



BLUEISLANDS

Tackling seasonal variation of waste
as an effect of tourism in Mediterranean islands

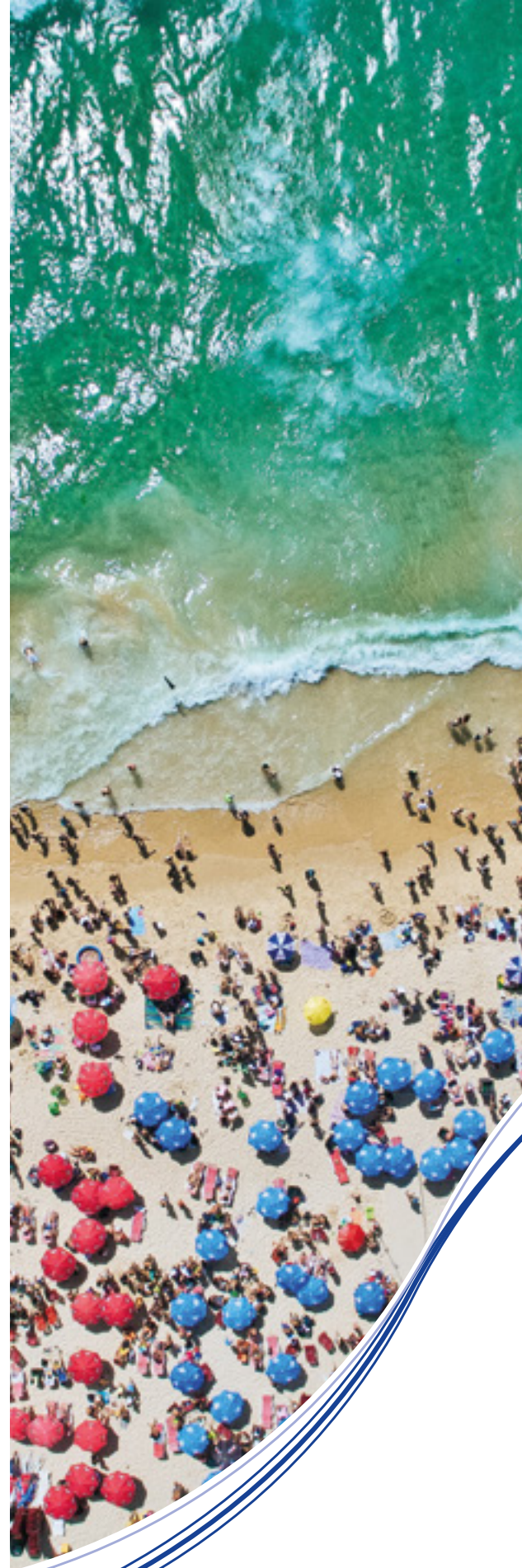
SUMMARY OF RESULTS



Project co-financed by the European
Regional Development Fund

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1. THE BLUEISLANDS PROJECT

The Mediterranean region is the world's leading tourist destination.

The BLUEISLANDS project carried out activities to **identify, address** and **mitigate** the effect of the **seasonal variation of waste generated** on Mediterranean islands as an effect of tourism.

The project ran from November 2016 to April 2020 and followed a three-phase methodology.



Phase 1: Studying

- Marine litter surveys
- Monitoring of anthropogenic nutrients in coastal seawater
- Waste characterisation study



Phase 2: Testing

- Definition, implementation and assessment of pilot activities



Phase 3: Transferring

- Waste management handbook
- Capacity building webinars and events

Stakeholders engagement
dissemination and capitalisation activities



BLUEISLANDS' PARTNERS



THE PROBLEM TARGETED: A GREAT BURDEN ON THE MEDITERRANEAN

The Mediterranean Sea is the world's leading tourist region. In 2017, about **one third of the world 1.326 billion arrivals** was generated in the countries surrounding this semi-enclosed sea¹. Tourism has developed into a major industry and often represents the **main source of income** for the local economy. The annual massive tourist wave towards the Mediterranean, largely concentrated within a short period, places a great burden on local infrastructure, especially for waste management. This is particularly true for sea-locked areas, such as islands.

It is common for these islands to host a far greater population than their own population during the high tourist season. For example, in 2017, the eight islands involved in the BLUEISLANDS project (Mallorca, Sicily, Rab, Malta, Crete, Mykonos, Rhodes and Cyprus) welcomed **45.069 million tourists**, while their population was **8.351 million residents**.

Local authorities face an often insurmountable challenge in coping with the resulting waste generation, especially during the high season. Although a known and recurrent phenomenon, the seasonal variation in waste generation in sea-locked island economies has yet to be properly defined and its socioeconomic and environmental effects determined. Moreover, the problem has yet to be addressed, exacerbating the difficulty facing Mediterranean islands in developing **circular economy** models.

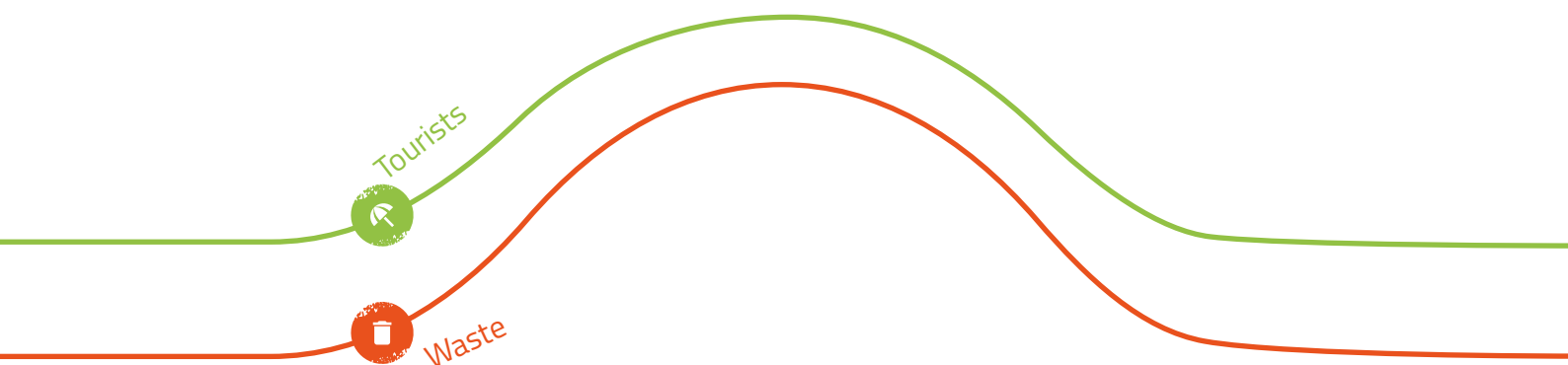
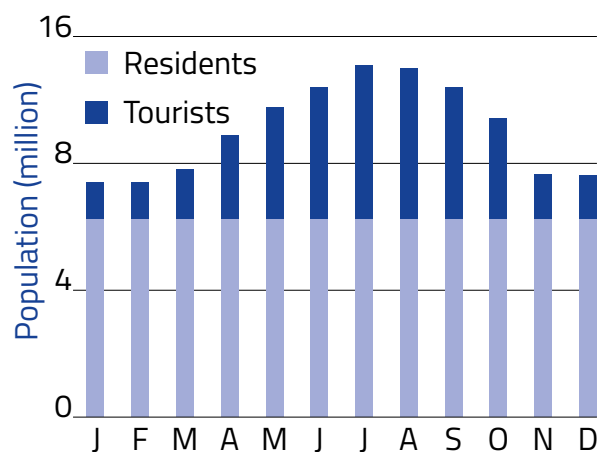


Fig. 1: Map of the eight Mediterranean islands involved in the study phase of the BLUEISLANDS project (left). Monthly distribution of the number of residents and the number of tourists welcomed in these eight islands in 2017 (right).



¹ World Tourism Organization, UNWTO Tourism Highlights, 2018 Edition. (Madrid, 2018).

2. THE STUDYING PHASE

MARINE LITTER SURVEYS

During the studying phase of the project, BLUEISLANDS assessed the seasonal dynamics of marine litter in highly touristic coastal areas: the beaches. A total of eight islands from the Mediterranean Sea (Mallorca, Sicily, Rab, Malta, Crete, Mykonos, Rhodes and Cyprus) were involved.

Focus

WHAT IS MARINE LITTER?

Marine litter is defined as any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment. Marine litter consists of items that have been made or used by people and deliberately discarded into the sea or rivers or on beaches; brought indirectly to the sea with rivers, sewage, storm water or winds; accidentally lost, including material lost at sea in bad weather (fishing gear, cargo); or deliberately left by people on beaches and shores².

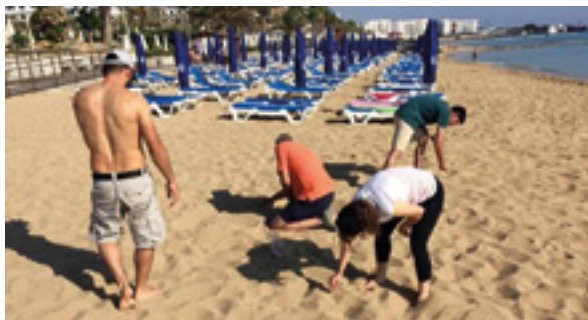
Fig. A: Typical type of items that are left on beaches by beachgoers. This is marine litter.



For each island, three selected beaches were periodically monitored during both the low and high touristic season, from February to November 2017. The three beaches were selected in order to include one impact site where tourists represent most of the visitors to the beach and two control sites:

	Volume of visitors	Type of visitors	Level of infrastructures dedicated to tourism and leisure in the area behind the beaches
 Touristic beaches	High, especially during the high touristic season	Mainly tourists	High
 Beaches mainly used by locals	High, especially during the high touristic season	Mainly locals	Low
 Remote beaches	Low, even during the high touristic season.	/	No infrastructures

On each beach a fixed 100m portion going from the shoreline to the back of the beach was defined. During the **147 surveys** performed in 2017 on these fixed portions of beach, all the items with an anthropogenic origin were collected, counted³ and characterised⁴. The time lapsed between the survey and the previous cleaning activity performed on the beach was taken into account in order to evaluate the **accumulation rate** of marine litter.



Results

- 162,320 items were collected during the 147 surveys:
 - During the low season 58,852 items were collected during 45 surveys, representing an average of 1,391 items collected per 100m of beach;
 - During the high season 103,468 items were collected during 102 survey, representing an average of 1,075 items collected per 100m of beach.
- The items made partly or completely of plastic represent 94.2% of the items collected.
- If only the number of items collected is considered, no seasonal variation is observed. The beaches mainly used by locals seem to be the most affected by marine litter (100,869 items collected), followed by the touristic beaches (40,713 items collected) and the remote beaches (20,738 items collected).
- **If the accumulation rate of the marine litter is considered, a clear seasonal variation is observed with higher accumulation during the high season.** It is on the touristic beaches that the accumulation is the highest (317.5 items/1000m²/day, +327.9% compared to the low season) followed by the beaches mainly used by locals (171.0 items/1,000m²/day, +216.9% compared to the low season), and the remote beaches (12.8 items/1,000m²/day, +38.6% compared to the low season).
- **The accumulation rates of the mesoplastics (0.5 – 2.5cm) and the “visible” microplastics (0.1 – 0.5cm) show a seasonal variation as well.** The strong positive correlation between the accumulation rates of these particles and the accumulation rates of the items most likely left on the beaches by the beachgoers suggest that these particles could be produced directly on the beaches by the fragmentation of larger plastic items as an effect of the high volume of visitors and the friction with the sand.
- The items most likely left on the beaches by the beachgoers represent “only” 25.4% of the total amount of marine litter collected during the surveys of 2017. However, during the high season this type of items represents 58.5% and 17.0% of the items accumulating on the touristic beaches and the beaches mainly used by locals respectively. These percentages can rise up to 76.7% and 73.6% respectively if meso- and microplastics are included.
- **The five most common items left on beaches are cigarette butts, cutlery (including straws), plastic caps/lids, crisp/sweet packets (including lolly sticks) and bottle caps (metal).**
- For smaller microplastics (<1mm) found in the sand samples collected during the monitoring of the marine litter, a seasonal increase is observed again with concentrations equivalent to 742.7 particles per kg of dry sand in the touristic beaches, 1235.3 particles per kg of dry sand in the beaches mainly used by locals and 612.8 particles per kg of dry sand in the remote beaches.

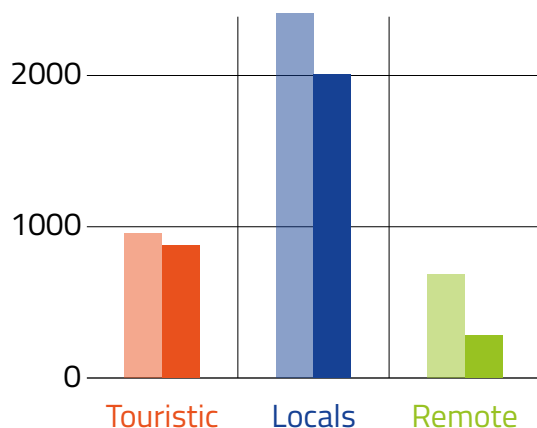
³ https://www.ospar.org/ospar-data/10-02e_beachlitter%20guideline_english%20only.pdf

⁴ Vlachogianni, Th., Anastasopoulou, A., Fortibuoni, T., Ronchi, F., Zeri, Ch., 2017. Marine Litter Assessment in the Adriatic and Ionian Seas. IPA-Adriatic DeFishGear Project, MIO-ECSDE, HCMR and ISPRA. pp. 168 (ISBN: 978-960-6793-25-7).

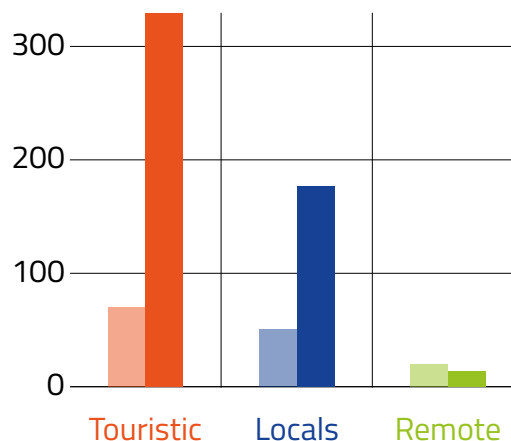
Fig. 2: Summary of the findings on the marine litter surveys.

Average number of items collected every 100m of beach

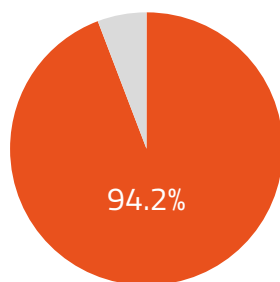
Low season High season



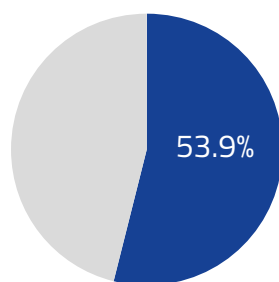
Average accumulation rates items/1000m²/day



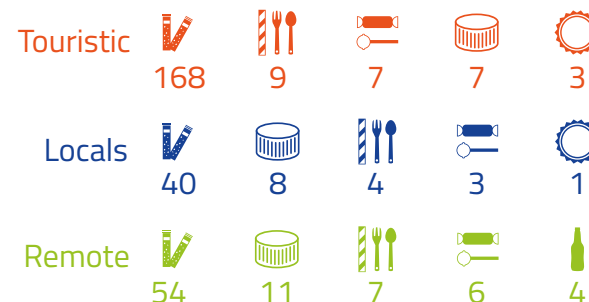
Proportion of plastic



Proportion related to tourism



The five items with the highest accumulation rates
Values in items/1000m²/day



THE ACCUMULATION INDEX TO BETTER ASSESS THE MARINE LITTER DYNAMICS

Regular monitoring “only” reports the number and type of items left on a beach, providing a snapshot of its cleanliness. The BLUEISLANDS project took into account the time elapsed between the monitoring and the previous cleaning of the beaches to estimate the accumulation rates of marine litter. This simple fact sheds a new light on the impact of tourism on the generation of waste in the Mediterranean region and particularly in vulnerable system like islands and the urgency in addressing this issue. From these results, a new accumulation index has been developed to support efficient mitigation strategies by local authorities: the accumulation index.

$$AI = \log_{10} (AR)$$

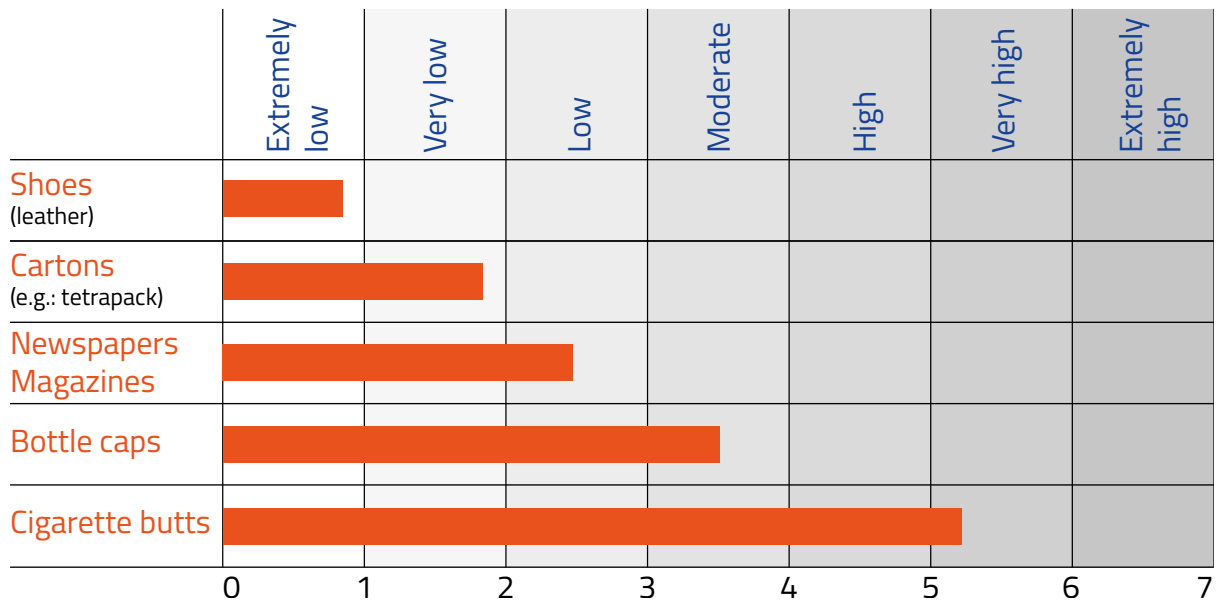
Where AI stands for Accumulation Index and AR for Accumulation Rates in number of items per km² and per day. The AI is divided into seven categories going from “extremely low” to “extremely high”.

Table 1: Accumulation Index (AI), value and equivalence for the accumulation rate.

Quality	Extremely low	Very low	Low	Moderate	High	Very high	Extremely high
AI	≤1	1-2	2-3	3-4	4-5	5-6	≥6
AR (items/ km ² /day)	1	10	100	1000	10000	100000	1000000

Fig. 3: Average accumulation index of some items most likely left on touristic beaches. In this example, the accumulation of the cigarette butts is almost 24,000 times higher than of shoes.

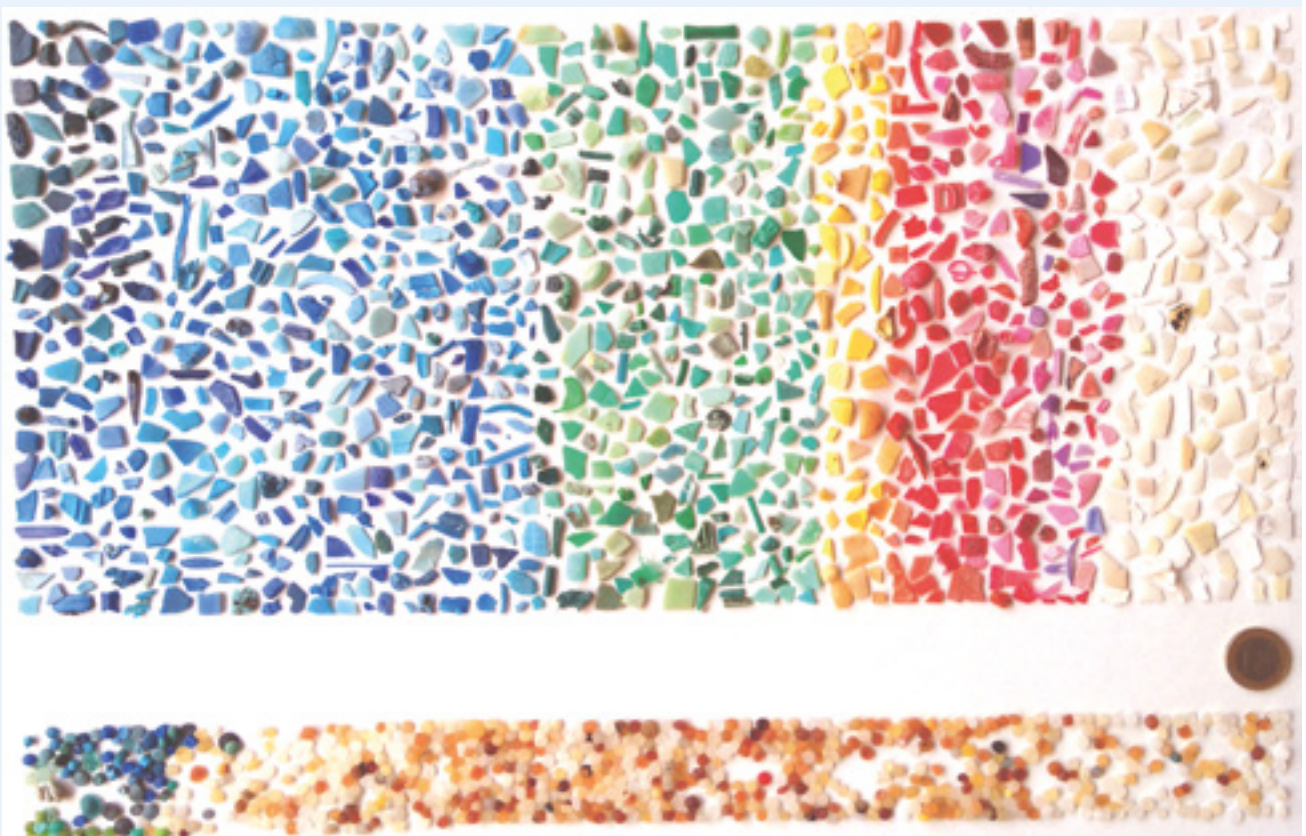
Accumulation Index



Focus WHAT ABOUT THE SMALL PIECES OF PLASTIC?

During the surveys, plastic pieces ranging in length from 0.5 and 2.5 cm (mesoplastics) and under 0.5 cm (microplastics) were collected as well. That is the case for both primary and secondary microplastics. Primary microplastics are those manufactured at a small scale to begin with and can include, amongst other, raw material used to create plastic products (pellets) or small particles used for pharmaceutical or cosmetics purposes (microbeads). On the other hand, secondary microplastics are derived from the fragmentation of larger plastic items due to exposure to physical, chemical and biological processes in the natural environment.

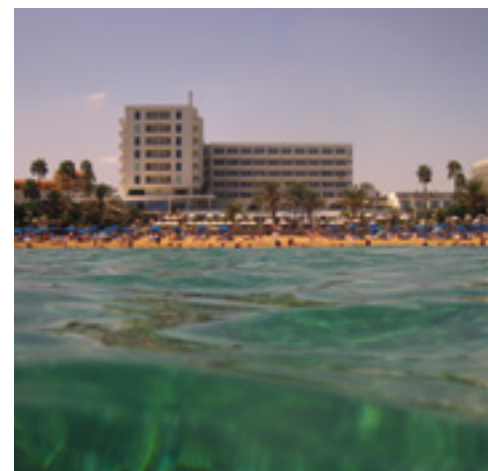
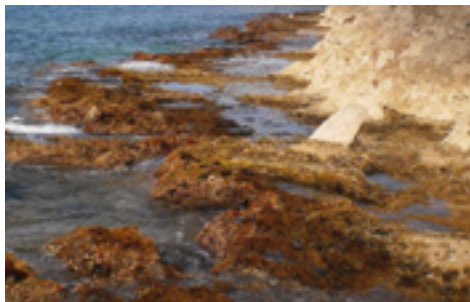
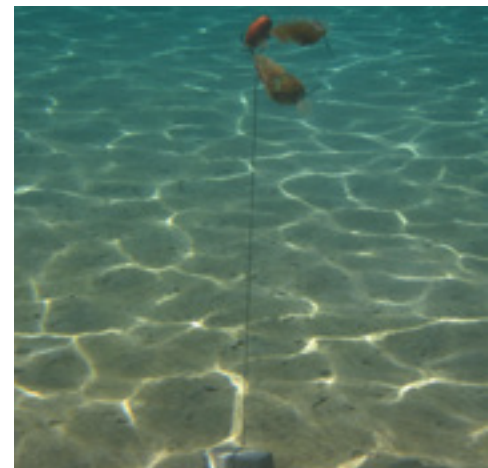
Fig. B: picture of meso- and microplastics collected on the beach mainly used by locals of Arina (Crete). Bottom: primary microplastics (pellets), top: secondary meso- and microplastics. The 1€ coin gives the scale.



MONITORING THE PRESENCE OF ANTHROPOGENIC NUTRIENTS IN COASTAL SEAWATERS

During the studying phase, BLUEISLANDS assessed the impact of tourism on highly touristic marine coastal areas. This was done through the assessment of the occurrence and the temporal variation of **anthropogenic nutrients in coastal waters**.

To measure the presence of anthropogenic nutrients, short-term **macroalgae deployments** were conducted in three selected Mediterranean islands: Cyprus, Sicily and Rhodes. For each island, three sites were selected in order to compare an impacted site, featured by large tourist infrastructures and popular beaches that experience a sharp increase in population density during the tourist peak, with two coastal sites where tourist activities and variation in population density throughout the year are negligible.



In each island, the species of macroalgae to be used in the experiments was selected based on specific features such as the perennial cycle and local abundance. For this purpose, brown macroalgae of the genus *Cystoseira* were suitable to be used in all the study areas.

The deployments were performed during three consecutive days in June (roughly before the tourist period), August (roughly during the tourist peak) and October (roughly at the end of the tourist period). Afterwards, the samples of macroalgae were analysed in the laboratory in order to assess the presence of anthropogenic nutrients in seawater.

Fig. 4: Location map of the studied sites in Cyprus (left), Sicily (middle) and Rhodes (right).

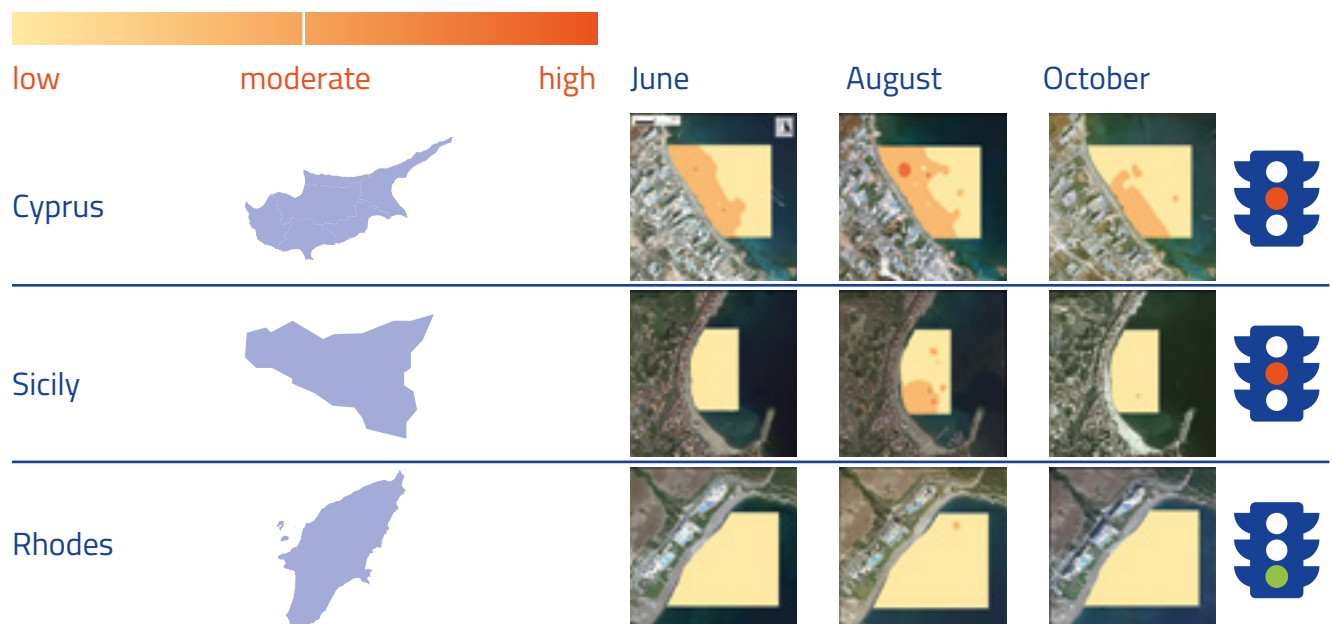


Results

- **72 georeferenced points** of macroalgae deployment on each island and for each period (30 at the tourist beach, 21 in each local/remote beach).
- Short-term macroalgae deployment worked as an **effective monitoring system to detect** the presence of **anthropogenic nutrients** in coastal waters.
- The presence of **anthropogenic nutrients** was recorded **in the tourist site of every island** during the high tourist peak, although in a concentration that was deemed not concerning.
- In Cyprus, the increase was detectable since the beginning of the tourist season (June), peaked in August and decreased in October.
- In Sicily, the increase was recorded in August and persisted slightly in October.
- In Rhodes, only a slight increase was recorded in August.
- This suggests a **limited influence of anthropogenic activities** in coastal seawater.

Fig. 5: Levels of anthropogenic nutrients in the coastal waters of the tourist beaches of Cyprus (top), Sicily (middle) and Rhodes (bottom).

Levels of anthropogenic nutrients in the seas



MACROALGAE DEPLOYMENT TO BETTER ASSESS ANTHROPOGENIC NUTRIENTS IN MARINE COASTAL AREAS

Increasing the awareness of island tourism stakeholders (from bathers and boaters to HORECA managers and policy-makers) about the importance of coastal systems, as well as the strong connection between the human behaviour and the system functioning, represents a fundamental challenge and a good starting point to promote sustainable practices advocated for the near future.

The approach adopted by BLUEISLANDS can be used as an **effective technique for the detection of anthropogenic nutrients in marine coastal areas, representing a smart early-warning system**. Such a system, and especially the final output consisting in easily readable georeferenced maps, could provide important information also for the wider region's water quality monitoring programs. This would help the decisional process of competent authorities in the eventual need to improve standards to prevent the deterioration of water quality due to the impact of tourism.

Focus WHAT IS WASTEWATER?

Wastewater is defined as “used water from any combination of domestic, industrial, commercial or agricultural activities, surface runoff or stormwater, and any sewer inflow or sewer infiltration”⁵. Therefore, wastewater is a byproduct of domestic, industrial, commercial or agricultural activities.

Fig. C: Wastewater pipe ending directly in the sea.

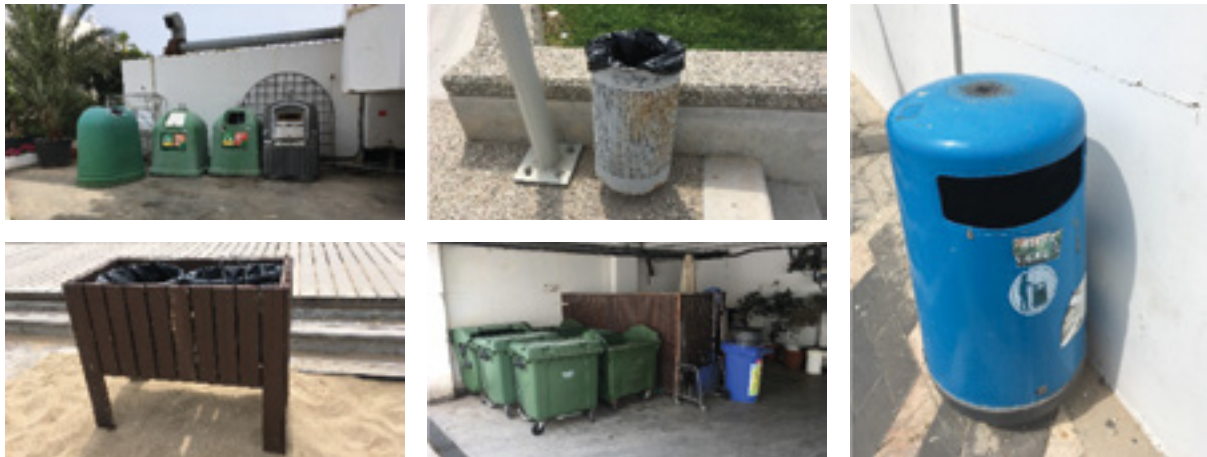


WASTE CHARACTERISATION STUDY

During the study phase of the project, one of the main goals was to assess the seasonal dynamics of **municipal solid waste (MSW)** in highly touristic coastal areas. Not only on the beaches, but in the area directly situated behind the beaches too. The selected sites are the same as for the marine litter surveys.

For each beach, an impact zone was defined, including the portion of beach that was monitored for the marine litter and the area right behind the beach where the waste generated by all the establishments related to tourism (hotels, restaurants, bars, etc.) as well as the waste collected by public litter bins was quantified and characterised⁶. The monitoring took place every month for a full week from June to November 2018.

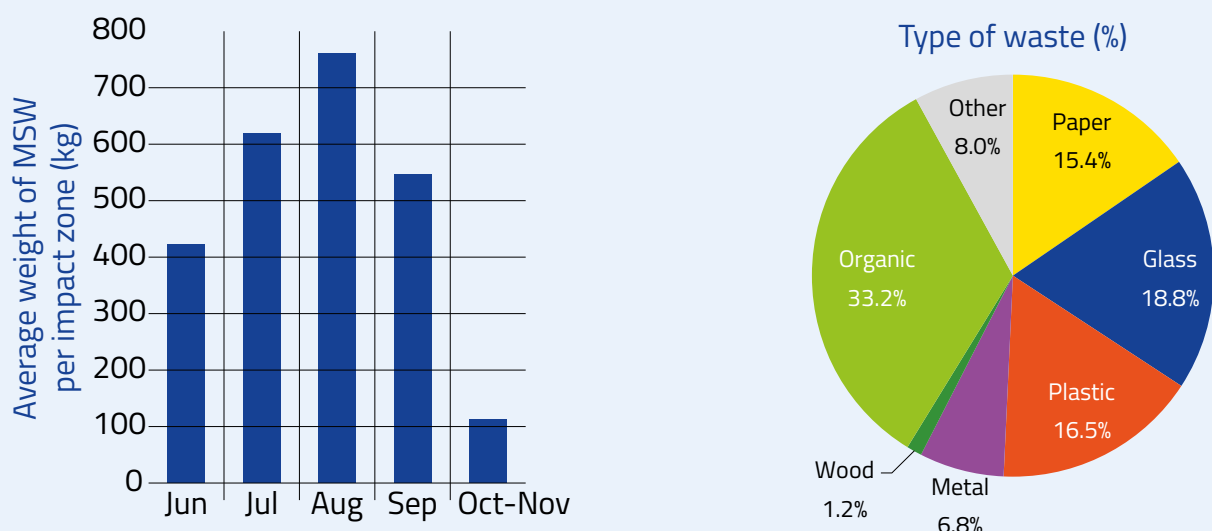
Fig. 6: Example of litter bins monitored during the waste characterisation study. Cyprus, May 2018.



Results

- In total, 16 impact zones were monitored during the study.
- The average surface of an impact zone, including the beach is of 34,638 m², with a standard deviation of 19,683 m².
- In total 40.65 tons of waste has been collected and characterised.
- The results show that the average amount of municipal solid waste per impact zone and per survey increased from June to August before decreasing until November. In August the average amount of MSW is the highest with 760.75 kg collected per impact zone and per survey (Fig. 7).
- The results show that the **organic waste is the highest contributor to the municipal solid waste**, followed by glass, plastics, paper, other solid waste, metal and wood (Fig. 7).

Fig. 7: Average weight of municipal solid waste (MSW) collected in the impact zones where the surveys were conducted (left) and the average relative contribution per category of waste (right).



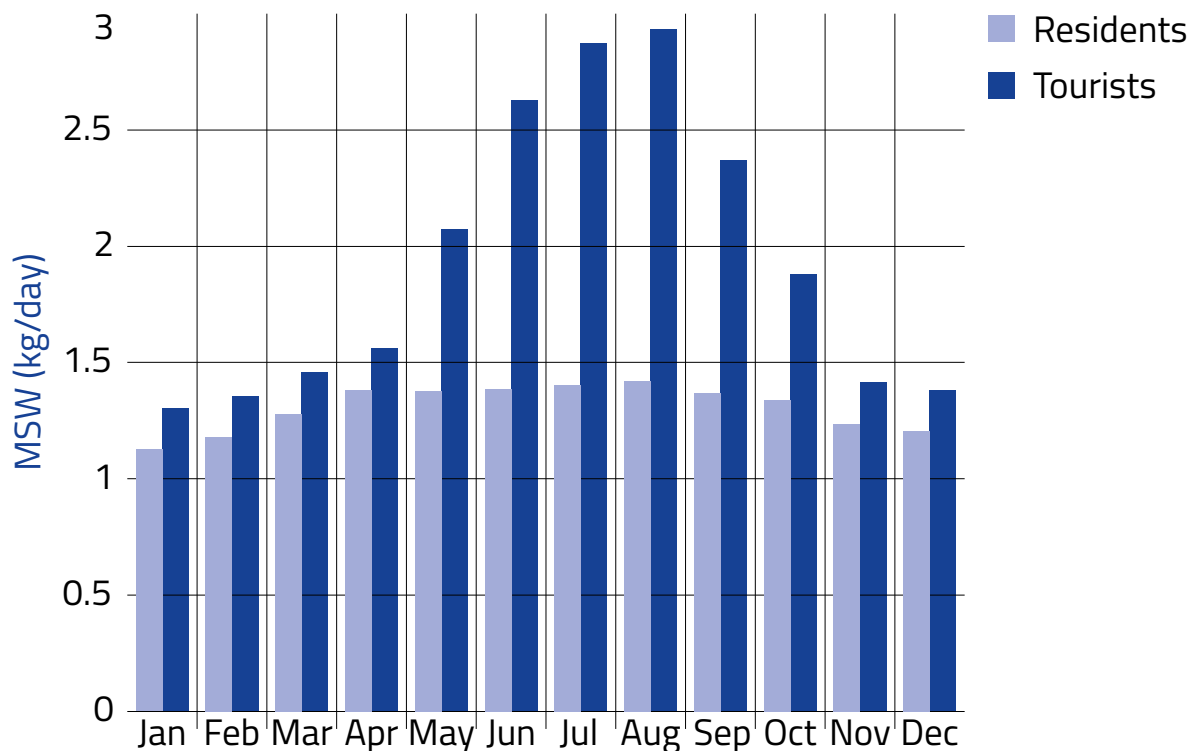
⁶ Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste, D5231 – 92 (Re-approved 2008).

A WASTE CHARACTERISATION STUDY TO BETTER ASSESS THE IMPACT OF TOURISM ON THE GENERATION OF MSW

By combining the results of the waste characterisation study to other data available from the monitored areas, such as the annual MSW quantities collected, the number of residents and the number of tourist days per month, it is possible to elaborate the tourist waste generation index which provides the amount of MSW produced per tourist and per day (kg/pax/day) and to compare it to the resident waste generation index, which provides the amount of MSW produced per resident and per day (kg/pax/day).

During the high season (May to September), the tourist waste generation index is on average 1.85 times higher than the resident waste generation index (Fig. 8). This value can increase up to 2.07 in August.

Fig. 8: Comparison between the tourist and resident waste generation indices.

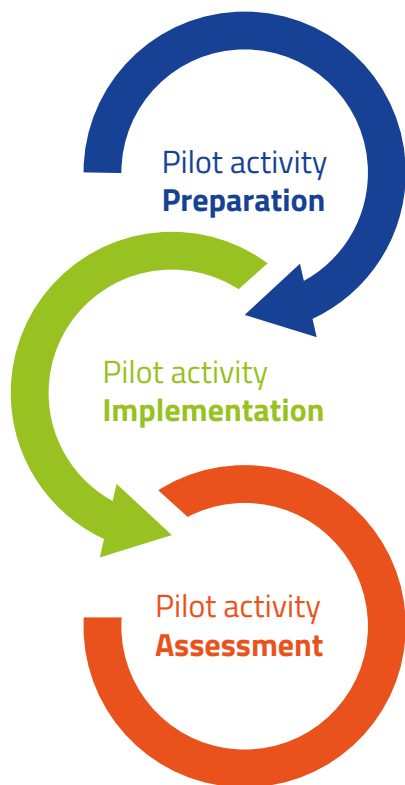


Focus WHAT IS MUNICIPAL SOLID WASTE?

Municipal solid waste (MSW), commonly known as trash or garbage, is a waste type consisting of everyday items that are discarded by the public. In the European Union, the semantic definition is “mixed municipal waste”, given waste code 20 03 01 in the European Waste Catalog. Although the waste may originate from a number of sources that has nothing to do with a municipality, the traditional role of municipalities in collecting and managing these kinds of waste have produced the particular etymology “municipal”.



3. THE TESTING PHASE

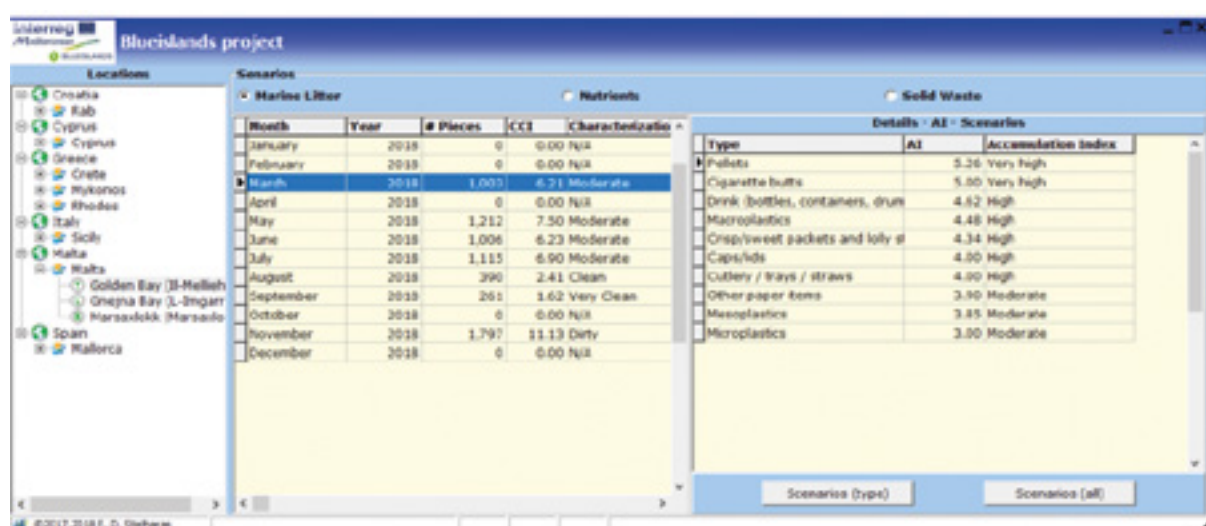


The testing phase of the BLUEISLANDS project was conducted in three steps aimed at **defining, implementing and assessing** the **PILOT ACTIVITIES**, a series of actions implemented with the purpose of **reducing the amount of litter and organic waste related to tourism** and recreational activities on the beaches and coastal seas of the Mediterranean islands targeted by the project.

PILOT ACTIVITY PREPARATION

Based on the results recorded during the studying phase of the project conducted in 2017, all the local partners set specific objectives for their own island aimed at improving environmental conditions through a series of proposed actions. The decision process of the action plans to implement was aided by the use of an online tool developed to support decision makers in analysing the outcomes of the study phase and drafting a plan of effective actions.

Fig. 8: Screenshot of the decision making tool.



PILOT ACTIVITY IMPLEMENTATION

Awareness raising

Project partners carried out **awareness raising** and **informative activities** through various media at different levels, as this is one of the most effective ways to educate people and invite them to **take effective action** and thus **be part of the solution**. The activities took place in **touristic beaches** and **beaches mainly used by locals**. The activities involved tourists and locals, youths, adults and local authorities. The key messages were about:

- the need to understand the threats and impacts of litter to coastal marine ecosystems and marine life;
- changing consumer habits and adopt sustainable behaviours to prevent litter, organic waste and anthropogenic nutrients from entering the environment;
- circular economy and reduction of single-use items.

Improved waste management

New ways to improve waste collection and sorting systems were tested on the beaches. These included the placement of new bins and the clear labelling of existing ones. Tourists and locals were therefore encouraged to dispose their waste properly.

Fig. 9: Pilot activities.





Awareness raising campaigns (Mallorca, Malta, Croatia, Rhodes, Sicily, Crete)



Placement of new bins and proper labelling of existing ones (Sicily, Crete)



Distribution of reusable items (Mykonos, Cyprus, Malta)



Online campaigns and advertisements (Marseille, Rhodes, Malta, Crete)



Clean-up actions (Mallorca, Mykonos)



A mobile environmental education centre (Rhodes)

PILOT ACTIVITY ASSESSMENT

The accumulation of waste generated by tourism and the presence of anthropogenic nutrients in coastal areas were measured after the implementation of pilot actions and compared with the measurements done during the studying phase.

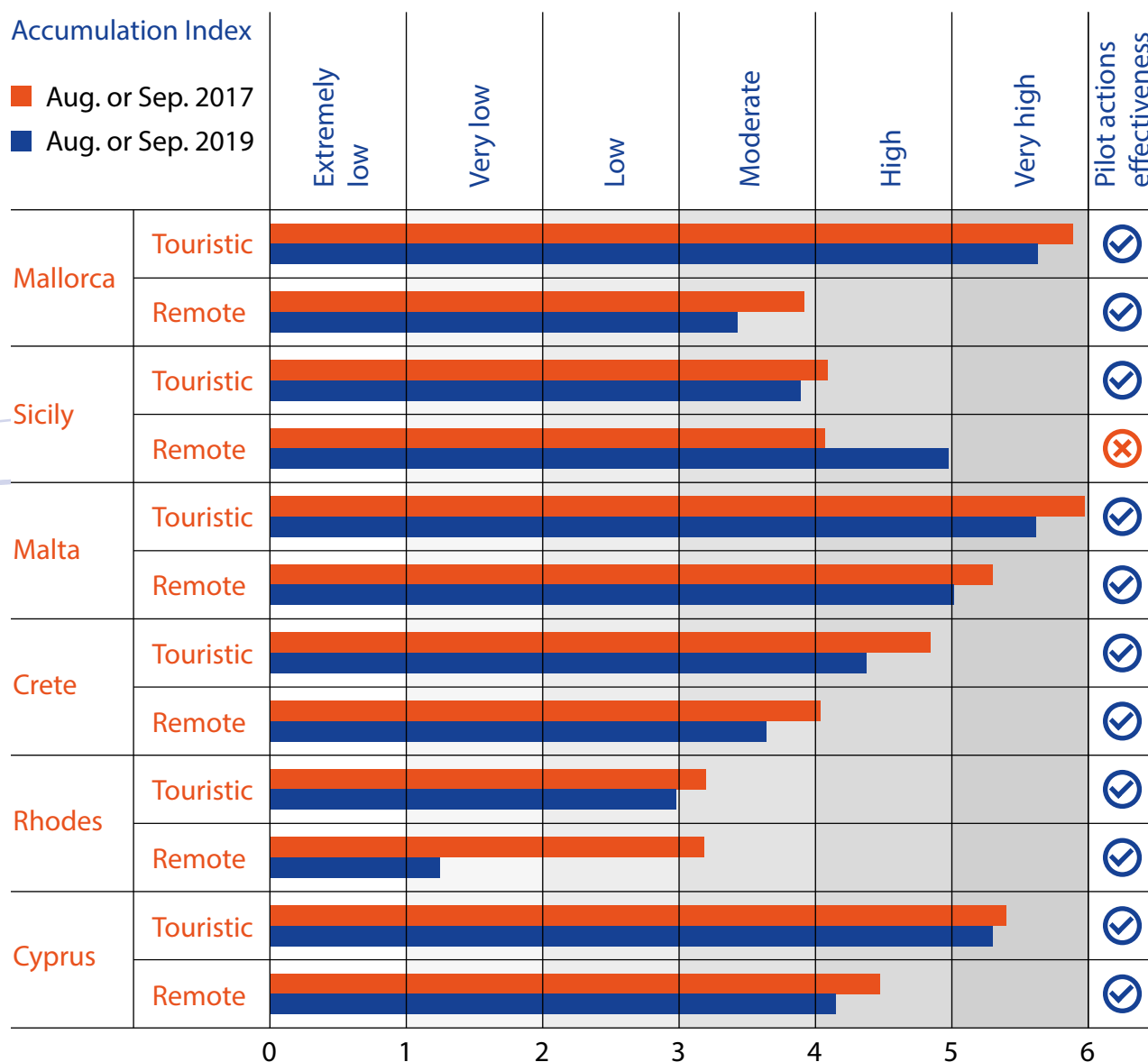
a. Accumulation of waste generated by tourism

The same surveys as those conducted during the studying phase were conducted in the same selected beaches of 6 islands during the tourist peak in summer 2019. The same criteria of beach selection were adopted, in order to include:

- one impact area where tourists represent most of the visitors to the beach;
- one impact area where locals represent most of the visitors.

Data collected were elaborated to calculate the Accumulation Index (AI) and compared to the results previously acquired, in order to define the achievement of the target and effectiveness of the pilot action implemented. The target set by the islands was an AI value equal to or lower than moderate (≤ 3.4) in 70% of the beaches investigated.

Fig. 10: Comparison between the accumulation index measured in 2017 and 2019 on the islands.



Results

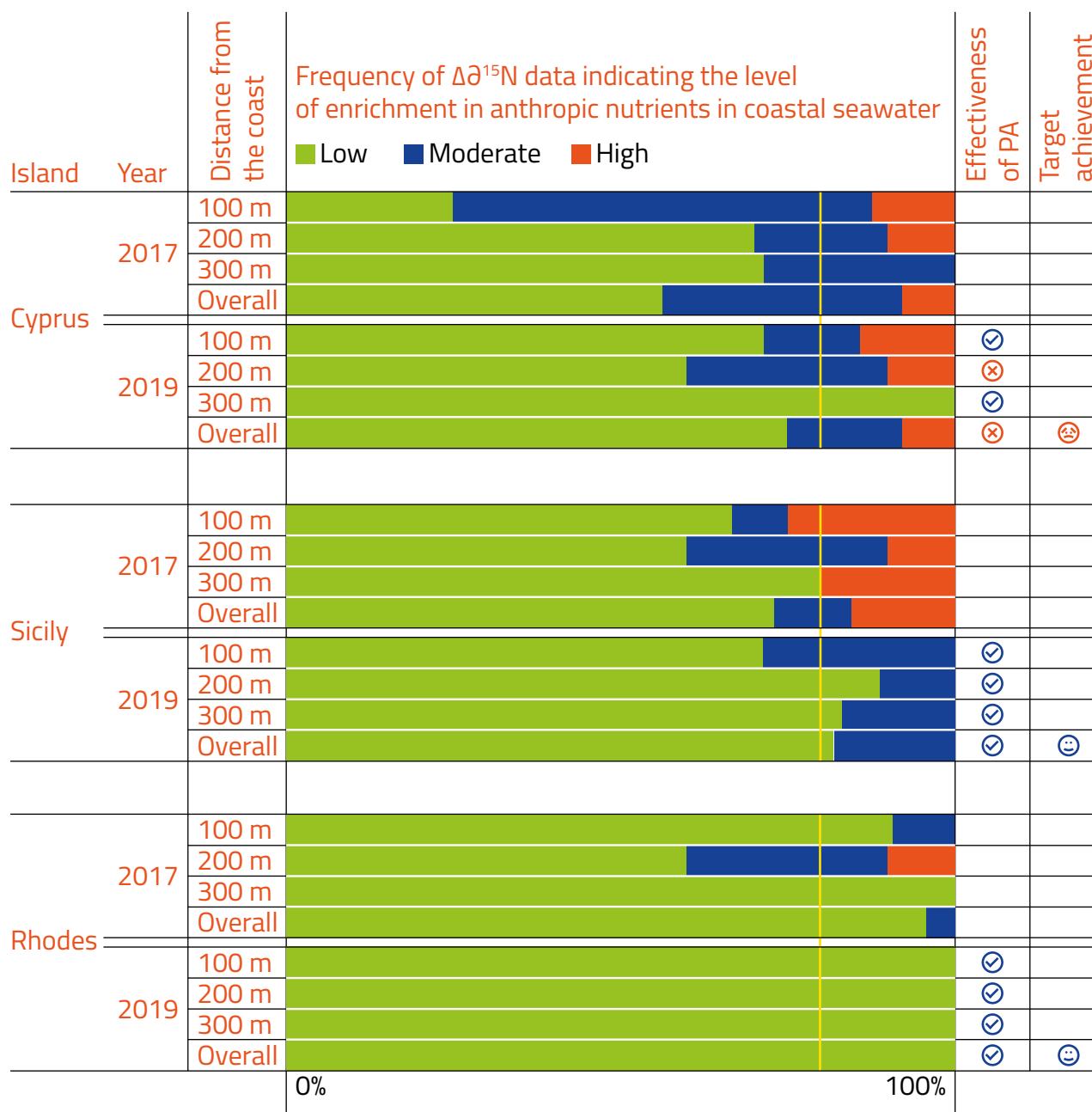
- In most beaches, **the accumulation index decreased** after the implementation of the pilot activities.
- Although levels of accumulation remain moderate to very high in many islands, the results are encouraging since they clearly show that the pilot actions had a positive effect on the decrease of the accumulation of marine litter related to tourism.

b. Variation of anthropogenic nutrients in coastal seawater

The presence of anthropogenic nutrients was assessed in the tourist sites in Cyprus, Rhodes and Sicily. The indicator used is the enrichment in anthropogenic nutrients (as $\Delta\delta^{15}\text{N}$) recorded in the macroalgae tissues after the deployment into the sea. The target was:

- To keep the frequency of $\Delta\delta^{15}\text{N}$ data indicating a "low" enrichment ($\Delta\delta^{15}\text{N} < 0.5\text{‰}$) stable in sites where it was low in the first measurement (80% enrichment or more);
- To increase to 80% the frequency of $\Delta\delta^{15}\text{N}$ data indicating a "low" enrichment ($\Delta\delta^{15}\text{N} < 0.5\text{‰}$) in sites where the frequency was below 80%.

Fig. 11: Comparison of the frequency of $\Delta\delta^{15}\text{N}$ data indicating the level of enrichment in anthropic nutrients in the coastal water of Cyprus, Sicily and Rhodes in 2017 (2018 in Rhodes) and 2019, indicating the effectiveness of the pilot actions in relation to the target achievement.



Results

- The target was overall achieved in Rhodes and Sicily. The results show that **the pilot activities had a positive effect** also at Cyprus, although the target was not fully achieved.
- All the islands showed **improved conditions** for distances from the coast of 100m, 200m and 300 m. The only exception was the 200m distance from the Coast in Cyprus.

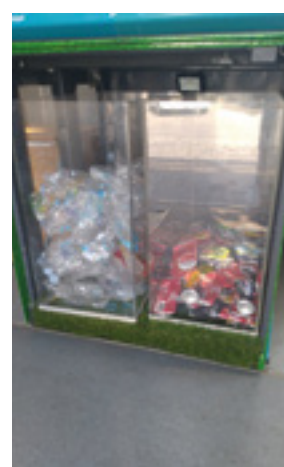
Focus on RHODES

ENVIRONMENTAL EDUCATION CENTRE

In summer 2019, an environmental education centre went on a three-week-long tour around the island, stopping in the main beaches and involving hotel managers, members of the educational and school community, active citizens, associations and tourists of various nationalities.

The education center was a double-decker bus containing aluminum, plastic, glass and paper recycling machines, as well as a video room where informative videos were displayed for the public. The electricity required for the operations was provided by a special photovoltaic panel.

More than 2,500 locals and tourists had the opportunity to become familiar with concepts like environmental protection, marine litter prevention and waste management, the reduction in single-use plastic items use, recycling and the possibility to donate for a social cause the rewards incentive obtained for every recovered packaging.



4. THE TRANSFERRING PHASE

During the transferring phase, BLUEISLANDS worked hard to facilitate the exchange of knowledge among the project partners and between them and external stakeholders.

THE WASTE MANAGEMENT HANDBOOK

BLUEISLANDS created a waste management handbook, which consists of a compilation of 25 pedagogical factsheets about good practices and innovations implemented in the partners' territories and directly contributing to empower the islands' stakeholders communities. The handbook proposes and showcases existing practical solutions to be implemented by public authorities and/or professionals in order to deal with waste management issues. The societal aspect, aiming at rising public awareness for waste management, is highlighted, as well as relevant technical and innovative solutions and services provided by the private and research sector.

Download the handbook

EN <https://bit.ly/2018-blueislands-handbook-en>

FR <https://bit.ly/2018-blueislands-handbook-fr>

IT <https://bit.ly/2018-blueislands-handbook-it>



Waste management needs

Societal level

"Blue Bag"

/ Primorje – Gorski Kotar County (Croatia)

Description of the good practice

The Blue Bag initiative is one of the many ecological initiatives carried out in the area of the Croatian islands, including the Primorje-Gorski Kotar County. It is an ecological and tourist project designed for yachters, tourists, local inhabitants and all other nature lovers who want to encourage and participate in volunteer cleaning of the coast and beaches.

The Blue Bag Project is being implemented by the Association "Ožala naših unuka" (which means "Coast of Our Grandchildren" in Croatian) with many partners since 2015. The first Blue Bags on the Croatian coast have appeared on the island of Rije, which demonstrated leadership in many innovative actions that encourage ecological awareness, environmental preservation and sustainable development. The goal of the Blue Bag is to get every sailor during the season to collect at least one Blue Bag of waste from the coast. It takes about 5 minutes of someone's holiday to collect waste or debris that was washed ashore on some hidden, less accessible beach. After return to the port the Blue Bag just has to be left in a nearest dumpster. The goal is for every sailor, either tourist or local, to collect a bag of debris or waste during the course of a tourist season. If that can be accomplished, there would be

no need for various actions and massive resources to keep the coastline clean. All the waste that washes ashore could be collected: plastics, cans, ropes, nets, jars, shoes, clothes, wooden objects... but following items are not collected: branches, leaves, bones, remains of regional flora and fauna.

"The goal of the Blue Bag is to get every sailor during the season to collect at least one Blue Bag of waste from the coast. It takes about 5 minutes of someone's holiday to collect waste or debris that was washed ashore on some hidden, less accessible beach"



Waste management needs

Technical level

"E Garbage"

(Data collection in real-time from the waste containers using ICT tools)

/ Region of Crete

Description of the good practice

Application E Garbage is an ICT tool to optimize waste collection methodologies which has developed under the LIFE E WAS project which has worked within the framework of the European project "LIFE 2013. EWAS via E Garbage introduced a network of sensors installed in the containers, for the collection of glass packages, paper and other recyclables packages. The sensors send data of filling level of each container through GPRS. The data are processed and projected online in a web based interface to the waste manager, providing him with real time information about the condition of sensors, containers, the waste materials quantity and the route efficiency.

Objective of EWAS project:

EWAS aimed to ensure a sustainable management of natural resources and waste with emphasis on energy efficiency and contributing to the reduction of GHG emissions, noise and traffic congestion during the waste collection and transportation using ICT technologies.

Challenges in waste collection:

- Monitoring the filling level of waste in recycling containers in remote areas, reduces the necessary routes of the collection trucks and eventually the fuel consumption.

Goals achieved:

- Reduction of resource used.
- Cost Reduction
- Minimize vandalism
- Reduce the risk of fire
- Improved routes

"EWAS via E Garbage introduced a network of sensors installed in the containers, for the collection of glass packages, paper and other recyclables packages"



Waste management needs

Political level

"Ban plastic into the beaches"

/ Sardinia

Description of the good practice

In Sardinia several coastal municipalities decided to anticipate the deadline to adjust to the European Directive banning disposable plastic with in year 2021.

The Municipality of Carbonara, South Sardinia, will ban the commercialization and the usage of disposable plastic objects as plastic plates, straws and plastic cutlery. This is part of their plastic free ordinance, which is already signed and will take effect starting from June 17th.

The Municipality of Olbia will ban the usage of disposable plastic and smoking starting from June 1st.

Their disposable plastic ban will take effect in the seaside as well as in other sensitive areas like archaeological sites, public parks and urban squares. The smoking ban will impede to light cigarettes anywhere closer than 8 meters from the seaside and outside appropriate equipped areas.

Other coastal Municipalities who are banning the usage of disposable plastic are: Badesi, Aglientu, Trinità d'Agultu e Vignola, Arzachena, Olbia, L'orri Porto San Paolo, San Teodoro, Siniscola, Castiada and Sant'Antioco. Among them, some have extended the ban inside school canteens and public offices.

"Their disposable plastic ban will take effect in the seaside as well as in other sensitive areas like archaeological sites, public parks and urban square."



Waste management needs

Technical level/2

Results

/ Results

Recycling big amounts of plastic collected in France.

- Production of resistant products, endlessly recyclable.
- Reduction of maintenance costs for users and public authorities.

Ecological results of recycled plastic:

- Recycle industrial, agricultural and household waste.
- Low consumption of natural resources
- Produced in France, minimum transportation.

Mechanical and technological results:

- High-quality top profiles, extruded under high pressure.
- Thermo-coated surface aspect.
- Work of the material as the wood.

Type of waste
Industrial, agricultural and household plastic waste

Location
Gardanne, Provence Alpes Côte d'Azur (South of France).

Volume treated
500 tons/year of finished products.

Further information
<http://www.mik-urban.com/>
<http://www.mpscietera.com>
https://www.youtube.com/watch?v=contin-ue-6&v=XZ6m15_2IE



Waste management needs

Political level

Results

/ Results

The program aims to bring awareness to the environmental impact of the cigarette flick. Reduce cigarette litter.

Type of waste
Cigarette litter.

Location
All crowded beaches on the island.



Waste management needs

Societal level

Results

/ Results

The main objective of the pilot activities is to reduce (in relation to the results recorded during the study phase of the project) the waste that enters the environment. The proposed measures are expected to improve environmental conditions

Type of waste
Urban solid waste generated by tourists or visitors or walkers in coastal areas and beaches.

Location
The areas where the pilot activities take place, are the beach of the city of Rethymno near by the old harbor, a beach with many visitors and popular tourists and locals and the beach of Arina (Ierapetra - Kokkini Hani), a long beach which is preferred by the locals.

Volume treated

In general:

- In Rethymno 850 plastic pieces and 750 cigarette butts.
- In Arina 1250 plastic pieces and 600 cigarette butts.

THE CAPACITY BUILDING WEBINARS

The BLUEISLANDS project offered to its partners and other interested stakeholders four free capacity building webinars focusing on:

- Circular Economy
- Integrated Coastal Zone Management (ICZM)
- Life Cycle Assessment (LCA)
- Sustainable Tourism

Among the conclusions of the webinars was the need to act on three main pillars for more sustainable tourism and better waste management:

- Social level: to raise awareness among the general public by involving local actors and working together with a territorial intelligence approach; to change consumers' habits and demands.
- Political level: to ban some practices such as plastic bags, plastic straws, etc.
- Innovation approach: to implement innovative technologies in waste management, which can contribute to the circular economy.

Watch the video recordings of the webinars

<https://bit.ly/2018-blueislands-webinars>

BLUEISLANDS' TRANSNATIONAL EVENT

On 17 December 2019, BLUEISLANDS held a successful international capacity-building event in Marseille in the framework of the Days for Ecological Transition and Circular Economy organised by the French Région SUD.

The event gathered more than 200 people from different backgrounds and created a place of exchange between French and Mediterranean actors thanks to the presence of the partners of the BLUEISLANDS project, who shared their innovative projects in the field of management, recycling and waste treatment in insular areas.

The international event was replicated by project partners at the local level through regional workshops. These events represented perfect opportunities for local stakeholders to design or pre-design local strategies and/or action plans for waste prevention, reduction and valorisation.



5. STAKEHOLDERS ENGAGEMENT

Throughout the three phases of the project, a wide range of activities was carried out to raise awareness on the issue of waste and tourism. BLUEISLANDS reached out to local and international policy makers, operators of the tourism sector and to the general public to inform about the project's work and achievements.

**1 international conference
at the European Parliament**

**1 Charter of Commitment
signed by 27 entities**

**7 briefings with local
and international policy makers**

**1 Awareness raising
campaign in 7 countries**

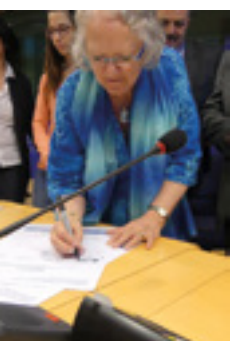
12 local dissemination events

THE CHARTER OF COMMITMENT

To draw attention and build awareness on the topic of waste in relation to tourism, BLUEISLANDS joined forces with the Horizon 2020 URBAN-WASTE project and launched a **"Charter of commitments for sustainable material resources management and circular economy"**.



Originally launched in January 2018, this manifesto has so far been signed by **27 signatories including cities, regions, waste management authorities and even the European Parliament's Intergroup for Seas, Regions, Islands and Coastal areas**. The Charter represents a declaration of intent to adapt the tourism sector to the environmental capacity of the areas of interest, developing strategies to reduce and manage tourism-generated waste. It gives voice to a shared vision of sustainable and environmental-friendly tourism.



THE TOURIST INFORMATION CAMPAIGN

Tourists may not always engage in environmentally responsible behaviours. They may not understand the local waste sorting system, often because of language barriers, or just not care that much about their waste as they are not in their home country.

"Do not leave your waste unattended" was the slogan of the tourist information campaign carried out in the summer of 2019 on eight Mediterranean partner islands and featured on a local newspaper in Marseille, France.

The campaign aimed to raise awareness about the importance of not abandoning waste in the environment and sorting it properly, as well as informing about the consequences of irresponsible behaviours. Tourists engaged in conversations with the campaign operators and shared reflections about their own attitudes when on holiday.

Informative materials were displayed and distributed at tourist offices and other strategic points, such as hotels. This was combined with the placement of additional bins for separate waste collection and the distribution of reusable mugs, straws, flasks and shopping bags.



"As I am on vacation and it is not my home country, I am more tempted to leave my waste on the beach"

"Not everybody who is on holidays knows about how to recycle waste and they don't do it. If you don't do it properly, waste can end up into the sea and this is wrong. That's why this kind of campaigns are very good".

Yanin and Henry, German tourists in Mallorca



LET'S KEEP OUR BEACHES CLEAN!



This booklet summarised some of the key results that the project achieved thanks to the hard work of the partners.

For more details about the work carried out during the project, please visit the website:

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Project co-financed by the European Regional Development Fund