



## Measure Evaluation Results

### ELB 5.1- Island freight logistics for tourist services – Implementation and demonstration report on smart and clean urban freight measures

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## Executive Summary

Elba Island is characterised by a strong touristic flow, especially during the summer period when the number of incoming tourists dramatically increases. The prevailing use of cars by both tourists and residents, on the island's narrow and steep roads, generates chronic traffic congestion and parking issues at peak times, as well as high levels of acoustic pollution and CO<sub>2</sub> emissions.

In addition, especially during the summer season, there is a large flow of freight vehicles coming from the mainland to supply commercial businesses, accommodation facilities, and local producers, thus increasing the traffic problems on the entire island.

With the support of the CIVITAS DESTINATIONS project, the Municipalities of Portoferraio and Rio successfully tested a supply service, specifically targeted at tourist facilities, such as Ho.Re.Ca. (Hotels, Restaurants, Cafés), whose business dramatically thrives thanks to the high number of tourists visiting Elba Island each year.

The aim of this measure was to improve the specific Ho.Re.Ca. supply service of special edible products and beverages that are particularly in demand during the summer. The optimised and centralised distribution solution that was tested in this measure allowed the reduction of commercial vehicles on the island, contributing to the improvement of traffic and the reduction of emissions and energy consumption.

The overall evaluation was positive as the test showed that the logistics service is very efficient, both for distribution companies and for their customers. During Summer 2019, the pilot transport operator, using consolidation centres and 1 vehicle dedicated to the distribution, made 1,535 deliveries to the Ho.Re.Ca. (over 25% of total deliveries). The relative estimated reduction in commercial vehicles in circulation amounts to 223 vehicles. In the future, this method of goods distribution can be coordinated by the Elba Sharing Agency (SUMA) with positive effects on its development.

## A Description

The proximity of Elba Island to the mainland allows not only tourists and residents, but also the different freight operators, to come to the island by their own vehicles, even for limited deliveries. This trend is due to the absence of specific logistics regulation discouraging the arrival of transport with limited loads and to the fact that businesses and distribution operators tend to maintain their long-standing agreements with their respective customers.

This situation has a negative impact on the environment (atmospheric, acoustic, energetic pollution), but also on other mobility aspects, such as the indiscriminate use of the urban area for wild stops, which are aggravated by the morphology of the island itself, with its narrow road network, often winding and with steep gradients, unsuitable for sustaining huge traffic flows. The massive presence of private and commercial vehicles on the island during the peak season also affects the Local Public Transport service, both for the general viability and for the bad habit of drivers in occupying bus stop areas as temporary parking slots.

Under such circumstances, the Municipalities of Portoferraio and Rio decided to intervene by testing a pilot service for the distribution of goods (especially food and beverages) to accommodation facilities and commercial businesses (Ho.Re.Ca. – Hotels, Restaurants, Cafés), aimed at reducing the number of commercial vehicles in circulation.

The city of Piombino, the nearest harbour on the mainland, was used as a consolidation centre for the goods carried by small commercial vehicles, in order to encourage them not to board the ferry and disembark on Elba Island. A second step was the transportation of the goods to a specialised hub on the island, by means of a large commercial vehicle. Finally, goods were subsequently distributed to Ho.Re.Ca. in an optimised way and by low-environmental impact vehicles.



**Figure 1:** Consolidation centre

### A1 Objectives and outputs

#### City policy level objectives

- Reduce polluting emissions, energy consumption, and traffic congestion
- Improve the island's overall mobility and liveability

#### Measure specific objectives

- Reduce the number of commercial vehicles in circulation during the tourist season
- Provide a high-level and efficient distribution service of goods and beverages to Ho.Re.Ca.

#### Outputs

- Test a distribution service through the use of a single truck with an optimised load for supplying all the Ho.Re.Ca. located in the same areas

## Supporting activities

Through the ELBA LIFE project, previous activities have facilitated the design and development of this measure for the distribution of goods through consolidation centres and optimised distribution on the island.

## A2 Inter-relationship with other measures

This measure is linked to *ELB 5.2 - Sustainable ELBA Logistics Plan*, as far as the opportunity to increase the distribution of goods through consolidation centres is concerned. The final aim is reducing the presence of commercial vehicles on the island, which contributes significantly to mobility problems in the summer season.

## A3 Target groups and/or affected part of the city or region

- Ho.Re.Ca. needing a punctual and efficient goods supply distribution service, especially during the summer season
- Citizens and tourists claiming for fewer commercial vehicles in circulation and for an innovative delivery service able to reach them at their precise locations

## A4 Stakeholders involvement

Stakeholder name	Activities description
Hotels and accommodation services	Organisation of the supply freight delivery service for tourists
Transport Operators	Supply freight delivery for tourists
Food markets	Supply food for Ho.Re.Ca. and moored boats

**Table 1:** Stakeholder involvement

## **B Measure implementation**

### **B1 Situation before CIVITAS**

At first, the distribution of goods did not follow a specific strategy, nor did its operators seem to be particularly aware of the impacts of their activity on environment, traffic, and liveability of the cities.

Prior to DESTINATIONS, some specific low-energy impact services were designed and tested for a short period under the ELBA LIFE project. The results of this demonstration were the baseline for defining, designing, and operating a new specific freight distribution service. Beyond this temporary project, optimised transport for Ho.Re.Ca. has not been established.

### **B2 Innovative aspects**

The innovative aspect of this measure is the creation of consolidation centres in Piombino (the nearest harbour on the mainland) and on the island. The centre allows an efficient and optimised distribution of goods on the island and in particular for products intended for Ho.Re.Ca.

### **B3 Research and technology development**

Not applicable.

### **B4 Current implementation of the measure**

Before the commissioning of the freight consolidation centre, the transporters, even with a small load, were forced to reach Elba with significant costs (ferry and fuel), a waste of time, and contributing to aggravating the situation of road traffic especially in the summer period.

The freight consolidation centre, despite being put into service about 5 years ago and operational for all goods transported to the island, was tested only for the goods distribution at Ho.Re.Ca. in Summer 2019.

Many goods, in particular those transported by small logistics operators, destined to Ho.Re.Ca. on the island were delivered to the consolidation centre of Piombino (the city overlooking Elba island). From this centre, every day in the early afternoon, a large vehicle was loaded to full capacity with all the goods destined for Ho.Re.Ca.

Once they had arrived at the consolidation centre on the island (not far from the main port located in Portoferraio), the goods were divided up according to location and delivery time. Those destined for Ho.Re.Ca. have been loaded in an optimised way, according to the destination, on a dedicated vehicle. Their distribution normally took place during the morning of the day following their arrival on the island.

During 3 months of Summer 2019, 1,535 deliveries were distributed with such a system to customers.

This distribution mode had the disadvantage of involving "breaking of load", with costs for additional loading and unloading of goods and the remaking of delivery documents.

The main advantage was that it allowed a limited presence of numerous small transporters who, although carrying a limited amount of goods, had to travel to the island at higher costs and contributed to aggravating traffic and polluting emissions on the island.



**Figure 2:** Landina of commercial vehicles in

After the test period carried out in relation to the DESTINATIONS project, the logistics operator continued the same procedure also for the year 2020, even if they did not keep recorded data as they did in the previous experimentation year.

## C Impact evaluation

### C1 Evaluation approach

#### Expected impacts and indicators

Impact category	Impact indicator	Unit of measure
Transport	1- Reduction of number of vehicles with load optimisation at Ho.Re.Ca.	Number
Society	2- Ho.Re.Ca. and tourists' satisfaction level with the logistic service	%

**Table 2:** Expected impacts and indicators

#### Method of measurement

Impact indicator	Method*	Frequency			Target Group	Domain (demonstration area/city)
		Bef.	Dur.	Aft.		
1-Reduction of number of vehicles with load optimisation at HoReCa	E	n.a.	n.a.	49	Transport operators	Elba island
2-HoReCa and tourists' satisfaction level with the logistic service	S	n.a.	n.a.	37	Citizens / Tourists	Elba island

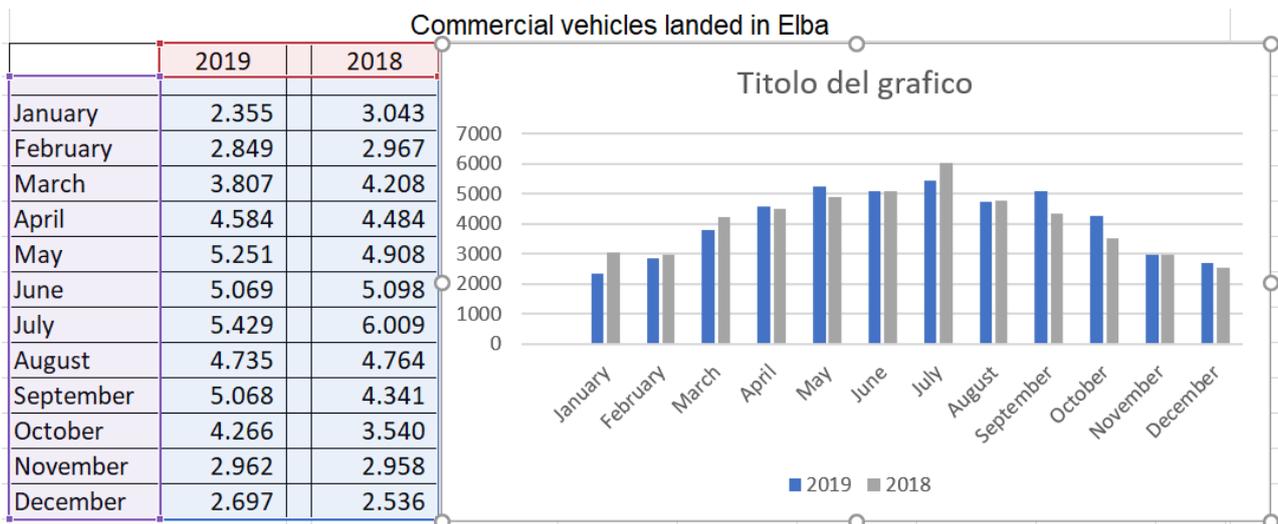
\*(Data collection (DC), Estimation (E), Survey (S))

**Table 3:** Method of measurement

**Detailed description of the indicator methodologies:**

**1- Reduction of number of vehicles with load optimisation at Ho.Re.Ca.** – The responsibility to calculate this indicator lies in collaboration between Rio Municipality and Portoferraio Municipality.

This indicator was defined based on the estimated number of commercial vehicles circulating on the island before and after the realisation of the optimised goods distribution at Ho.Re.Ca. On Elba island, 2,850 commercial vehicles were registered (years 2017-2018). It has been assumed that in the summer period (June, July, August), about 1/3 of these were in circulation – 950 commercial vehicles (fixed number of vehicles "resident"). To calculate the total number of commercial vehicles circulating in Elba, the number of vehicles that landed on the island in the same period were added to this number. It was estimated that at least 1/3 of total commercial vehicles are dedicated to refuelling Ho.Re.Ca. The variation over the years in the number of commercial vehicles used to refuel Ho.Re.Ca. can therefore be linked to the variation in the number of commercial vehicles landing on the island during the same period.



**Figure 3:** Port Authority: commercial vehicles landed in Elba ports

**2- Ho.Re.Ca. and tourists’ satisfaction level with the logistic service** – This indicator was defined based on surveys applied by the staff from Portoferraio and Rio to the 20 refuelled hotels and restaurants. The distribution service of goods (mainly drinks) to Ho.Re.Ca. through dedicated vehicles was carried out by a transport operator from Portoferraio during Summer 2019. This transporter used 1 freight consolidation centre on the mainland and 1 in Portoferraio. For the distribution of goods on the island, great attention was devoted to optimising the loading of this vehicle depending on the location and the delivery times of the goods.

The survey at the various refuelled hotels and restaurants was carried out in September 2019 through direct and telephone interviews with hotels, restaurants, and bars in Portoferraio and Rio, carried out by the Portoferraio staff. 35 tourists’ opinions were also collected through direct interviews. Furthermore, the owner of the transport company was also interviewed.

The various Ho.Re.Ca. were asked the question: “Are you satisfied with the goods replenishment that was carried out using a dedicated vehicle?” The answerers were VS – Very satisfied; S – Satisfied; N – Not satisfied.

Tourists were asked “if they had sometimes suffered from lack of some product to consume”. The possible answers were Yes or No.

## The Business-as-Usual scenario

Not applicable.

## C2 Measure results

Impact category	Impact indicator	Unit of measure	Baseline	Ex-Ante	Ex-Post
Transport	1- Reduction of number of vehicles with load optimisation at Ho.Re.Ca.	Nº	-	265	223
Society	2- Ho.Re.Ca. and tourists' satisfaction level with the logistic service	%	-	80% Vs 10% s 10% n	80% Vs 20% no reply

VS = very satisfied, S = satisfied, N = not satisfied

**Table 4:** Measure results

### C2.1 Transport

#### 1- Reduction of number of vehicles with load optimisation at Ho.Re.Ca.

The experimentation of goods distribution with a dedicated vehicle and optimised load was carried out during the months of June, July, and August 2019. In the Ex-ante forecast, a 5% reduction in commercial vehicles landing on the island was estimated, compared to the corresponding period of 2018. Based on the data provided by the Port Authority and using the estimate that about 1/3 of disembarking vehicles carry goods for Ho.Re.Ca., the local partners estimated that:

2018: commercial vehicles landed 15,871. Estimated for Ho.Re.Ca. about 5,300 (1/3 of total). 2019 ex-ante reduction estimation 5%: 265 vehicles.

2019: commercial vehicles landed 15,233. Estimated for Ho.Re.Ca. about 5,077 (1/3 of total). Actual reduction: 223 vehicles.

This positive reduction is very low in percentage terms when compared to the total number of commercial vehicles landing on the island, but it demonstrates the benefits of the measure. Certainly, a future strengthening of the freight consolidation centres could represent a serious contribution to the net reduction of commercial vehicles circulating on the island.

## C2.2 Society

### 2- Ho.Re.Ca. and tourists’ satisfaction level with the logistic service

The interviews were carried out in September 2019 by the staff from Portoferraio and Rio. The indications of the hotels, bars, camping, and restaurants (about 20) to be interviewed were provided by the goods carriers. All interviewees were satisfied with the service (80% were very satisfied and 20% satisfied). 35 tourists were interviewed, some of whom were present during the survey at the bars. Most of them (80%) replied that they always had the requested products during the summer. 20% declared that they could not give a precise answer as they did not know if all the products on sale were available. Several interviewees have generally stated that they appreciate the efforts of the two municipalities to address the issues relating to the reduction of vehicular traffic in peak periods, as these policies will certainly affect the level of tourist satisfaction – in fact, the customer's comfort depends on the possibility of accessing any product without delay, versus the “green” island feature loses its value in case of vehicular traffic, road congestion and pollution.

Interviste ad HoReCa				set-19	Interviste a turisti				
Viete soddisfatti del servizio di rifornimento merci ottimizzato					Vi è capitato che alcuni bar o ristoranti non erano provvisti di prodotti da voi richiesti?				
		molto soddisfatti	Soddisfatti	Non soddisfatti	Turista	Si	No	Nio so	Nota
1	Hotel Acqua Marina	1			1		1		
2	Ristorante Padulella	1			2		1		
3	Ristorante Stella Marina		1		3		1		
4	Hotel Villa Ombrosa	1			4		1		Cocomero
5	Bar Nordisco	1			5		1		
6	Bar La Tonnina	1			6			1	
7	Bar La Vela	1			7		1		
8	Bar La Gran Guardia		1		8		1		
9	Hotel Le Ghiaie		1		9		1		
10	Bar Sail Port	1			10		1		
11	Bar le Sirena		1		11		1		
12	Hotel Acquarelli	1			12			1	
13	Hotel Crystal	1			13		1		
14	Bar Sotto il Mare	1			14		1		
15	Bar Centrale	1			15		1		
16	Hotel Mare	1			16		1		
17	Bar sotto il Mare	1			17			1	
18	Ristorante Tre Archi	1			18		1		
19	Bar Il Moletto	1			19		1		
20	Ristorante Il Garibaldino	1			20		1		
	<b>Totale</b>	<b>16</b>	<b>4</b>		21		1		
	<b>%</b>	<b>0,8</b>	<b>0,2</b>		22		1		
					23		1		
					24		1		
					25		1		
					26			1	
					27		1		
					28			1	
					29		1		fino Chianti Gallo Nero
					30		1		
					31			1	
					32			1	
					33		1		
					34		1		
					35		1		
					<b>Totale</b>	<b>0</b>	<b>28</b>	<b>7</b>	
					<b>%</b>	<b>0,06</b>	<b>0,80</b>	<b>0,20</b>	

Figure 4: Interviews to Ho.Re.Ca. and Tourists

### C3 Quantifiable targets

No	Target	Rating
1	*Decrease of 5% in the number of commercial vehicles for supplying Ho.Re.Ca. on the island	★
2	*At least 80% of Ho.Re.Ca. are satisfied with the dedicated service	★★
3	Reduction of emissions and of energy consumption of freight vehicles and to improve the overall island mobility and accessibility	★
4	Enhance the quality of the tourist services offered to Elba's visitors	★
<b>NA = Not Assessed O = Not Achieved</b> <b>★ = Substantially achieved (at least 50%)    ★★ = Achieved in full    ★★★ = Exceeded</b>		

\*New target, not in GA

**Table 5:** Quantifiable targets

Target 1 was Substantially Achieved. It was very difficult to evaluate the variation of commercial vehicles in circulation on the island due to the implementation of logistics measures. The need for goods supply of the commercial establishments on the island and, therefore, the number of commercial vehicles, is closely linked to the presence of tourists on the island. With the same number of tourists present, a good index is the number of commercial vehicles landing in the periods under examination.

The positive evaluation of the ELB 5.1 measure is demonstrated by the decrease in commercial vehicles landing in the months in question (June, July, August) in the year of testing the measure (2019), compared to the previous year (2018). The estimated decrease was 4.2%, around 220 vehicles (out of a total of over 5,000). However, it should be considered that in 2019 in the months in question there was a slight greater presence of tourists (+ 1.5%) compared to the previous year, so Elba should have had an increased, albeit limited, number of commercial vehicles.

Target 2 was Achieved in Full. The indications of the hotels, bars, camping, and restaurants (about 20) interviewed were provided by the goods carriers. All interviewees were very satisfied or satisfied with the service. As for the tourists who were present during the survey, most replied that they always had the requested products during the summer.

As for Target 3, the reduction of emissions and energy consumption of freight vehicles was Substantially Achieved. Given the reduction of freight vehicles in circulation, it was possible to calculate an estimate of energy saved. The estimation was considering the average consumption of 11 lt / 100 km and an average journey on the island of 60km. Using this hypothesis, there was a saving of 1,400 litres of diesel fuel. The related CO2 emissions saved, considering average emissions of commercial vehicles of 200 gr/km, were 2.54 tons.

Target 4 was Substantially Achieved. Positive interviews with tourists and shopkeepers showed that this measure has contributed to increasing, albeit in a limited way, the efficiency of the distribution of goods dedicated mainly to tourists on the island. The improvement of these services for tourists improves the goods quality on the island and contributes to the increase in tourism.

## C4 Up-scaling of results

The experimentation by a transporter of using consolidation centres in Piombino and Portoferraio to distribute the goods to Ho.Re.Ca. and the use of dedicated vehicles has been positive.

Another transport operator has already equipped its company with consolidation centres both in Piombino and Elba, and it is hoped that this method will be increasingly adopted in the future in consideration of the time necessary to distribute on the island and of the high ferry costs.

Interviews with transport operators revealed that some of them are planning to use vehicles with combustion / electric traction. The plan is to use the electric engine in tourist and urban centres and the combustion engine in the transfers between cities.

# D Process Evaluation Findings

## D 1 Drivers

The factors that enabled the measure implementation were related to the interest of transport operators to provide specialised services to better satisfy their customers, and also of the time and cost of transporting the vehicle by ferry to and from the island. The cost and time are particularly significant and leads transporters with reduced loads to use the freight consolidation centre (UCC) on the mainland.

## D 2 Barriers

Specialising a service only for a range of customers sometimes involves having the vehicles not fully loaded. The local partners also faced constraints related to the unloading and reloading of goods at the consolidation centre, documentary procedures for goods delivery, and cost for the transport service. Many transporters/producers prefer to face higher costs and more time to maintain personal contact with the customers on the island.

## D 3 Lessons learned

The service provided under this measure has been considered with interest by the stakeholders who have agreed on their modality and usefulness. However, it should be noted that for the development of this modality (consolidation centres and specialised vehicles according to goods), and which, if maximised would certainly lead to a significant reduction of commercial vehicles circulating on the island, stringent regulations of all municipalities would be necessary to prevent the entry of small freight vehicles or with non-optimised loads during the summer period. However, this would go against the economic interests of the ferry companies.

## E Evaluation Conclusion

This method of goods distribution tested on the island in 2019 has been positive. Considering that the major goods supply to Ho.Re.Ca. on the island takes place mainly during the months of June, July, and August, during this period the pilot transport operator made 1,535 deliveries to Ho.Re.Ca. (over 25% of total deliveries) using consolidation centres and one vehicle dedicated to the distribution, with a non-negligible reduction (223 vehicles estimated) in the presence of small commercial vehicles on the island.

## F Additional information

### F1 Appraisal of evaluation approach

The evaluation of the circulation reduction of commercial vehicles in the Summer 2019 period was made on the basis of the number of vehicles landing on the island during the period.

The positive evaluation is however confirmed by the high number of deliveries made by the pilot transport operator.

### F2 Future activities relating to the measure

The courier who has experimented with this measure will continue to distribute the goods in the same way and, by extending the type of goods to serve the various commercial businesses of the island, it is foreseeable that other couriers will follow this example (as already mentioned in point C4).

In future, the Elba “Shared Used Mobility Agency” (SUMA, ELB 4.1-ELB 4.4) could coordinate the logistics services, by allowing private businesses and distribution operators to find common sustainable solutions to their needs, by matching the demand of aggregated goods supply and the offer of shared-mobility solutions.