



SHORT BOOK

ECO-cruise tool for measuring
the socio-economic and
environmental impact in the
Port of Valencia

FUNDACIÓN VALENCIAPORT

Interreg
Mediterranean



CO-EVOLVE

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ECO-CRUISE TOOL PILOT IN VALENCIAPORT

The ECO-cruise tool has been designed for measuring specific aspects related to their socio-economic and environmental impact of the cruise industry in the city of Valencia. In addition to its theoretical description, a practical application has been conducted to assess the cruise tourism impact on Valencia (Spain) as a first benchmark following the principles of the Integrated Coastal Zone Management (ICZM) Protocol.

This short book summarises the results of the application of the model to the case of Valencia.

PILOT AREA CONTEXT

THE CITY AND THE PORT OF VALENCIA

Valencia is located on the East coast of the Iberian Peninsula, in front of the Gulf of Valencia in the Mediterranean Sea. It is the capital of the autonomous region of Valencia and the third-largest city in Spain after Madrid and Barcelona, with around 800,000 inhabitants and an extension of near 138 km², of which around 62.5 km² correspond to the city. Its metropolitan area extends beyond the municipality limits, adding up near 76 towns and a population of around 1.8 million people.

The area's development is influenced by economic, environmental and Mediterranean touristic dynamics.

Valencia shows a quite positive trend in terms of tourism development and market. This condition is quite different from the nearby Regions, characterised by coastal destinations hosting a relatively low number of tourists than the Mediterranean average but with a good potential for attracting more tourist fluxes. Valencia's Region shows high potential for strengthening its market share, paying attention to not exceeding its carrying capacity and the negative externalities that could affect it. Moreover, the population trend in the area, as in the surrounding regions, goes in the right direction with a high increase in the last years in line with the nearby Regions and the Northern/Western Mediterranean trend.

Valencia has an important commercial Port, known as Valenciaport. Cruise traffic at the Port of Valencia has grown 125% in number of passengers over the last 10 years. At the end of 2018, it closed the year with a total of 194 calls and 421,518 cruise passengers. This traffic will continue increasing according to the cruise industry trends and its growth perspectives in the Mediterranean area.

The Pilot Area includes the port-city system and, in particular the axis port - City of Arts and Sciences - old city.

The port waterfront extends for 5.2 km of the coastline. The City of Arts and Sciences and the old city are the most demanded tours for cruise passengers. These are also the main attractions for most of Valencia's tourists and same day visitors apart from cruisers.

The City of Arts and Sciences consists of an avant-garde collection of buildings (most of them designed by Santiago Calatrava), with Europe's biggest aquarium, a science museum, a 3D cinema and the Palau de les Arts opera house. It is located in the former bed of the Turia River.

The old city, known as Ciutat Vella, concentrates most of Valencia's cultural heritage. The district extension is 1.69 km² with a population of nearly 27,000 inhabitants. It concentrates most of the cultural heritage elements of the metropolitan area, including museums, historical buildings, monuments, art galleries and hosting some of the main thematic routes offered by tourism operators.



Pilot area limits (Terrasit <http://terrasit.gva.es>)

The economic impact of cruise tourism and its benefit to local livelihoods is a ubiquitous topic for destination policymakers and stakeholders that arises when discussing cruise tourism development. Cruise tourism has been criticised for keeping the majority of associated revenues within the cruise shipping line and not for the local communities (which may make up a large part of the attractiveness and experience) that are not benefitting sufficiently from cruise passengers. Destinations should routinely monitor, benchmark and seek to improve the spending per cruise passenger and the portion that remains within the local economy and its communities.

Cruise tourism is a key source for Valencia City, but this kind of tourism is also pointed out as a source of pressure and environmental impacts

The presence of cruises in the port and high concentrations of cruiser passengers in certain parts of the city, could affect negatively the city environmentally speaking. In this sense, the coexistence between ports and cities has had many problems related to the territory sharing.

Information regarding the environmental and economic aspects associated with the cruise tourism activity in Valencia is largely lacking, and it is very convenient to establish / integrate/ strengthen the information channels that make it possible to collect quantitative data from the cruise activity in relation to its sustainability, in order to determine a sustainable model for development of this traffic.

DEFINING VISION-GOALS-OBJECTIVES IN THE PILOT AREA

The starting point to create an effective strategy for sustainable tourism development in coastal areas is to set the main direction to which we want to move: the vision and its related objectives.

The construction of the vision for the area and the identification of strategic specific objectives must be constructed, on one hand, addressing the strategic issues emerged from the analytical phase, and, on the other hand ensuring the coherence and compliance with ICMZ and Sustainable tourism principles

The development planned for the future, aims to convert the city of Valencia in a European model of sustainable and transparent destination, dynamic, with an efficient and collaborative structure, respectful of the environment and built with the complicity of all the sectors involved. The base of this vision is strongly connected with the integration of the city center and the port (physically, economically and socially), which means:

- Promote sustainable cruise tourism development.
- Increase the profitability of the cruise tourist activity in the city in terms of creating wealth and quality employment, promoting a sustainable tourism with higher average spending and less environmental impact.
- Adapt the offer to the demands and requirements of new consumers, improving the value proposal, making the tourist resources and services offered by the city more attractive and accessible.
- Innovate the management models and the instruments and tools used, intensifying and optimising the use of ICTs in the management of the city. To promote a comprehensive intelligence system that provides companies and institutions with the best knowledge to make decisions.

- Broaden the vision from a transversal perspective, actively involving cruising agents (institutions, companies, residents, professionals), through an institutional framework of collaboration and participation.
- Implement operational instruments that are part of the management of the destination and in which companies and professionals have the greatest role.

The main planning goals and objectives are:

1. Maximise local economic benefits enhancing direct and indirect economic activities by promoting cruise tourism
2. Reduce environmental impact associated with cruise activity
3. Encourage sustainable management of cruise destination (touristic fluxes)
4. Improve the institutional framework and policy affecting sustainable cruise activity

ECONOMIC IMPACT OF CRUISE TOURISM IN VALENCIA

MODEL TO MEASURE ECONOMIC IMPACT OF CRUISING ON LOCAL DESTINATIONS

The methodological development used in this study is based on the following sources of information:

- 1) Information of the cruise companies (Interviews and annual accounts)
- 2) Information on the economy of Valencia Region (Input/Output Tables and Regional Accounts).

The methodology for measuring the economic impact is described as follows:

OBJECTIVE	COMPLETION OF FIELD WORK		GEOGRAPHICAL AREA
Total economic impact generated by cruise activity from its direct, indirect and induced effects.	January - December 2017		City and Port of Valencia
DIRECT SPENDING	SOURCE		Initial & Direct effect
Quantification of spending generated by each of the main agents involved in cruise activity (shipping companies and suppliers, cruise passengers and crew)	Cruise passenger survey for CO-EVOLVE project / Questionnaires to suppliers of goods and services with Shipping agents, Cruise terminal and Tour Operator / Financial Statements / Bibliographical sources and other sources of information		Measuring the initial and direct spending made by the main agents of the activity under study.
INDIRECT AND INDUCED EFFECTS	Indirect effect	Induced effect	SOURCE
Specific multipliers from the input-output tables of the Valencia economy were used to translate this spending in terms of impact on GDP, employment and tax income.	Because of direct spending, supply sectors generate a series of indirect effects through the purchases they make in other sectors of the economy to produce goods and services demanded by the agents. Multipliers derived from the Input-Output tables are used to calculate these. This is the multiplier effect of the economy.	This corresponds to the effect of consumer spending produced by income from work generated by the direct and indirect effects.	Input-output tables

Summary of the economic impact methodology

ECONOMIC TOOLKIT RESULTS IN VALENCIA

As a result, a deep analysis of the economic impact of the cruise sector in the city of Valencia has been performed. The main economic indicators are summarised in the following tables:

ECONOMIC INDICATOR					
INITIAL EFFECT	CRUISE PASSENGER	ENTERPRISES		CREWS	CRUISE COMMUNITY
	17,508,369 €	7,208,146 €		626,571 €	25,343,086 €
DIRECT ECONOMIC IMPACT	GDP	Employment	Gross Surplus	Tax Income	Wage Income
	19,981,000 €	393	8,684,000 €	2,090,000 €	9,207,000 €
INDIRECT ECONOMIC IMPACT	3,502,000 €	54	1,585,000 €	381,000 €	
INDUCE ECONOMIC IMPACT	12,525,000 €	189	5,541,000 €	1,355,000 €	

SECTORIAL EFFECT IN TERM OF SALES				TOTAL ECONOMIC IMPACT			
Multiple effect	CONSUMER (M)	SECTORIAL (M)	TOTAL	GDP	Employment	Gross Surplus	Wage Income
1.2	40,200,000 €	30,700,000 €	71,000,000 €	36,008,000 €	637	15,810,000 €	16,373,000 €
Average of movements cruise passenger, according to type of stopover. Embark-Disembark/Transit.				18%-82%	Average of stopover according to type of category of the cruise (Budget, Contemporary, EPL)		
Seasonality of cruise activities per quarter (%)				5%;29%;33%;34%	Average of cruise passenger according to type of category of the cruise (Budget, Contemporary, EPL)		
Number of days with call (days)				149	Average length of stay of visitors shoreside organized (hours)		
Average length of stay of cruise ships (hours)				10.94	Average length of stay of visitors shoreside independent (hours)		
Number of cruise company with call				33	% number transit cruise passenger taking organized shoreside tour		
Number of Cruise Ship with call				73	Gender (women; men;na)		
Average spending of a cruise passenger per visit (€)				45.7	Average Age (years old)		
Initial outline per cruise passenger per visit (€)				66.2	Age by groups (0-20; 21-40; 41-60; 60)		
Economic Impact of a cruise passenger per visit (€)				146	Nationality (Italia; Alemania, Reino Unido, Francia, EEUU, España; %)		
Each ship cruise ship that stop over in Valencia generated a billing of (€)				349,754			
Average spending of a cruise ship per stop over (€)				35,508			
Economic Impact per stopover of cruise ship to GDP (€)				177,379			

Summary of economic tool kit indicators in Valencia

ENVIRONMENTAL IMPACT OF CRUISE TOURISM IN VALENCIA

MODEL TO MEASURE ENVIROMENTAL IMPACT OF CRUISING ON LOCAL DESTINATIONS

The tool proposes a three-step approach:

1st) Definition of parameters to measure (WHAT), the best way to do it and their metrics (HOW).

2nd) Measurement and analysis in order to evaluate the starting point (AS IS).

3rd) Establishment of an action plan (TO BE) including recommendations to minimise its negative impact.

The tool focuses on five aspects (areas of analysis) related to the environmental impact of the cruise ships' activity:

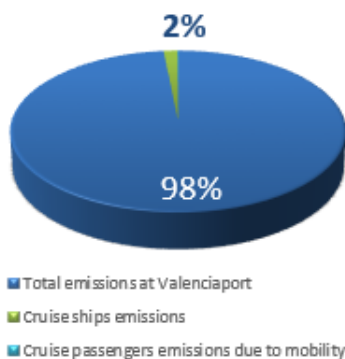


Main areas of analysis included in the eco-cruise port/city tool

In the following sections a brief summary of some eco-tool indicators by each area under study are presented.

AIR EMISSIONS FROM CRUISE SHIPS BERTHED AT VALENCIAPORT

According to the yearly calculation of the Carbon Footprint in the Port of Valencia performed by the Port Authority of Valencia, cruise ships at port produced 2511.09 tons of CO₂ in 2017. This amount represents 1.5% of the total carbon footprint of Valenciaport. On the other hand, the mobility options used by their passengers generated 114 tons of CO₂, meaning only 0.07% of the total CO₂ emissions at Valenciaport that year.



Carbon footprint of cruise ships and their passengers in 2017 at Valenciaport.

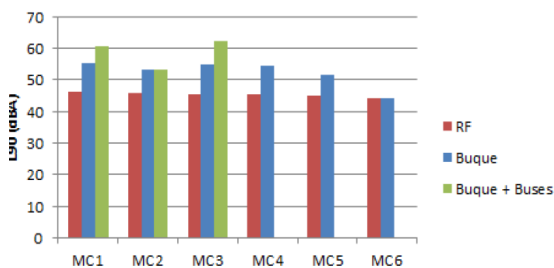
NOISE IMPACT ON RESIDENTIAL AREAS NEAR VALENCIAPORT CAUSED BY CRUISE SHIPS

The level of noise was measured in six points (locations at Cruise berth) and in three different scenarios/situations:

- Background noise (without any cruise ship berthed).
- Noise caused by cruise ships.
- Noise caused by cruise ships plus the buses picking up or leaving passengers at berth.



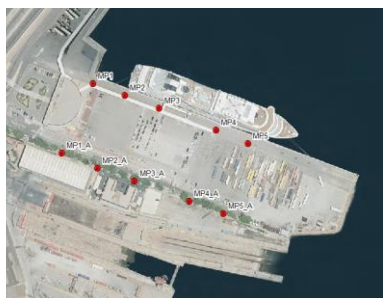
Cruise berth measurement points



Noise levels measurement at the Cruise Berth

The results showed that the noise increased between 6 dB and 9 dB in all the locations except in the one furthest away from cruise ships situated at 250 metres away where no difference was registered.

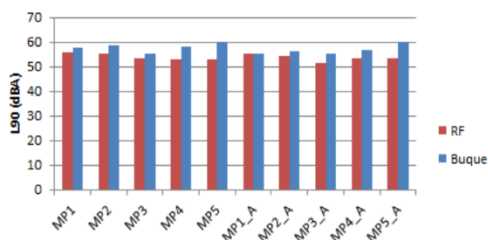
Whereas the presence of buses at berth increased the noise between 5 dB and 7 dB, compared with the scenario with only the cruise ship berthed.



Western berth measurement points

In the case of the Western Berth, the level of noise in ten points (locations at berth) and in two situations was measured:

- Background noise (without any cruise ship berthed).
- Cruise ships at berth.



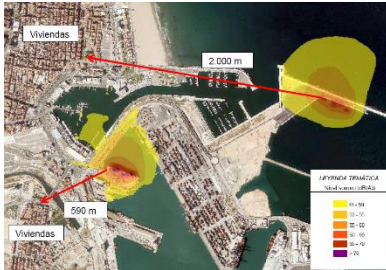
Noise levels measurement at the Western Berth

The noise caused by ships was lower than 3 dB in three of the locations (MP1, MP2 AND MP3), however it was registered an incensement of 7 dB in MP5 due to its proximity to the ship's ventilation grilles.

The measurements located at 100 metres from the ships were:

- There was no difference of level of noise at the MP1_A point.

- Noise increased around 3 dB at MP2_A, MP3_A and MP4_A points and it was perceived relevant noise coming from the chimney of the ship during the measurement.
- Measurements at the MP5_A are not taken into account due to construction works being carried out very close and the values are not representative.



Noise map at Valenciaport for cruise ships.

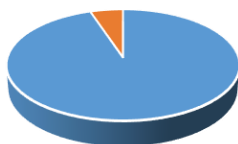
Additionally, a predictive model was performed to obtain the isophonic line map.

The Port of Valencia complies with the targets for noise quality without affecting residential areas near the port. Its level of noise does not exceed the 45 dB (target level at night).

WASTE MANAGEMENT AT VALENCIAPORT

The reception facilities for MARPOL waste at Valenciaport dealt with 2.765 m³ of MARPOL I waste and 4009 m³ of MARPOL V waste from cruise ships in 2017.

It means that cruise ships were responsible of 5.16% over the total of MARPOL I waste handled at Valenciaport that year. Nevertheless, in the case of MARPOL V waste this percentage rises 22.82% that reveals the significant volume of garbage produced by these ships.



■ Other ships
■ Cruise ships

MARPOL I waste managed in 2017.

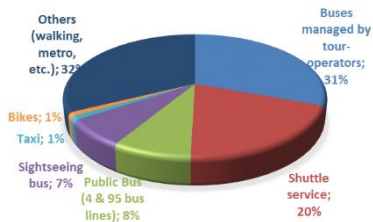


■ Other ships
■ Cruise ships

MARPOL V waste managed in 2017.

On the bright side, 60% of this garbage was valorized and 66% of cruise ships calling at Valenciaport held Waste Certificate.

MOBILITY AT VALENCIAPORT



Mobility options chosen by cruise passengers at Valenciaport in 2017

The most common mobility option are the buses managed by tour-operators and that are contracted on board the cruise ships, being the option chosen by 31% of the passengers. A similar percentage of passengers decided to just walk around the port surroundings. 8% of cruise passenger chose either of the two bus lines going to the old town from the port.



WHO WE ARE

CO-EVOLVE is a three-year project that aims at analyzing and promoting the co-evolution of human activities and natural systems in touristic coastal areas, allowing for sustainable development of tourism activities based on the principles of Integrated Coastal Zone Management (ICZM)/Maritime Spatial Planning (MSP).

It couples a presently unavailable analysis at MED scale of threats and enabling factors for sustainable tourism with local studies of seven representative Pilot Areas, to demonstrate through pilot actions the feasibility and effectiveness of an ICZM/MSP-based planning process.

Finally, CO-EVOLVE contributes to the Strategic Theme 2 (Joint Action 2.1) of the Bologna Charter Joint Action Plan: <http://www.bolognacharter.eu/>.

CONTACT US



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