

2014 - 2020 Interreg V-A  
Italy - Croatia CBC Programme  
Call for proposal 2019 Strategic

## MARLESS (MARine Litter cross-border awarenESS and innovation actions)

Priority Axis: Environment and cultural heritage; Specific objective: 3.3 - Improve the environmental quality conditions of the sea and coastal area by use of sustainable and innovative technologies and approaches

### 4.2.1 - At least 10 Concessionaires of beaches (2 for the 5 regions involved in this activity) trained to be involved in the collection of ML according prescribed methodology

ACT 4.1

WP 4

Version: FINAL  
Distribution: PUBLIC  
Date: 30 June 2023

**PROJECT MARLESS**

<b>Work Package:</b>	WP4
<b>Activity:</b>	ACT 4.2
<b>WP Leader:</b>	Apulia Region – PP10
<b>Deliverable:</b>	4.2.1 - At least 10 Concessionaires of beaches (2 for the 5 regions involved in this activity) trained to be involved in the collection of ML according prescribed methodology

<b>Version:</b>	Final	<b>Date:</b>	30/06/2023
<b>Type:</b>	Report		
<b>Availability:</b>	Public		
<b>Responsible Partner:</b>	PP11 - Veneto Region		
<b>Involved Partner</b>	PP2 - Autonomous Region Friuli Venezia Giulia PP4 - Cetacea Foundation PP9 - Irena – Istrian Regional Energy Agency L.T.D. PP10 - Apulia Region		
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## 1. Introduction

### 1.1. Overall objective

The main objective of this report is the description of the training, monitoring and analysis activities carried out on different coastal locations in several beach facilities, in which the stakeholders have been involved in the collection of marine litter according to the methodology prescribed by the Marine Strategy Framework Directive.

The described activities have affected beach concessionaries of Friuli Venezia Giulia, Emilia Romagna, Marche, and Apulia on the Italian coast, and the Istrian County on the Croatian coast.

It is well known that the touristic sector generates a great amount of land-based marine litter. One main aim of the activity was indeed to involve and raise awareness on the touristic sector regarding the phenomenon of marine litter.

The beach concessionaries involved were required to assess the marine litter collected during the daily cleaning-up actions according to prescribed methodologies agreed by the PPs, to identify the quantity and composition of beached marine litter, both contributing to the monitoring action and participating in MARLESS touristic sector' engagement.

Online training sessions have been held supported by the Technical Group that managed WP3 and the participants were trained on how to categorize the marine litter collected during the daily cleaning-up activities.

The beaches sampled had an extension of 100m. The monitoring activities took place in different periods in 2021 and 2022 in all the test sites.

After the collection and categorization of the marine litter, main results were the data analysis of marine litter and the proposal of conservation measures. Licensed beaches provide a significant amount of data on the amount and composition of marine litter due to daily cleanups. Furthermore, the trained beach facilities stakeholders involved in the monitoring activities participated in the international Marless Project meeting at Bisceglie in one of the test site of Apulia Region (Italy), during which the interaction between researchers and local, regional and international stakeholders could focus and discuss on different aspects of the important issue of marine litter in the environment.

## 2. Deliverable methodology

### 2.1 Stakeholder engagement

#### *Autonomous Region Friuli Venezia Giulia*

Stakeholders' engagement involved different phases, starting with the identification of the beach facilities, followed by the involvement of all the different people interested, and the analysis of the beaches suitable for this action. Within the identification phase, PP2 reached the municipalities of FVG on the coast with beach facilities, to collect potential interest in the participation to the activity and eventually to acquire their contacts. Formal invitations were then sent to interested facilities stakeholders and a final list of participants was created. Subsequently, PP2 collected all the necessary data. Finally, two internal meetings were held to better arrange the training contents that have been organized remotely with the support of ARPA FVG on July 6<sup>th</sup>, 2021. The cleaning-up activities started just after these events.

#### *Cetacea Foundation*

The Rimini and Pesaro beach facilities have been chosen resuming previous collaborations with other European projects (Cleansea Life) and considering the characteristics of the beaches, as they all met the specific requirements for monitoring activities.

#### *Irena – Istrian Regional Energy Agency L.T.D.*

At the beginning of 2021, IRENA contacted four biggest hotels in the Istria Region: Maistra, Valamar, ARENA Hospitality Group and Plava Laguna, and invited them to participate in project activities. One online meeting/training was held at the start of June 2021 and an additional in presence training in Rovinj on June 29<sup>th</sup>, 2021. During the training IRENA and IRB-CIM presented the methodology for the monitoring activity. After the training, due to previous commitments, only MAISTRA and Plava Laguna agreed to participate to the activity.

Three beaches were chosen for monitoring (locations: Rovinj, Poreč and Umag). The monitoring activities have been conducted during two touristic seasons (summer 2021 and summer 2022).

#### *Apulia Region*

The beach facilities have been chosen by a public selection (Determination 009/0011 of January 21<sup>st</sup> 2021, open to all the bathing concessionaires present on the Apulian coast in the provinces of Bari, Brindisi, BAT, Lecce and Foggia. Three bathing establishments have been selected in the first year of monitoring: Lido Soleluna in the Municipality of San Cataldo (LE), Lido Le Maldive del Salento in the Municipality of Marina di Pescoluse, Salve (LE) and Lido Le Sirene in the Municipality of Gallipoli (LE). During the second year of monitoring, two bathing establishments were added, Lido La Conchiglia in the Municipality of Bisceglie (BAT) and Lido Nettuno in the Municipality of Molfetta (BA).

## 2.2 WHERE: Deliverable location description

### *Autonomous Region Friuli Venezia Giulia*

The training was accomplished during an online meeting held on Microsoft Team on the 6th of July 2021. The supporting material for the training can be found at the following link: <https://we.tl/t-u00k7Lq3Z0>.

The cleaning-up activities in Friuli Venezia Giulia were respectively held between the summer of 2021 and 2022 (July-September), and involved beach concessionaires from Lignano Sabbiadoro, Grado and Sistiana.



Figure 1: ARPA FVG: <http://cmsarpa.regione.fvg.it/cms/tema/acqua/acque-marino-costiere-e-lagunari/approfondimenti/Acque-marino-costiere-e-lagunari-il-territorio.html>

### *Cetacea Foundation*

Cetacea Foundation involved 3 bathing establishments between Rimini and Pesaro. All sampling areas involved present sandy beaches and an extension of 100 meters. The concessionaires extend close to touristic areas (busy areas in summer). There are also refreshment facilities nearby.

### *Irena – Istrian Regional Energy Agency L.T.D.*

The three monitored beaches are situated on the western coast of the Istrian peninsula at Rovinj, Poreč and Umag. The climate of this territory is Mediterranean.

The town of Rovinj (Rovigno in Italian) is located at 45° 04' N and 13° 38' E. The average annual temperature is 16°C. The average temperature in winter (January) is 4.8°C, while in summer (July) is 22.3°C. The vegetation is subtropical. 940 mm of rain falls annually and the annual average humidity is 72%.



Poreč is located at 45° 13.62' N and 13° 35.56' E at an altitude of 29 meters on the sea level. After Pula, Poreč is the largest Istrian city in terms of population. The climate is very mild, without summer heat. August is the warmest month with an average of 30 °C and low humidity, while January is the coldest, with an average temperature of 5 °C. The city has more than 3,850 hours of sunshine a year (an average of more than 10 hours of sunshine on a summer day). The sea temperature can rise up to 28 °C, which is higher than the temperatures in southern Croatia. Average annual rainfall of 920 mm is evenly distributed throughout the year. In Poreč, the bora wind blows from North and brings cold and sunny weather in the winter, while in the south, blows a warm wind that brings rain; the mistral, a summer breeze, blows from sea to land.

According to the data of the Tourist Board of the Istrian County, Poreč and Rovinj are the leading tourist destinations in terms of the number of overnight stays not just in Istria, but in the whole Croatia. Because there is big impact on the environment and waste creation.

Umag is a city on the western Istrian coast, only 10 km from the Slovenian border and next to Savudrija, it is the westernmost place in the Republic of Croatia.



Figure 2: Map of deliverable locations (source: <https://en.wikipedia.org/wiki/Istria>)

### Apulia Region

The Apulia Region, involved in this activity five beach concessionaires. The beaches, that extend for a minimum of 100 m, are sandy in San Cataldo, Salve and Gallipoli, while the beaches of

Molfetta and Bisceglie present pebbles and rocks. All the beaches are very touristic and offer restaurant services on the beaches themselves. All beaches are in the vicinity of the city centers.

### 2.3 WHO: Beach Concessionaries Involved

#### *Autonomous Region Friuli Venezia Giulia*

The beach concessionaires involved in these activities are the following:

- Castelreggio (Sistiana, Trieste);
- Grado Impianti Turistici (GIT) (Grado, Gorizia);
- Villaggio Turistico Europa (Grado, Gorizia);
- Residence & Camping Punta Spin (Grado, Gorizia);
- Camping Sabbiadoro (Lignano Sabbiadoro, UD).

#### *Cetacea Foundation*

The following concessionaires have been involved in the monitoring activities:

- Bagni 62 (Rimini, RN);
- Bagni 149 (Miramare, RN);
- Bagni Bahia (Pesaro, PU).

#### *Irena – Istrian Regional Energy Agency L.T.D.*

The involved beach concessionaires are from two major Hotels of the Istrian County:

- Maistra;
- Plava Laguna.

Maistra D.D. is a Croatian hotel and tourism company that manages over 20 hotels, resorts and camps in Rovinj and Vrsar. It is the leading tourist company in luxury tourism in Croatia. He leads the tourism part of the Adris Group.

Plava Laguna D.D. is a company behind more than 60 years of successful work and development, based on ecological principles and sustainable development, during which it has consistently occupied a leading position in Croatian tourism, and by permanently refining its overall offer and adapting to the needs of an increasingly demanding tourist market. In their accommodation portfolio are 20 hotels, 11 apartment complexes, 9 camps, for a total capacity of 16,219 accommodation units. Plava Laguna employs about 3,000 people in the tourist season peak.

#### *Apulia Region*

The following concessionaires have been involved in the monitoring activities:

- Lido Soleluna in the Municipality of San Cataldo (LE);
- Lido Le Maldive del Salento in the Municipality of Marina di Pescoluse;
- Salve (LE) and Lido Le Sirene in the Municipality of Gallipoli (LE);
- Lido La Conchiglia in the Municipality of Bisceglie (BAT);




- Lido Nettuno in the Municipality of Molfetta (BA).

## 2.4 HOW: Clean-up actions

### Autonomous Region Friuli Venezia Giulia


The cleaning-up actions were daily carried out in each beach concession. Specifically, they completed the ordinary cleaning-up activity and, as agreed within the framework of MARLESS, they then categorized the marine litter collected in different categories set by the PPs. Participants were provided with an Excel template for the data categorization.

Beach Concessionaries Involved:

<b>Castelreggio</b>	
<b>LOCATION</b>	Sistiana Bay, Trieste
<b>TRANSECT SIZE</b>	100 m length
<b>NAME OF BEACH CONCESSIONARY</b>	Castelreggio
<b>CLEAN-UP DURATION</b>	Approx. 4 months
<b>TOTAL AMOUNT OF ML COLLECTED</b>	17984
<b>TOTAL NUMBER OF ITEMS COLLECTED</b>	Tobacco product
<b>SHORT DESCRIPTION</b>	<i>The coast where the beach is located is characterised by high and rocky coast, with different and small beaches, that can be traced back to abrasion terrain of outcropping rocks.</i>
<b>PICTURES</b>	

<b>Grado Impianti Turistici (GIT)</b>	
<b>LOCATION</b>	Grado
<b>TRANSECT SIZE</b>	100 m length
<b>NAME OF BEACH CONCESSIONARY</b>	Grado Impianti Turistici (GIT)
<b>CLEAN-UP DURATION</b>	July - August 2022
<b>TOTAL AMOUNT OF ML COLLECTED</b>	4418
<b>TOTAL NUMBER OF ITEMS COLLECTED</b>	Tobacco product

<b>SHORT DESCRIPTION</b>	<i>From a morphological point of view, the coast where the beach is located is low and sandy, characterized by moderate depth, originating both following marine deposition and river sediments. The area is near the Isonzo River's mouth and the Lagoons of Grado and Marano.</i>
<b>PICTURES</b>	Available at: <a href="https://www.gradoit.it/">https://www.gradoit.it/</a>

<b>Residence &amp; Camping Punta Spin</b>	
<b>LOCATION</b>	Grado
<b>TRANSECT SIZE</b>	100 m length
<b>NAME OF BEACH</b>	Residence & Camping Punta Spin
<b>CONCESSIONARY</b>	
<b>CLEAN-UP DURATION</b>	July - August 2022
<b>TOTAL AMOUNT OF ML COLLECTED</b>	101
<b>TOTAL NUMBER OF ITEMS COLLECTED</b>	Tobacco product
<b>SHORT DESCRIPTION</b>	<i>From a morphological point of view, the coast where the beach is located is low and sandy, characterized by moderate depth, originating both following marine deposition and river sediments. The area is near the Isonzo River's mouth and the Lagoons of Grado and Marano.</i>
<b>PICTURES</b>	

<b>Villaggio Turistico Europa</b>	
<b>LOCATION</b>	Grado
<b>TRANSECT SIZE</b>	100 m length
<b>NAME OF BEACH</b>	Villaggio Turistico Europa
<b>CONCESSIONARY</b>	
<b>CLEAN-UP DURATION</b>	July - August 2022
<b>TOTAL AMOUNT OF ML COLLECTED</b>	478
<b>TOTAL NUMBER OF ITEMS COLLECTED</b>	Plastic straws
<b>SHORT DESCRIPTION</b>	<i>From a morphological point of view, the coast where the beach is located is low and sandy, characterized by moderate depth, originating both following marine deposition and river sediments. The area is near the Isonzo River's mouth and the Lagoons of Grado and Marano.</i>
<b>PICTURES</b>	Available at: <a href="https://www.villaggioeuropa.com/">https://www.villaggioeuropa.com/</a>


<b>Camping Sabbiadoro</b>	
<b>LOCATION</b>	Lignano Sabbiadoro
<b>TRANSECT SIZE</b>	100 m length

<b>NAME OF BEACH CONCESSIONARY</b>	Camping Sabbiadoro
<b>CLEAN-UP DURATION</b>	July - August 2022
<b>TOTAL AMOUNT OF ML COLLECTED</b>	8878
<b>TOTAL NUMBER OF ITEMS COLLECTED</b>	Tobacco product
<b>SHORT DESCRIPTION</b>	<i>The area of Lignano begins from the mouth of the Tagliamento river, with low and sandy beaches.</i>
<b>PICTURES</b>	Available at: <a href="https://www.campingsabbiadoro.it/">https://www.campingsabbiadoro.it/</a>


### Cetacea Foundation

From 15<sup>th</sup> July to 15<sup>th</sup> September 2021 and 2022, the marine litter has been collected daily from the bathing establishments that decided to cooperate with the MARLESS project. The litter has been divided into several simplified categories following the guidelines set out by the Marine Strategy Framework Directive. The waste collected and categorized had to be larger than 2.5 cm. When daily sorting was not possible, the concessionaire kept the collected waste in a separate bag and filled in the form the following day. In this case it has been specified that the form refer to two or more days. Known events that might have caused an unusual presence of waste have been marked in the notes section.

### Beach Concessionaries Involved:

<b>Bagni Bahia, Pesaro</b>	
<b>DATE</b>	15/07/2021 – 15/09/2021
<b>LOCATION</b>	Bagni Bahia, Pesaro (PU)
<b>TRANSECT SIZE</b>	100 m length
<b>CLEAN-UP DURATION</b>	2 months
<b>TOTAL AMOUNT OF ML COLLECTED</b>	Since the data haven't been analysed yet, we cannot detect the total amount of ML collected, but the most abundant categories are cigarettes and other plastic materials.
<b>TOTAL NUMBER OF ITEMS COLLECTED</b>	Since the data haven't been analysed yet, we cannot detect the exact number of items, but the most abundant categories are cigarettes and other plastic materials.
<b>SHORT DESCRIPTION</b>	The beach is sandy and has an extension of 100 meters. It is located close to tourist areas and busy areas in the summer. There are also refreshment facilities nearby. The cleaning action have been carried out every day.
<b>PICTURES</b>	

<b>Bagni 149, Miramare</b>	
<b>DATE</b>	15/07/2021 – 15/09/2021

<b>LOCATION</b>	Bagni 149, Miramare (RN)
<b>TRANSECT SIZE</b>	100 m length
<b>CLEAN-UP DURATION</b>	2 months
<b>TOTAL AMOUNT OF ML COLLECTED</b>	Since the data haven't been analysed yet, we cannot detect the total amount of ML collected, but the most abundant categories are cigarettes and other plastic materials.
<b>TOTAL NUMBER OF ITEMS COLLECTED</b>	Since the data haven't been analysed yet, we cannot detect the exact number of items, but the most abundant categories are cigarettes and other plastic materials.
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<b>PICTURES</b>	

<b>Bagni 62, Rimini</b>	
<b>DATE</b>	15/07/2022 – 15/09/2022
<b>LOCATION</b>	Bagni 62, Rimini (RN)
<b>TRANSECT SIZE</b>	100 m length
<b>CLEAN-UP DURATION</b>	2 months
<b>TOTAL AMOUNT OF ML COLLECTED</b>	Since the data haven't been analysed yet, we cannot detect the total amount of ML collected, but the most abundant categories are cigarettes and other plastic materials.
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<p><b>PICTURES</b></p>	
<p><b>Bagni 149, Miramare</b></p>	
<p><b>DATE</b></p>	<p>15/07/2022 – 15/09/2022</p>
<p><b>LOCATION</b></p>	<p>Bagni 149, Miramare (RN)</p>
<p><b>TRANSECT SIZE</b></p>	<p>100 m length</p>
<p><b>CLEAN-UP DURATION</b></p>	<p>2 months</p>
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<p><b>DATE</b></p>	<p>15/07/2022 – 15/09/2022</p>
<p><b>LOCATION</b></p>	<p>Bagni Bahia, Pesaro (PU)</p>
<p><b>TRANSECT SIZE</b></p>	<p>100 m length</p>
<p><b>CLEAN-UP DURATION</b></p>	<p>2 months</p>
<p><b>TOTAL AMOUNT OF ML COLLECTED</b></p>	<p>Since the data haven't been analysed yet, we cannot detect the total amount of ML collected, but the most abundant categories are cigarettes and other plastic materials.</p>
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<b>SHORT DESCRIPTION</b>	The beach is sandy and has an extension of 100 meters. It is located close to tourist areas and busy areas in the summer. There are also refreshment facilities nearby. The cleaning action have been carried out every day.
<b>PICTURES</b>	

*Irena – Istrian Regional Energy Agency L.T.D.*

Beach Concessionaries Involved:

<b>Amarin beach</b>																																																													
<b>LOCATION</b>	Rovinj, Hotel Amarin																																																												
<b>TRANSECT SIZE</b>	160 m																																																												
<b>NAME OF BEACH CONCESSIONARY</b>	Maistra d.d.																																																												
<b>CLEAN-UP DURATION (days)</b>	62 days in 2021. 62 days in 2022.																																																												
<b>TOTAL AMOUNT OF ML COLLECTED (kg)</b>	65,83 kg in 2021. 123,40 kg in 2022.																																																												
<b>ITEMS MORE REPRESENTATIVE</b>	<table border="1"> <thead> <tr> <th>Year</th> <th>CLOTHES / TEXTILES</th> <th>FOOD WASTE</th> <th>GLASS Glass bottles</th> <th>METAL CANS</th> <th>PLASTIC Plastic bottles &gt;0.5l</th> <th>PLASTIC Plastic bottles &lt;0.5l</th> <th>PLASTIC Cigarette lighters</th> <th>PLASTIC Beach items</th> <th>PLASTIC Tobacco products with filters (butt with filter)</th> <th>PLASTIC Candy wrappers, bags of chips and snack</th> <th>PLASTIC Plastic caps</th> <th>PLASTIC Plastic straws</th> <th>PLASTIC Plastic cosmetic bottles (e.g. sun protection lotion)</th> <th>PLASTIC Plastic plates and trays</th> <th>PLASTIC Plastic bag for collecting shells</th> <th>RUBBER</th> <th>PAPER Paper packets for cigarettes</th> <th>PROTECTIVE MASKS AND GLOVES</th> <th>OTHER SUBJECTS</th> </tr> </thead> <tbody> <tr> <td>2021</td> <td>0,0%</td> <td>0,5%</td> <td>7,6%</td> <td>16,5%</td> <td>3,3%</td> <td>8,3%</td> <td>3,1%</td> <td>3,1%</td> <td>15,8%</td> <td>4,5%</td> <td>19,4%</td> <td>1,7%</td> <td>1,9%</td> <td>1,9%</td> <td>0,0%</td> <td>0,0%</td> <td>11,6%</td> <td>0,9%</td> <td>0,0%</td> </tr> <tr> <td>2022</td> <td>0,0%</td> <td>3,1%</td> <td>3,8%</td> <td>7,5%</td> <td>10,0%</td> <td>9,7%</td> <td>2,5%</td> <td>9,1%</td> <td>9,7%</td> <td>11,0%</td> <td>8,5%</td> <td>11,6%</td> <td>2,2%</td> <td>0,6%</td> <td>0,3%</td> <td>2,2%</td> <td>8,2%</td> <td>0,0%</td> <td>0,0%</td> </tr> </tbody> </table>	Year	CLOTHES / TEXTILES	FOOD WASTE	GLASS Glass bottles	METAL CANS	PLASTIC Plastic bottles >0.5l	PLASTIC Plastic bottles <0.5l	PLASTIC Cigarette lighters	PLASTIC Beach items	PLASTIC Tobacco products with filters (butt with filter)	PLASTIC Candy wrappers, bags of chips and snack	PLASTIC Plastic caps	PLASTIC Plastic straws	PLASTIC Plastic cosmetic bottles (e.g. sun protection lotion)	PLASTIC Plastic plates and trays	PLASTIC Plastic bag for collecting shells	RUBBER	PAPER Paper packets for cigarettes	PROTECTIVE MASKS AND GLOVES	OTHER SUBJECTS	2021	0,0%	0,5%	7,6%	16,5%	3,3%	8,3%	3,1%	3,1%	15,8%	4,5%	19,4%	1,7%	1,9%	1,9%	0,0%	0,0%	11,6%	0,9%	0,0%	2022	0,0%	3,1%	3,8%	7,5%	10,0%	9,7%	2,5%	9,1%	9,7%	11,0%	8,5%	11,6%	2,2%	0,6%	0,3%	2,2%	8,2%	0,0%	0,0%
Year	CLOTHES / TEXTILES	FOOD WASTE	GLASS Glass bottles	METAL CANS	PLASTIC Plastic bottles >0.5l	PLASTIC Plastic bottles <0.5l	PLASTIC Cigarette lighters	PLASTIC Beach items	PLASTIC Tobacco products with filters (butt with filter)	PLASTIC Candy wrappers, bags of chips and snack	PLASTIC Plastic caps	PLASTIC Plastic straws	PLASTIC Plastic cosmetic bottles (e.g. sun protection lotion)	PLASTIC Plastic plates and trays	PLASTIC Plastic bag for collecting shells	RUBBER	PAPER Paper packets for cigarettes	PROTECTIVE MASKS AND GLOVES	OTHER SUBJECTS																																										
2021	0,0%	0,5%	7,6%	16,5%	3,3%	8,3%	3,1%	3,1%	15,8%	4,5%	19,4%	1,7%	1,9%	1,9%	0,0%	0,0%	11,6%	0,9%	0,0%																																										
2022	0,0%	3,1%	3,8%	7,5%	10,0%	9,7%	2,5%	9,1%	9,7%	11,0%	8,5%	11,6%	2,2%	0,6%	0,3%	2,2%	8,2%	0,0%	0,0%																																										
<b>SHORT DESCRIPTION</b>	<p>Monitored beach is located near Hotel Amarin, in Rovinj. Beach is mostly visited by guests of family Hotel Amarin. IRENA and CIM organized training with employees of Maistra that are in charge of environmental protection and their disseminated gained knowledge to employees who are cleaning the beach. Monitoring was done once per day during regular cleaning of beaches from 1.07.2021. to 31.08.2021. and 1.07.2022. to 31.08.2022.</p>																																																												



<b>Beach Istarska hiža</b>																																																													
<b>LOCATION</b>	Istarska hiža, Poreč																																																												
<b>TRANSECT SIZE</b>	50 m																																																												
<b>NAME OF BEACH CONCESSIONARY</b>	Plava Laguna d.d.																																																												
<b>CLEAN-UP DURATION (days)</b>	62 days in 2021. 62 days in 2022.																																																												
<b>TOTAL AMOUNT OF ML COLLECTED (kg)</b>	20,97 kg in 2021. 6,27 kg in 2022.																																																												
<b>ITEMS MORE REPRESENTATIVE</b>	<table border="1"> <thead> <tr> <th>Year</th> <th>CLOTHES / TEXTILES</th> <th>FOOD WASTE</th> <th>GLASS Glass bottles</th> <th>METAL CANS</th> <th>PLASTIC Plastic bottles &gt;0.5l</th> <th>PLASTIC Plastic bottles &lt;=0.5l</th> <th>PLASTIC Cigarette lighters</th> <th>PLASTIC Beach items</th> <th>PLASTIC Tobacco products with filters (butt with filter)</th> <th>PLASTIC Candy wrappers , bags of chips and snacks</th> <th>PLASTIC Plastic caps</th> <th>PLASTIC Plastic straws</th> <th>PLASTIC Plastic cosmetic bottles (e.g. sun protection)</th> <th>PLASTIC Plastic plates and trays</th> <th>PLASTIC Plastic bag for collecting shells</th> <th>RUBBER</th> <th>PAPER Paper packets for cigarettes</th> <th>PROTECTIVE MASKS AND GLOVES</th> <th>OTHER SUBJECTS</th> </tr> </thead> <tbody> <tr> <td>2021</td> <td>14,0%</td> <td>6,9%</td> <td>2,4%</td> <td>1,7%</td> <td>0,7%</td> <td>0,7%</td> <td>0,3%</td> <td>39,3%</td> <td>4,7%</td> <td>3,3%</td> <td>2,6%</td> <td>0,1%</td> <td>0,2%</td> <td>0,3%</td> <td>0,0%</td> <td>0,1%</td> <td>0,3%</td> <td>0,2%</td> <td>22,3%</td> </tr> <tr> <td>2022</td> <td>4,0%</td> <td>9,1%</td> <td>1,0%</td> <td>4,8%</td> <td>2,5%</td> <td>4,5%</td> <td>0,2%</td> <td>39,9%</td> <td>5,2%</td> <td>1,8%</td> <td>1,4%</td> <td>0,1%</td> <td>3,7%</td> <td>0,0%</td> <td>0,0%</td> <td>0,0%</td> <td>3,3%</td> <td>0,3%</td> <td>18,3%</td> </tr> </tbody> </table>	Year	CLOTHES / TEXTILES	FOOD WASTE	GLASS Glass bottles	METAL CANS	PLASTIC Plastic bottles >0.5l	PLASTIC Plastic bottles <=0.5l	PLASTIC Cigarette lighters	PLASTIC Beach items	PLASTIC Tobacco products with filters (butt with filter)	PLASTIC Candy wrappers , bags of chips and snacks	PLASTIC Plastic caps	PLASTIC Plastic straws	PLASTIC Plastic cosmetic bottles (e.g. sun protection)	PLASTIC Plastic plates and trays	PLASTIC Plastic bag for collecting shells	RUBBER	PAPER Paper packets for cigarettes	PROTECTIVE MASKS AND GLOVES	OTHER SUBJECTS	2021	14,0%	6,9%	2,4%	1,7%	0,7%	0,7%	0,3%	39,3%	4,7%	3,3%	2,6%	0,1%	0,2%	0,3%	0,0%	0,1%	0,3%	0,2%	22,3%	2022	4,0%	9,1%	1,0%	4,8%	2,5%	4,5%	0,2%	39,9%	5,2%	1,8%	1,4%	0,1%	3,7%	0,0%	0,0%	0,0%	3,3%	0,3%	18,3%
Year	CLOTHES / TEXTILES	FOOD WASTE	GLASS Glass bottles	METAL CANS	PLASTIC Plastic bottles >0.5l	PLASTIC Plastic bottles <=0.5l	PLASTIC Cigarette lighters	PLASTIC Beach items	PLASTIC Tobacco products with filters (butt with filter)	PLASTIC Candy wrappers , bags of chips and snacks	PLASTIC Plastic caps	PLASTIC Plastic straws	PLASTIC Plastic cosmetic bottles (e.g. sun protection)	PLASTIC Plastic plates and trays	PLASTIC Plastic bag for collecting shells	RUBBER	PAPER Paper packets for cigarettes	PROTECTIVE MASKS AND GLOVES	OTHER SUBJECTS																																										
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<b>Beach Sipar</b>																																																													
<b>LOCATION</b>	Hotel Sipar, Umag																																																												
<b>TRANSECT SIZE</b>	100 m																																																												
<b>NAME OF BEACH CONCESSIONARY</b>	Plava Laguna d.d.																																																												
<b>CLEAN-UP DURATION (days)</b>	62 days in 2021. 62 days in 2022.																																																												
<b>TOTAL AMOUNT OF ML COLLECTED (kg)</b>	45,57 kg in 2021. 25,11 kg in 2022.																																																												
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PICTURES



*Apulia Region*

During the two-year period (2021 and 2022) detailed monitoring of the beaches were carried out following the guidelines of the marine strategy. The key points of the monitoring activities are summarized below.


- Monitoring Period: from July 15th to September 15th in the two consecutive years;
- Daily Samplings: carried out at the bathing establishments that participated in the MARLESS project;
- Bimonthly Sampling: beach concessionaires filled out a monitoring form, in which were listed the main types of litter that could be found on the beach;
- Monitoring of 100 Meters of Beach: 100-meter length;
- Simplified Waste Categories: the collected waste has been classified into different categories following the guidelines of the Marine Strategy Framework Directive;
- Minimum Dimensions of Waste: bigger than 5 mm;
- Conservation of Unsorted Waste: when it was not possible to carry out the daily separate collection, the waste was stored in separate bags and the monitoring form was filled in the following day. In these cases, it was specified that the module covered two or more days.
- Reported Abnormal Events: in the notes section of the monitoring form, known events have been reported that may have caused an unusual accumulation of litter on the beach;
- Checks by Regional Authorities: all PPs carried out periodic checks to make sure that the monitoring was correctly performed, as foreseen by the MARLESS project. These details indicate a comprehensive approach to beach monitoring, with a clear focus on waste categorization and reporting of exceptional events. This data is valuable for the management and conservation of marine resources.


Beach Concessionaries Involved:

<b>Lido le Maldive del Salento Salve (Le)</b>	
<b>DATE</b>	15/07/2021 – 15/09/2021 - 15/07/2022 – 15/09/2022
<b>LOCATION</b>	Pescoluse, Salve (Le)
<b>TRANSECT SIZE</b>	100 m lenght
<b>CLEAN-UP DURATION</b>	2 month 2021 and 2 month 2022
<b>TOTAL AMOUNT OF ML COLLECTED</b>	The data was transmitted to be processed technically, it can be noted that the most present waste is cigarette butts.
<b>TOTAL NUMBER OF ITEMS COLLECTED</b>	The project envisaged the transmission of data from two beaches for each PPs. The data was transmitted to be processed technically, it can be noted that the most present waste is cigarette butts
<b>SHORT DESCRIPTION</b>	The sandy type beach was 100 linear meters. Waste monitoring on the beach was carried out every day. The beach in question is very popular with tourists in the summer months, but the presence of restaurant services on the beach is a very important aspect.
<b>PICTURES</b>	


<b>Lido Soleluna San Cataldo (Le)</b>	
<b>DATE</b>	15/07/2021 – 15/09/2021 - 15/07/2022 – 15/09/2022
<b>LOCATION</b>	San Cataldo Lecce
<b>TRANSECT SIZE</b>	100 m lenght
<b>CLEAN-UP DURATION</b>	2 month 2021 and 2 month 2022
<b>TOTAL AMOUNT OF ML COLLECTED</b>	The data was transmitted to be processed technically, it can be noted that the most present waste is cigarette butts.
<b>TOTAL NUMBER OF ITEMS COLLECTED</b>	The project envisaged the transmission of data from two beaches for each PP. The data of this beach have been transmitted to be processed technically, it can be noted that the most present waste is cigarette butts.
<b>SHORT DESCRIPTION</b>	The sandy type beach was 100 linear meters. Waste monitoring on the beach was carried out every day. The beach in question is very popular with tourists in the summer months, but the presence of restaurant services on the beach is a very important aspect.




<b>PICTURES</b>		
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<b>Lido Le sirene Gallipoli (Le)</b>	
<b>DATE</b>	15/07/2021 – 15/09/2021 - 15/07/2022 – 15/09/2022
<b>LOCATION</b>	Li foggi, Gallipoli (Le)
<b>TRANSECT SIZE</b>	100 m length
<b>NUMBER OF DIVERS</b>	/
<b>CLEAN-UP DURATION</b>	2 month 2021 and 2 month 2022
<b>TOTAL AMOUNT OF ML COLLECTED</b>	The data was transmitted to be processed technically, it can be noted that the most present waste is cigarette butts.
<b>TOTAL NUMBER OF ITEMS COLLECTED</b>	The project envisaged the transmission of data from two beaches for each PP. The data of this beach have been transmitted to be processed technically, it can be noted that the most present waste is cigarette butts.
<b>SHORT DESCRIPTION</b>	The sandy type beach was 100 linear meters. Waste monitoring on the beach was carried out every day. The beach in question is very popular with tourists in the summer months, but the presence of restaurant services on the beach is a very important aspect.
<b>PICTURES</b>	

<b>Lido la conchiglia Bisceglie (BA)</b>	
<b>DATE</b>	15/07/2022 – 15/09/2022
<b>LOCATION</b>	Porto Bisceglie (BAT)
<b>TRANSECT SIZE</b>	100 m length
<b>NUMBER OF DIVERS</b>	/
<b>CLEAN-UP DURATION</b>	2 months - 2022
<b>TOTAL AMOUNT OF ML COLLECTED</b>	The data was transmitted to be processed technically, it can be noted that the most present waste is cigarette butts

<b>TOTAL NUMBER OF ITEMS COLLECTED</b>	The project envisaged the transmission of data from two beaches for each PPs. The data was transmitted to be processed technically, it can be noted that the most present waste is cigarette butts	
<b>SHORT DESCRIPTION</b>	The pebble type beach was 100 linear meters. Waste monitoring on the beach was carried out every day. The beach in question is very popular with tourists in the summer months, but the presence of restaurant services on the beach is a very important aspect.	
<b>PICTURES</b>		

<b>Lido Nettuno Molfetta (Ba)</b>	
<b>DATE</b>	15/07/2022 – 15/09/2022
<b>LOCATION</b>	Torre calderina, Molfetta (Ba)
<b>TRANSECT SIZE</b>	100 m length
<b>NUMBER OF DIVERS</b>	/
<b>CLEAN-UP DURATION</b>	2 months - 2022
<b>TOTAL AMOUNT OF ML COLLECTED</b>	The data was transmitted to be processed technically, it can be noted that the most present waste is cigarette butts
<b>TOTAL NUMBER OF ITEMS COLLECTED</b>	The project envisaged the transmission of data from two beaches for each PPs. The data was transmitted to be processed technically, it can be noted that the most present waste is cigarette butts
<b>SHORT DESCRIPTION</b>	The rock and pebble beach was 100 linear meters long. Waste monitoring on the beach was carried out every day. The beach in question is very popular with tourists in the summer months, but the presence of restaurant services on the beach is a very important aspect.
<b>PICTURES</b>	

## 2.5 Deliverable data analysis

*Autonomous Region Friuli Venezia Giulia*

The data analysis showcased that Friuli Venezia Giulia region presents the highest number of plastic items compared to the other areas involved. Furthermore, tobacco products and non-classified items represent a huge portion of marine litter. In Friuli Venezia Giulia, aquaculture contributes to boosting marine litter.

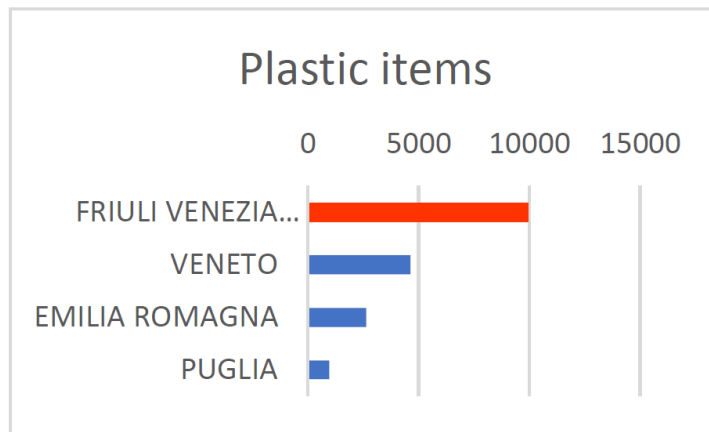


Figure 3: Comparison of the number of plastic items found

*Irena – Istrian Regional Energy Agency L.T.D.*

From three beaches monitored, the beach with the highest number of objects collected is Amarin, located in the city of Rovinj, a figure in line with the number of tourist presences recorded.

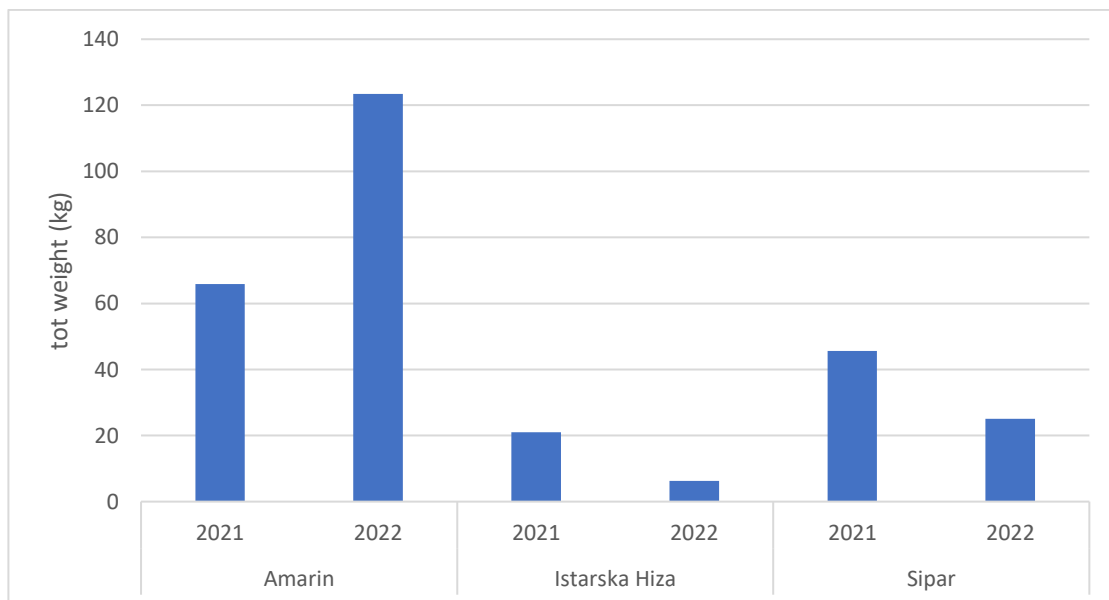


Figure 4: Volume of collected waste

In the table reported here below the quantity of items collected in each of the monitored beach is presented with largest figure highlighted in color red. The most frequent type of waste in all beaches is the category of plastics.

Beach Name	Year	Tot weight (kg)	CLOTHES / TEXTILES	FOOD WASTE	GLASS Glass bottles	METAL CANS	PLASTICS	Tobacco products	RUBBER	Paper packets for cigarettes	PROTECTIVE MASKS AND GLOVES	OTHER SUBJECTS
Amarin	2021	65,83	0,00%	0,47%	7,57%	16,55%	47,04%	15,84%	0,00%	11,58%	0,95%	0,00%
	2022	123,40	0,00%	3,13%	3,76%	7,52%	65,52%	9,72%	2,19%	8,15%	0,00%	0,00%
Istarska Hiza	2021	20,97	14,05%	6,92%	2,38%	1,72%	47,31%	4,67%	0,10%	0,26%	0,24%	22,34%
	2022	6,27	3,99%	9,09%	0,96%	4,78%	54,04%	5,23%	0,00%	3,35%	0,32%	18,25%
Sipar	2021	45,57	5,27%	0,00%	6,06%	2,63%	76,01%	0,37%	7,30%	1,16%	0,99%	0,22%
	2022	25,11	10,15%	0,00%	13,10%	5,40%	53,12%	0,71%	12,91%	2,84%	1,78%	0,00%

Figure 5: Number of items collected

The general analysis of the data indicates that the sampled objects are mostly of anthropic nature due to bathing activity and not coming from the sea.

#### Apulia Region

The following link refers to MARLESS app, that allows to explore the Project dataset:

<https://public.tableau.com/app/profile/interregithr.arpafvg/viz/InterregIT-HRMARLESS-Balneari/MARLESS>

### 3. Summary

#### Autonomous Region Friuli Venezia Giulia

The activities described in this report refers to the different phase of the monitoring and cleaning-up activity carried out by the beach concessionaries, starting from the training activity. The cleaning-up activities were concluded at different times by every beach facility selected.

The overall activity brought a crucial contribution to the project as, firstly, it deepened the understanding of the quantity and composition of marine litter generated by the touristic sector in determined areas. Moreover, it involved the touristic sector, boosting beach concessionaries' awareness about the impact of land-based marine litter and facilitating a constructive dialogue between public entities and the concessionaries regarding issues related to marine litter.

Some difficulties encountered included the engagement of some beach concessionaires, whereas the training and the data analysis did not bring specific problems.

The main achievements include the successful involvement of some beach concessionaires who increased their awareness about the problem of marine litter and a major visibility of the project along with citizens' engagement. Moreover, the activity strengthened the dialogue between the public institutions and the tourist sector. Overall, the feedback received was positive, with participants stating their interest in the theme and their willingness to participate in potential future action aimed at tackling the problem of marine litter.

### *Cetacea Foundation*

Cetacea Foundation involved 3 bathing establishments between Rimini and Pesaro. The choice of concessionaries derives from previous collaborations and the characteristics of the beaches. The cleaning action started on the 15th of July and lasted for 2 months. The marine litter has been collected daily and divided into several simplified categories following the guidelines set out by the Marine Strategy Framework Directive. The data collected within these actions have already been delivered to the responsible partner to be analyzed.

### *Irena – Istrian Regional Energy Agency L.T.D.*

Region of Istria and its coastal systems is threatened by intense anthropogenic pressures including rapid accumulation of marine litter by diverse human activities. The region, which is very popular to touristic destination, has to face a seasonal increase of waste generation due to the seasonal influx of visitors. The beaches, extremely crowded during the summer, are particularly vulnerable since they are proven to be concentrated accumulation zones and one of the main gateways of litter to enter the marine system. The cleanliness of the beaches being one of the main factors considered by the tourists, along with the scenery, the safety, the facilities and the water quality, marine litter can represent, in addition to its negative environmental effects, a shortfall for touristic sector financial windfall. The implementation towards an efficient and sustainable tourism business model is urgently required. Because of that, IRENA through project MARLESS implemented different activities focused on reduction of marine litter.

One of these activities was simplified monitoring in three beaches; Rovinj, Poreč and Buzet in the period from 01/07/2021 to 31/08/2021 and 01/07/2022 to 31/08/2022 with cooperation of two major touristic houses in Istria; Maistra and Plava Laguna. IRENA and CIM organized training with employees of Plava Laguna that are in charge of environmental protection and their disseminated gained knowledge to employees who are cleaning the beach. The biggest problem was to motivate employees to conduct the monitoring because they had a lot of other responsibilities during high touristic season. As multiple employees were interchanging in cleaning the beach during the season, there are some inconsistencies in gathered data.

Overall, monitoring showed the most frequent type of waste in all beaches is the category of plastics and that general analysis of the data indicates that the sampled objects are mostly of anthropic nature due to bathing activity and not coming from the sea. Luckily monitored beaches are cleaned regularly so they are not big source of marine litter but we can conclude that a lot of other beaches in the region, which are not under concession and are not cleaned regularly, can be a big source of marine litter.

### *Apulia Region*



In Puglia, the Marless project involved five seaside concessionaires for marine litter monitoring between 15 July and 15 September 2021 and 2022. All provided data for the analysis, but two bathing establishments provided useful data for the analysis.

The data collected showed that plastic is the most common category of waste on the monitored beaches, mainly of anthropic origin and linked to bathing activities, without forgetting cigarette butts. The monitored beaches are cleaned regularly, but the marine litter problem persists in other unmonitored and non-permitted beaches.