



Taller 2

How will Cala Millor be affected by climate change?

[The Socioeconomic Dimension]

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How will Cala Millor be affected by climate change?

[The Socioeconomic Dimension]

- 1. Total economic value**
- 2. The effect of climate change**
- 3. Conclusion**

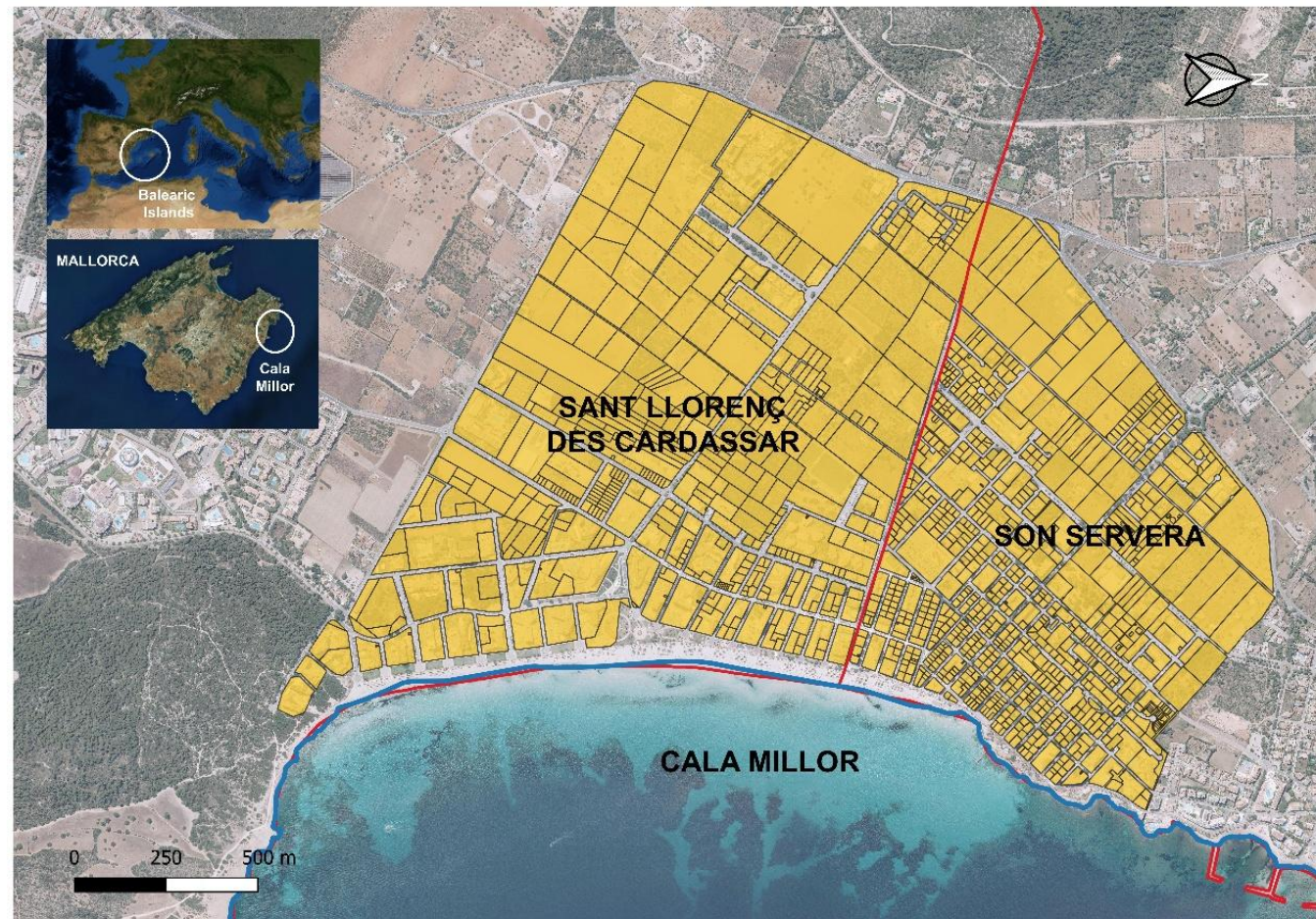
[The Socioeconomic Dimension]

1. Total economic value

Cadastral plots (14/20-digit codes) in Cala Millor

Cala Millor Case-Study

- Hotels and other tourism accommodations (Htl),
- Retail establishments and other commercial activities (Ret)
- Housing and other real estate properties (Hou)



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1. Total economic value

TEV

Cala Millor Case-Study

- Hotels and other tourism accommodations (Htl),
 - Retail establishments and other commercial activities (Ret)
 - Housing and other real estate properties (Hou)
- Rev are the revenues of the economic activity developed by business i in year t ,
 - RV the Residual Value of the unit of value in year 50, proxied as the current real estate value provided by the Spanish cadastre for this unit

$$TEV_i = \sum_{t=1}^n \frac{Rev_{i,t}}{(1+r)^t} + \frac{RV_{i,20}}{(1+r)^{20}}$$

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1. Total economic value

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- Hotels and other tourism accommodations (Htl),
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TEV

Value of each real estate property from Spanish cadastre

[The Socioeconomic Dimension]

1. Total economic value

Economic data

Average Daily Rate per Month and Category in Mallorca for 2023 (€)

Category	2023M12	2023M11	2023M10	2023M09	2023M08	2023M07	2023M06	2023M05	2023M04	2023M03	2023M02	2023M01
5 stars	252.2	196.1	238	312.6	371.2	382	288.2	276.4	233.3	175.1	145.9	177.8
4 Stars	107.7	98.6	104.5	133.3	162.2	153.3	128.3	102.3	98.8	91	86.9	97.6
3 Stars	68.5	56.7	83.2	106.3	137.1	112.2	98.3	79.8	78.6	58.8	60.3	85.7
2 Stars			68.4	76	99.9	92.6	73.3	67.8	66.2	58.8		
1 Star						61.8	51					

Source: IBESTAT (<https://ibestat.es/>)

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1. Total economic value

Economic data

Revenues per room in Son Servera and Sant Llorenç for 2023 (€)

	2023M12	2023M11	2023M10	2023M09	2023M08	2023M07	2023M06	2023M05	2023M04	2023M03	2023M02	2023M01	
Sant Llorenç													
Average Daily Rate (€)			81.2	107.9	129.6	129.5	103.9	77	75.6				
Occupancy Rate %			62.93	83.39	92.83	87.43	80.23	63.67	31.09				
Estimated revenues per room and month													Total per room and year
5 stars	0	0	3539.2	6031.0	8332.7	7841.9	5587.3	3395.6	1575.4	0	0	0	36,303.04 €
4 Stars	0	0	1598.8	2724.4	3764.2	3542.5	2524.0	1533.9	711.7	0	0	0	16,399.31 €
3 Stars	0	0	1199.7	2044.3	2824.5	2658.2	1893.9	1151.0	534.0	0	0	0	12,305.59 €
2 Stars	0	0	1007.9	1717.5	2373.0	2233.3	1591.2	967.0	448.7	0	0	0	10,338.68 €
1 Star	0	0	670.0	1141.7	1577.4	1484.5	1057.7	642.8	298.2	0	0	0	6,872.16 €
Son Servera													
Average Daily Rate (€)			80	96.5	122.6	108.2	97.6	77.5	73.5				
Occupancy Rate %			58.71	81.83	93.55	88.42	82.91	70.39	29.81				
Estimated revenues per room and month													Total per room and year
5 stars	0	0	3253.1	5292.9	7943.7	6626.3	5423.8	3778.4	1468.6	0	0	0	33,786.73 €
4 Stars	0	0	1469.5	2391.0	3588.5	2993.3	2450.1	1706.8	663.4	0	0	0	15,262.61 €
3 Stars	0	0	1102.7	1794.1	2692.7	2246.1	1838.5	1280.7	497.8	0	0	0	11,452.64 €
2 Stars	0	0	926.4	1507.3	2262.3	1887.1	1544.6	1076.0	418.2	0	0	0	9,622.06 €
1 Star	0	0	615.8	1001.9	1503.8	1254.4	1026.7	715.2	278.0	0	0	0	6,395.83 €

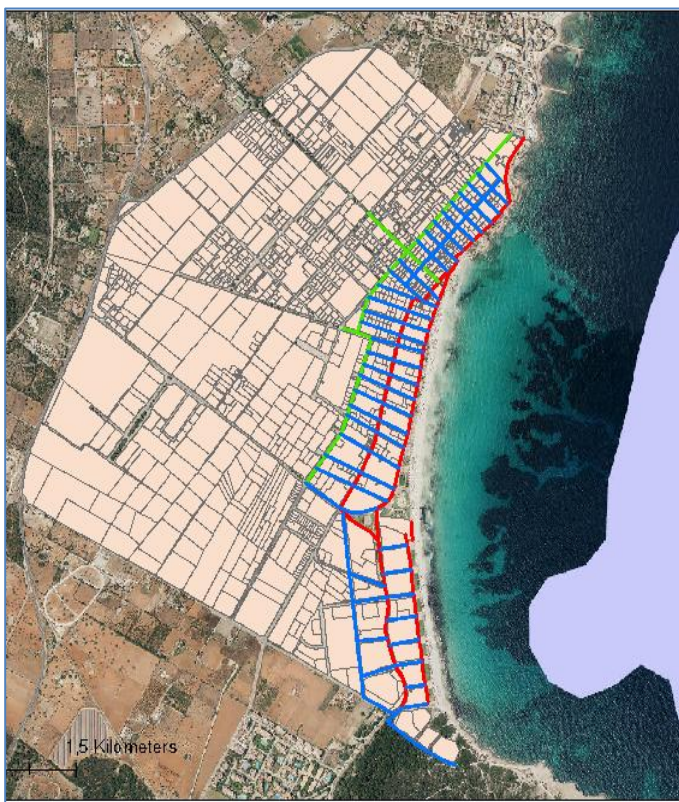
Source: IBESTAT (<https://ibestat.es/>)

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1. Total economic value

Economic data



Rental prices of real estate properties for businesses in similar towns per commercial zones

Town	Zone	Price per month	Squate Meters	Price per month and square meter	Down payment	Homogenized Down Payment	Homogenized price per month and square meter
Cala Millor	1	650.00 €	50	19.00 €	72,000.00 €	12.00 €	31.00 €
Port Pollença	1	1,500.00 €	85	17.65 €	- €	- €	17.65 €
Cala d'Or Por	1	2,700.00 €	95	28.42 €	135,000.00 €	11.84 €	40.26 €
Cala Ratjada	1	1,700.00 €	150	11.33 €	190,000.00 €	10.56 €	21.89 €
Average							27.70 €
Alcudia	2	650.00 €	26	25.00 €	70,000.00 €	22.44 €	47.44 €
Sa Coma	2	650.00 €	36	26.39 €	- €	- €	26.39 €
Sa Coma	2	1,100.00 €	55	20.00 €	- €	- €	20.00 €
Alcudia	2	1,200.00 €	67	17.91 €	- €	- €	17.91 €
Cala d'Or Por	2	1,670.00 €	70	23.86 €	30,000.00 €	3.57 €	27.43 €
S'Illot	2	1,500.00 €	82	18.29 €	330,000.00 €	33.54 €	51.83 €
Cala d'Or Por	2	918.00 €	100	9.18 €	25,000.00 €	2.08 €	11.26 €
Port Pollença	2	1,500.00 €	132	11.36 €	- €	- €	11.36 €
Alcudia	2	2,500.00 €	140	17.86 €	- €	- €	17.86 €
Alcudia	2	2,400.00 €	200	12.00 €	100,000.00 €	4.17 €	16.17 €
Alcudia	2	1,500.00 €	200	7.50 €	- €	- €	7.50 €
Average							23.19 €
Cala d'Or Por	3	950.00 €	60	15.85 €	- €	- €	15.85 €
Can Picafort	3	1,100.00 €	65	16.92 €	- €	- €	16.92 €
S'Illot	3	600.00 €	70	8.57 €	- €	- €	8.57 €
Porto Cristo	3	1,300.00 €	100	13.00 €	- €	- €	13.00 €
Alcudia	3	1,200.00 €	120	10.00 €	100,000.00 €	6.94 €	16.94 €
S'Illot	3	1,200.00 €	122	9.84 €	12,000.00 €	0.82 €	10.66 €
S'Illot	3	1,200.00 €	140	8.45 €	105,000.00 €	6.25 €	14.70 €
Cala Ratjada	3	1,800.00 €	153	11.76 €	95,000.00 €	5.17 €	16.93 €
Cala Ratjada	3	1,500.00 €	199	7.54 €	80,000.00 €	3.35 €	10.89 €
Cala Ratjada	3	1,100.00 €	210	5.24 €	- €	- €	5.24 €
Port Pollença	3	2,200.00 €	214	10.28 €	- €	- €	10.28 €
Cala Ratjada	3	1,100.00 €	259	4.25 €	- €	- €	4.25 €
Alcudia	3	2,400.00 €	270	8.89 €	- €	- €	8.89 €
Cala Ratjada	3	1,820.00 €	300	6.07 €	55,000.00 €	1.53 €	7.60 €
Cala Ratjada	3	870.00 €	375	2.32 €	99,990.00 €	2.22 €	4.54 €
Average							11.02 €
Port Pollença	4	850.00 €	70	12.14 €	- €	- €	12.14 €
Cala d'Or Por	4	950.00 €	120	7.92 €	- €	- €	7.92 €
S'Illot	4	1,200.00 €	142	8.45 €	- €	- €	8.45 €
Port Pollença	4	1,300.00 €	150	8.67 €	- €	- €	8.67 €
Port Pollença	4	1,300.00 €	175	7.43 €	- €	- €	7.43 €
Sa Coma	4	1,000.00 €	200	5.00 €	- €	- €	5.00 €
Porto Cristo	4	2,000.00 €	228	8.77 €	- €	- €	8.77 €
Cala d'Or Por	4	1,200.00 €	248	4.84 €	- €	- €	4.84 €
Port Pollença	4	1,500.00 €	300	5.00 €	- €	- €	5.00 €
Average							7.58 €

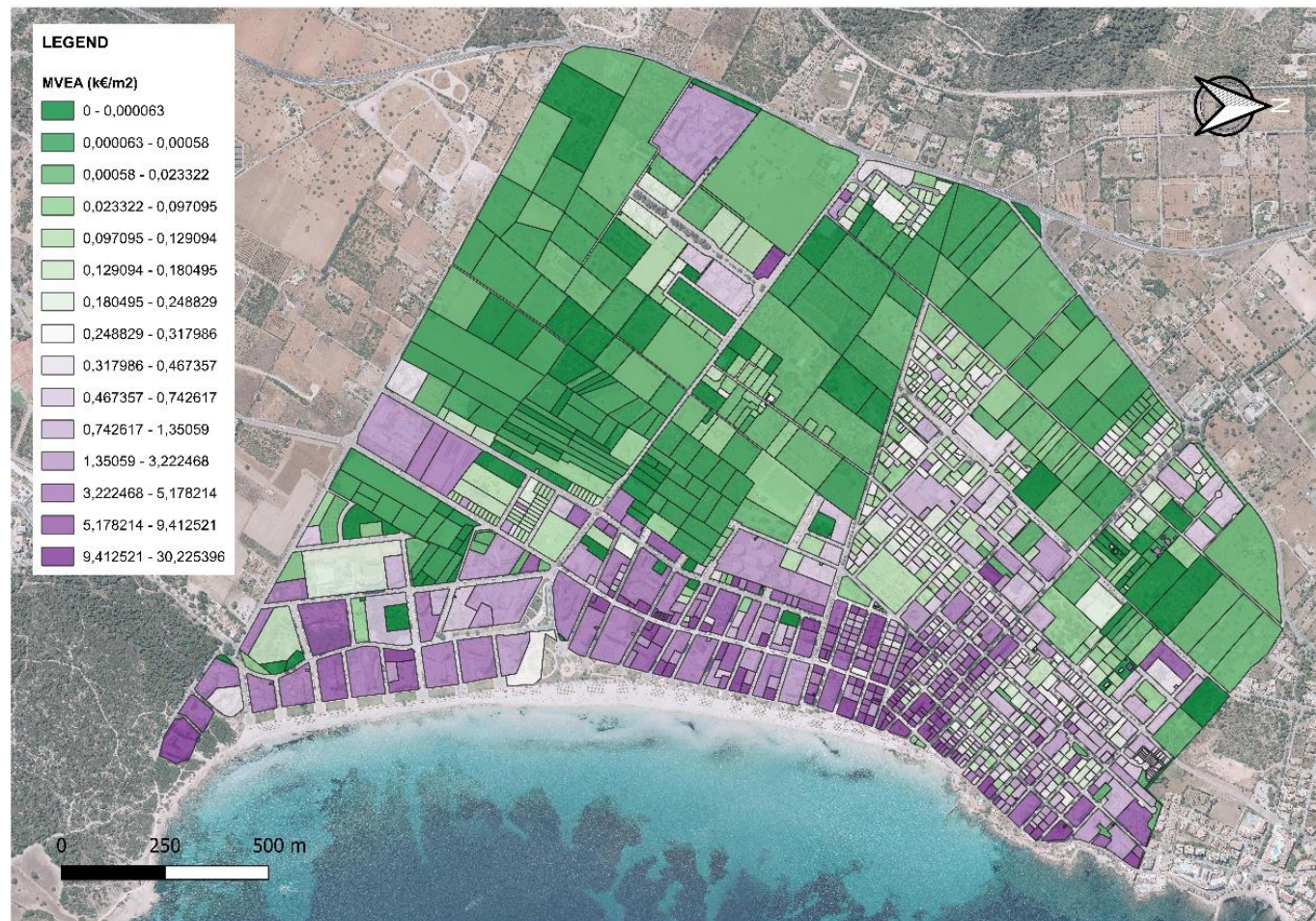
<https://www.idealista.com/>

[The Socioeconomic Dimension]

1. Total economic value

RESULTS I

Valuation map according to the total market value of the economic activity developed in each cadastral 14-digit plot (thousand euros).



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1. Total economic value

2. The effect of climate change

3. Conclusion

2. The effect of climate change

Only those effects requiring external intervention to protect the economic activity are considered to evaluate the effect of climate change

- **Direct effects**
 - *Temporal floodings: No loss of value is considered. We assume that the local economic system can react to recover itself*
 - *Permanent Floodings: Total value is lost. No cadastral plot is affected in the current analysis*
- **Indirect effects (evaluated from a survey of tourists)**
 - *Beach erosion*
 - *Temperature Increase*

[The Socioeconomic Dimension]

2. The effect of climate change

Environmental data

Projected beach width of minimum and maximum values and temperature increase for the 25th, 50th, and 75th percentiles during the period 2024-2100 under scenarios RCP4.5 and RCP8.5

		Beach Width (Demand)			Temperature Increase (Demand)		
		Quartile 1	Median	Quartile 3	Quartile 1	Median	Quartile 3
RCP 4.5	2030	71%	67%	62%	98%	83%	80%
	2050	68%	61%	51%	97%	87%	76%
	2100	60%	43%	23%	99%	86%	73%
RCP 8.5	2030	70%	67%	62%	98%	85%	52%
	2050	67%	60%	49%	96%	86%	45%
	2100	45%	35%	4%	98%	86%	43%

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2. The effect of climate change

RESULTS II

*Percentage of demand that remains during the period 2024-2100
under scenarios RCP4.5 and RCP8.5*

		Beach Width (Demand)			Temperature Increase (Demand)		
		Quartile 1	Median	Quartile 3	Quartile 1	Median	Quartile 3
RCP 4.5	2030	71%	67%	62%	98%	83%	80%
	2050	68%	61%	51%	97%	87%	76%
	2100	60%	43%	23%	99%	86%	73%
RCP 8.5	2030	70%	67%	62%	98%	85%	52%
	2050	67%	60%	49%	96%	86%	45%
	2100	45%	35%	4%	98%	86%	43%

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2. The effect of climate change

RESULTS II

The Effect of Climate Change – Indirect effects

	% Sales over the actual situation	TOTAL VALUE	VALUE LOST	
		Thousand Euros	Thousand Euros	% of value lost
<i>RCP 4.5</i>				
2030 Quartile 1	71%	2,001,187.00	672,280.60	25.1%
2030 Quartile 2 (median)	67%	1,908,459.00	765,009.00	28.6%
2030 Quartile 3	62%	1,792,548.00	880,919.50	33.0%
2050 Quartile 1	68%	1,931,641.00	741,826.90	27.7%
2050 Quartile 2 (median)	61%	1,769,366.00	904,101.50	33.8%
2050 Quartile 3	51%	1,537,545.00	1,135,922.00	42.5%
2100 Quartile 1	60%	1,746,184.00	927,283.60	34.7%
2100 Quartile 2 (median)	43%	1,352,088.00	1,321,379.00	49.4%
2100 Quartile 3	23%	888,446.60	1,785,021.00	66.8%
<i>RCP 8.5</i>				
2030 Quartile 1	70%	1,978,005.00	695,462.70	26.0%
2030 Quartile 2 (median)	67%	1,908,459.00	765,009.00	28.6%
2030 Quartile 3	52%	1,560,727.00	1,112,740.00	41.6%
2050 Quartile 1	67%	1,908,459.00	765,009.00	28.6%
2050 Quartile 2 (median)	60%	1,746,184.00	927,283.60	34.7%
2050 Quartile 3	45%	1,398,453.00	1,275,015.00	47.7%
2100 Quartile 1	45%	1,398,453.00	1,275,015.00	47.7%
2100 Quartile 2 (median)	35%	1,166,632.00	1,506,836.00	56.4%
2100 Quartile 3	4%	447,986.90	2,225,481.00	83.2%

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RESULTS II

The Effect of Climate Change – Indirect effects, type of economic activity RCP4.5 2030 – median – thousand euros

		No climate change	Climate Change	Variation	% Variation
14-digit cadastral plots	Total	2,673,468.00	1,908,459.00	-765,009.00	-28.61%
	Average	2,036.15	1,453.51	-582.64	-28.61%
	# Units	1313	1313		
Hotel and other tourism accommodations	Total	1,139,533.00	764,404.30	-375,128.70	-32.92%
	Average	17,531.27	11,760.07	-5,771.20	-32.92%
	# Units	65	65		
Retail establishments and other commercial activities	Total	1,182,056.00	792,175.30	-389,880.70	-32.98%
	Average	1,728.15	1,158.15	-570.00	-32.98%
	# Units	684	684		
Housing and other real estate properties	Total	351,879.10	351,879.10	-	0.00%
	Average	60.83	60.83	-	0.00%
	# Units	5785	5785		

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[The Socioeconomic Dimension]

1. Empirical implementation of the methodology
2. Data and Results
- 3. Conclusion**

3. Conclusion

- The Cala Millor case study shows that this method captures both:
 - ✓ Direct impacts, such as the loss of land used for economic activities, and
 - ✓ Indirect impacts, including beach erosion and rising temperatures.
- The estimated economic value of the study area is €2.67 billion, with climate change–related losses ranging from 25% to 83%, depending on the scenario.
- This methodology allows a direct evaluation of the effectiveness of any intervention: comparing the total value of the economic activity in a given climate change scenario with and without the intervention
- Limitations to keep in mind:
 - ✓ The estimates are conservative.
 - ✓ Results are based on today's tourism demand and do not fully reflect future adaptations (new tourist attractions, shifts in seasonality, etc.).