay for 1-hour Visit to the Analyzed Object of Individual Groups of Visitors

	Travelling by car				Travelling by bus				Travelling on foot
	Local visitor	Regional visitor	National visitor	Foreign visitor	Local visitor	Regional visitor	National visitor	Foreign visitor	Local visitor
2015	9.14	11.91	17.98	32.30	8.69	9.80	16.41	29.80	5.16
2016	9.36	12.16	18.31	32.72	8.98	10.07	16.81	30.28	5.38
2017	9.59	12.42	18.65	33.22	9.28	10.35	17.24	30.85	5.61
2018	9.82	12.68	19.00	33.72	9.60	10.64	17.67	31.43	5.84
2019	10.07	12.96	19.37	34.23	9.93	10.95	18.13	32.00	6.08
2020	10.32	13.25	19.75	34.73	10.27	11.26	18.59	32.57	6.33
2021	10.58	13.55	20.14	35.27	10.62	11.58	19.08	33.19	6.60
2022	10.86	13.86	20.55	35.80	10.99	11.92	19.58	33.80	6.87
2023	11.14	14.18	20.98	36.38	11.37	12.27	20.11	34.46	7.15
2024	11.44	14.51	21.43	36.96	11.77	12.63	20.66	35.12	7.45
2025	11.75	14.86	21.89	37.58	12.19	13.01	21.23	35.83	7.75
2026	12.07	15.23	22.37	38.19	12.62	13.41	21.83	36.53	8.07
2027	12.40	15.61	22.87	38.85	13.07	13.82	22.45	37.28	8.40
2028	12.75	16.00	23.40	39.50	13.54	14.25	23.09	38.03	8.75
2029	13.11	16.41	23.94	40.20	14.03	14.70	23.76	38.82	9.11
2030	13.49	16.84	24.51	40.93	14.54	15.17	24.46	39.66	9.49
2031	13.89	17.29	25.10	41.66	15.06	15.65	25.19	40.49	9.88
2032	14.30	17.75	25.71	42.43	15.61	16.16	25.95	41.37	10.28
2033	14.72	18.24	26.35	43.24	16.19	16.68	26.73	42.30	10.71
2034	15.17	18.74	27.02	44.05	16.79	17.23	27.56	43.22	11.15
2035	15.63	19.26	27.71	44.93	17.41	17.80	28.41	44.24	11.61
2036	16.11	19.81	28.43	45.82	18.05	18.39	29.30	45.25	12.09
2037	16.61	20.38	29.19	46.70	18.73	19.01	30.23	46.26	12.59
2038	17.13	20.97	29.97	47.67	19.43	19.65	31.20	47.36	13.10
2039	17.68	21.58	30.78	48.67	20.16	20.32	32.20	48.51	13.64
2040	18.24	22.23	31.63	49.67	20.92	21.02	33.25	49.65	14.21

Source: drawn up by BGI Consulting.

Table 2. Willingness to Pay for 2-hour Visit to the Analyzed Object of Individual Groups of Visitors

	Travelling by car				Travelling by bus				Travelling on foot
	Local visitor	Regional visitor	National visitor	Foreign visitor	Local visitor	Regional visitor	National visitor	Foreign visitor	Local visitor
2015	12.26	17.23	26.06	50.51	11.31	14.22	23.96	46.75	8.03
2016	12.61	17.63	26.58	51.20	11.71	14.64	24.58	47.54	8.37
2017	12.97	18.06	27.12	52.03	12.13	15.07	25.24	48.47	8.72
2018	13.35	18.50	27.69	52.85	12.56	15.52	25.91	49.40	9.08
2019	13.74	18.96	28.28	53.67	13.02	16.00	26.62	50.33	9.46
2020	14.14	19.43	28.88	54.49	13.48	16.48	27.34	51.26	9.85
2021	14.57	19.92	29.51	55.38	13.97	16.99	28.09	52.26	10.26
2022	15.00	20.43	30.17	56.27	14.48	17.51	28.88	53.26	10.68
2023	15.46	20.96	30.85	57.21	15.00	18.06	29.69	54.34	11.12
2024	15.93	21.52	31.57	58.16	15.55	18.63	30.54	55.41	11.58
2025	16.43	22.09	32.31	59.18	16.12	19.22	31.43	56.55	12.06
2026	16.94	22.69	33.08	60.19	16.72	19.83	32.35	57.70	12.56
2027	17.48	23.32	33.88	61.26	17.33	20.48	33.31	58.91	13.07
2028	18.03	23.97	34.72	62.34	17.98	21.15	34.31	60.13	13.61
2029	18.62	24.64	35.59	63.48	18.65	21.84	35.35	61.42	14.17
2030	19.22	25.35	36.50	64.68	19.35	22.57	36.43	62.78	14.76
2031	19.85	26.08	37.44	65.88	20.08	23.32	37.56	64.14	15.37
2032	20.50	26.85	38.42	67.15	20.83	24.11	38.73	65.57	16.00
2033	21.19	27.64	39.45	68.48	21.62	24.93	39.96	67.07	16.66
2034	21.90	28.47	40.51	69.81	22.44	25.78	41.23	68.57	17.34
2035	22.64	29.34	41.62	71.26	23.30	26.67	42.56	70.22	18.06
2036	23.41	30.24	42.78	72.72	24.19	27.59	43.94	71.86	18.80
2037	24.21	31.17	43.98	74.17	25.11	28.55	45.37	73.51	19.58
2038	25.04	32.15	45.23	75.76	26.08	29.55	46.87	75.30	20.39
2039	25.91	33.16	46.54	77.40	27.08	30.59	48.43	77.16	21.23
2040	26.82	34.22	47.89	79.05	28.13	31.68	50.05	79.02	22.10

Source: drawn up by BGI Consulting.