



Erasmus+



# BEST PRACTICES TO PRESERVE OUR COASTLINE

PROYECTO  
LITORAL



# **BEST PRACTICES GUIDE**

## **Best practices to preserve our coastline**

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# 1. Introduction

This guide is based on the development of a methodology aimed at **training** readers on **how to participate in the protection of the coastline and its resources** (included in the Erasmus+ project Protection of the coastline and its resources, **2021-2-ES02-KA210-YOU-000047880**). sharing *Best Practices* which are linked to values and behaviours that are reflected in daily activities.

*Introduction. Spanish student from la Hispanidad school.*

 <https://www.youtube.com/shorts/N14tRTTVYi8> - video EN

The environmental challenges that we face imply a change in education (formal and non-formal) that takes us from knowing how to be to know what to do for the benefit of all. That is, moving from theoretical knowledge to knowledge accompanied by (practical) actions that seek changes in behaviour, based on improving the quality of education and life, the exercise of human rights and nature, the reduction of poverty and the consolidation of fairer and more sustainable societies.

This methodology of good practices for the **conservation of the coastline and its resources** is an invitation to young people interested in raising awareness, learning and teaching knowledge, skills, values, duties, rights and behaviours that allow the protection and conservation of the environment. Good environmental practices are actions and practical and educational advice that seek to generate changes in the habits and lifestyles of consumers. Its practice fosters a culture of responsible consumption and respect for the environment.

*introduction to the guide. Spanish student from La Hispanidad School.*

 [INTRODUCCIÓN GUÍA - YouTube](#) - Video ES

The **beneficiary group** is the youth directly and, of course, the planet and the environment indirectly, since following the advice and recommendations of our guide we reduce our ecological footprint and help conserve the coasts. Its objective is to provide basic notions on environmental management, establishing a series of practices and guidelines that lead to the reduction of the environmental impact on the coasts. **Young people** have come out in defence of the planet and demand more concrete actions to fight against climate change. His concern is oriented to the effects that climate change has on the planet. Commitment to the group is deeply rooted in the attitudes of young people. In terms of percentages, up to 7 out of 10 young people consider that causes such as the environment are worth defending. Since Greta Thunberg decided to skip her ninth-grade classes in 2018 in protest of the Swedish



government's inaction on climate change, concern for the environment has become the current of thought for many young people. For this very reason, this good practice methodology is aimed at young people aged 12 to 25.

The tools you are going to find are:

- Videos
- Cómics
- Pictures
- Games
- Images
- Tales

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*"Where land, freshwater and sea meet, these environmental changes become so evident as to be representative of a transitional landscape, which integrates, on the one hand, natural processes ranging from the scale of microbial loop dynamics to that of climate changes, on the other the history of human societies."*<sup>1</sup>

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These fragile ecosystems hosting beaches, wetlands, and dune habitats are threatened by coastal erosion and human impact.<sup>2</sup> These areas are diverse, highly productive, ecologically important systems on a global scale and highly valuable for the services they have provided to human societies from as early as the Neolithic age. They supplied food, shelter, and transportation and also served as natural wastewater treatment systems. The presence of human settlements along the shores of estuaries and lagoons has been documented since ancient times, representing the nucleus of early civilization and later social and economic establishments.<sup>3</sup>

At the same time, coastal wetlands are very important and valued features due to their high biodiversity and ecosystem services, such as preventing floods, cleansing waters, and recharging groundwater aquifers. Wetlands also host a wide variety of flora and fauna, providing habitat for rare and endangered species. Many of the Mediterranean coastal wetlands are threatened by a number of factors, such as modifications of their natural functions, over-fishing and hunting, excessive pumping, and partial drainage<sup>4</sup>. Hence, these coastal environments are particularly vulnerable and worthy of attention and protection for their specific ecosystem functions.

Sea-level rise is inevitable. It is a reality the current and future generations will have to face. We, as a society, play different roles in this problem. We are the main cause, the main group affected, and the main actor when it comes to developing and implementing long-lasting solutions. It is up to us to fight the problem we created.

→ [More info about our ocean](#)

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<sup>1</sup> (A.Basset, G.C. Carrada, 2007)

<sup>2</sup> (J.P. Doody, 2013)

<sup>3</sup> (F.Castagnoli,1976, P.Breber et al. 2008)

<sup>4</sup> (G.C. Zalidis et al., 1999)



## 2. What are good environmental practices?

**Good Environmental Practices** are defined as those actions that seek to **reduce the negative environmental impact** caused by activities and processes through changes and improvements in the organisation and development of actions. The usefulness of the Best Practices is well proven and lies in their low cost and simplicity of implementation, as well as the fast results obtained. Therefore, this Guide of Best Environmental Practices is the agglutinative document that collects the institutional environmental management criteria of Pacto Verde, as recommended by the tool of indicators of transparency and good governance for social action NGOs. The Foundation assumes the implementation of Best Environmental Practices and is understood as a whole, committing itself to continuous improvement in its application. From Pacto Verde, this Guide and its implementation are considered a tool to improve the transparency, competitiveness and integral development of the beneficiaries of the activities.



*description Refuse. Spanish student from la Hispanidad school.*

 [Definición guía de buenas practicas - YouTube](#) - video ES

**Best environmental practices** are the first step in establishing long-term environmental awareness in an organisation, as well as a prerequisite for implementing an Environmental Management System. Environmental management addresses the "how to do" in order to achieve the goals of sustainable development, namely, achieving an adequate balance between economic development, population growth, rational resource use, and environmental protection and conservation. An Environmental Management System (EMS) is a component of an organization's management that is used to develop and implement its environmental policy (the organization's general intentions concerning the environment) by managing the environmental aspects, i.e. the activities of the organisation that may interact with the environment. The Environmental Management System provides documentary and organisational methods to enable compliance with legislative requirements and environmental objectives, as well as to maintain compliance over time while encouraging environmental continuous improvement.

For a first approach, however, it is only necessary to apply common sense and to take into account a series of measures that, when carried out systematically, can achieve savings in raw materials and energy, as well as reduce pollution and possible risks that may affect both the environment and human health. To better understand the points referred to in this guide, it is necessary to be clear about several concepts that are used continuously throughout the document. These concepts are mainly those of **refuse, reduce, reuse, recycle and rot**





*description of the Five R's. Spanish student from la Hispanidad school.*

 [CONCEPTOS CLAVES - YouTube](#) - video ES

**Refuse:** This is the first and leading principle that tells us to refuse anything we don't need. Even if it's free, if you don't need it, say no to knick-knacks and other promotional freebies, single-use items like utensils, cups and foodware and anything else that isn't truly essential in our lives. This is the first step to cutting down on our waste.



*description Refuse. Spanish student from la Hispanidad school.*

 [RECHAZAR - YouTube](#) - video ES



**Reduce:** Reducing goes along with refusing, in terms of thinking about what is needed and cutting out what is not. Whenever possible, we can make choices to reduce the things we use, such as by bringing our own bags to the grocery store, our own water bottles to events or our own cups to the coffee shop.

*description Reduce. Spanish student from la Hispanidad school.*

 [REDUCIR - YouTube](#) - video ES





**Reuse:** It's important to note that reuse comes before recycling, and this means that whenever possible, we should see if items can be repurposed. Old pasta jars, for example, can be repurposed as containers for dried food items. Reuse also means that instead of tossing something out, if it still has use or life left to it, even if we don't need it ourselves, we can donate it or give it to somebody who can continue to use it.

*description Reuse. Spanish student from la Hispanidad school.*

*video ES*



**Recycle:** If we are unable to reuse items, and they are recyclable, we can recycle them, so the material can be converted into something new. While recycling is a way to extend the lifespan of a material, it's important to note that it is a process that requires resources and energy, and some materials, like plastic, have a limited number of times they can be recycled before its quality is diminished and it can no longer be recycled.

*description Recycle. Spanish student from la Hispanidad school.*

*video ES*



**Rot:** At the bottom of the hierarchy comes "Rot," which invites us to compost organic material like yard waste or food scraps. Paper can also be composted, but, as composting is last on the 5R hierarchy, the paper should be recycled whenever possible before being composted, and if it is wet, dirty or with food residue like a greasy pizza box, then it should be composted.

*description Rot. Spanish student from la Hispanidad school.*

*video ES*





*And that's the Five Rs!!*

*By following the Five Rs and their order, we can start taking steps towards reducing our waste and our impact on the planet!*

As the global population grows and we begin to see the long-term consequences of excessive energy use and industrial growth, we must prevent further damage. It is our job to ensure our future generations have healthy places to live and minimize our damage to the earth's biodiverse ecosystems. In simple terms, we must ensure the existence of environmental sustainability, which is the practice of interacting with the planet responsibly.

Sustainability means living and meeting current needs without compromising future generations' living standards and needs. While it is a broad definition, sustainability (or environmental sustainability) matters in everything we do. For example, the Environmental Protection Agency (EPA) claims that “*everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment.*”

The more good practices we all apply our part – the faster we will create an entire ecology of living that promotes sustainability. The first step is to begin to understand the basics of what each part of life can do to become more environmentally friendly. Aside from benefiting the planet and its inhabitants, environmental sustainability can offer plenty of benefits. The three pillars of sustainability involve the three **E's**<sup>5</sup>:

<sup>5</sup> (R. Brinkmann, 2022)





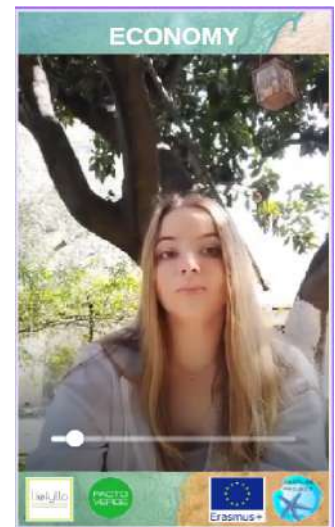
## Economy

Economy stands for how we deal with personal and national business. On a personal level, we should make sure that we are responsible consumers. We should only buy ethically sourced, ecologically friendly things that can last us for some time. Frequently, it seems like we are powerless as individuals, but by changing our buying habits, we show others that we care — and that just might be enough for them to start caring as well. On the national level, make sure to support legislation and politicians that hold businesses accountable for pollution. This is a difficult thing to do, but just like being a better consumer, demanding more from your representatives will signal to others that this is normal.

*Description Economy, Greek student from 12th High School of Patras.*



<https://youtube.com/shorts/XSX82m43bhk?feature=share> - video EN



## Ecology



Ecology stands for being environmentally conscious, to think actively about how to be greener. On a personal level, this means actively looking at spaces around you — your home, your family, your friends, your job — and seeing whether some parts of them could be made more ecological. Don't worry if you can't do all the changes at once — nobody can — the important thing is to try and make a change. Socially, ecology is more about changing how people think about the environment. People have this notion that nature doesn't concern them or that it's something they visit like Disneyland. But we depend on nature, and without it, we can't live on this planet.

*Description Ecology, Greek student from VERGI VET*

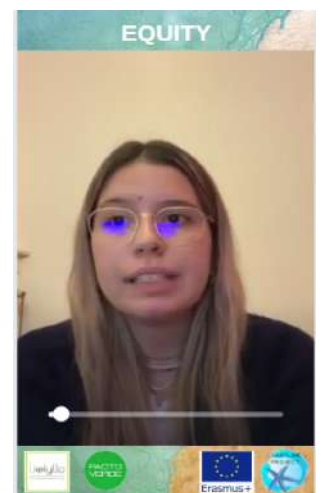
<https://www.youtube.com/watch?v=aW75P-892Vs> - video EN



## Equity

Equity stands for both equality of opportunity and equality of people. This is probably the hardest of them all, and that's saying something. These days we like to think that the lives of others don't concern us much. But the opposite is true. Making sure that everyone has a life worth living makes solving problems like climate change easier. A lot has been said about the impacts of climate change — droughts, floods, wildfires, rising sea levels — but we often forget that many of these problems might not be immediately felt by us. It'll be people in the global south and people who live in inhospitable places who will see their lives destroyed the soonest. But it will also be the next generation of people. Equity is not just about equality between people alive right now but also about the fair treatment of people yet to come.

*Description Ecology, Greek student from DELTA VET* <https://www.youtube.com/shorts/OIGFJKNdWog>



### 3. What are the coasts? Why should we conserve and protect them?

#### Context

Europe is made up of 33 regions stretching across a coastline of 1,550 miles, home to around 70 million inhabitants. These regions are characterised by a strong identity, linked to their proximity to the ocean and displaying great natural and cultural diversity. They are also very vulnerable due to the pressure of human and natural origin that they are subjected to: for example, urbanisation or coastal erosion.

Coasts change due to natural and human processes. Natural processes such as weathering, erosion, transportation and deposition, form and transform coastal environments over different time frames and cycles. Photographs show long-term cycles of erosion and deposition– see **Figure 1**.



*Happisburgh in 1996, 2006 and 2012 during which time it lost a number of sea front properties (copyright Mike Page)*

Other natural influences changing coasts include intense events such as earthquakes, cyclones, floods and tsunamis. Natural cycles of climate change over hundreds of thousands of years, as evidenced by ice age effects on the coast–see **Figure 2**.



*The situation of Sicilian Ionian coast due to the Mediane Helios. Copyright: Italy 24 Press News*

In this context, the LITORAL PROJECT intends to strengthen the operational capacities of coastal decision-makers as well as young people in these regions, with the aim of informing and supporting the consideration of coastal risks. To do this, it intends to provide tools to aid decision-making and to promote examples of good practices in the various areas concerned. The project does not involve developing scientific research work but rather intensifies operational exchanges with a view to improving the prevention and management of coastal risks.

## Type of coasts

Coastal zones, which serve as a transition between the marine and terrestrial environments, have long been a region with distinctive ecological and socioeconomic features that encourage the concentration of human activities. For many reasons, coastal management and protection are particularly important. First, to advance the blue economy<sup>6</sup>, next to coordinate and advance both land and marine development<sup>7</sup>, and finally to advance the creation of an ecological ecosystem. Blue growth that is effective and sustainable is essential for the economy's continued expansion, but it also needs to put equal emphasis on safeguarding the maritime environment, and the coasts, and ensuring efficient and safe transportation.



What are the coasts? Spanish student from IES Bitácora

 [¿Qué son las costas PART 1 - YouTube](#) - Video ES

<sup>6</sup> (Voyer, Quirk, McIlgorm, & Azmi., 2018)

<sup>7</sup> (Barragán, J. M., Boy, Á., Carballo, A., Colina, A., Doménech, J. L., & Juanes, J. A., 1991)





Coastal wetlands connect the terrestrial and marine environments by acting as transitional habitats along the sea-land border. The idea that transitional waters are partially saline due to their proximity to coastal waters, but are strongly influenced by freshwater flows, is supported by the European Water Framework Directive<sup>8</sup>, which was developed in response to the need to unify water management actions in the European Union. The material and energy exchanges between land and the sea are regulated by these transitional ecosystems<sup>9</sup>. Additionally, because they are home to a variety of habitats and offer a favourable setting for several endemic and/or protected species, they are important locations for biodiversity. Due to their paramount significance for wildlife, particularly migratory and breeding birds, and are very valuable due to their abundance in natural resources. They also offer a variety of ecological services, including the stabilisation of shorelines, control of nutrient levels, carbon sequestration, purification of contaminated waterways, and the provision of food and energy.

## Europe

Europe's coastlines are very diverse. There are cliffs, dunes and sandy beaches. There are also islands and rivers. Europe's coastline is one of the most beautiful areas in the world. It has a great variety of landscapes, from the cliffs of Dover in England to the golden sandy beaches of Spain. There is also a wide variety of activities that can be done on the coasts of Europe, from swimming in the sea to climbing the cliffs.

Europe's relief is very varied due to its geological formation. Most of Europe is made up of tectonic plates that have slowly moved over each other for millions of years, resulting in a wide variety of landforms. The main relief features of Europe include the Alps, the Pyrenees, the Urals, the Caucasus and the mountains of Scandinavia. There are also a large number of plains and plateaus, such as the Central Plateau of Spain, the North European Plain and the Danube Plain.

Depending on the oceans (oceans) and seas (seas) that bathe them, the coasts can be:

### Atlantic coasts (Atlantic coasts).

1. These include the coasts of the Baltic, North and Cantabrian Seas.
2. The Scandinavian and Jutland peninsulas are close to the Baltic Sea.
3. The former and the British Isles border the North Sea.

### Mediterranean coasts

1. These include the three large peninsulas: Iberian, Italic and Balkan and border the following seas:

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<sup>8</sup> (WFD, 2000/60/EC)

<sup>9</sup> (Crespo Garay, 2021)



- Tyrrhenian.
  - Adriatic.
  - Aegean.
2. In the interior is the Black Sea, which connects with the Mediterranean through the Bosphorus Strait.
  3. Numerous islands are found here: the Balearic archipelago, Corsica, Sardinia, Sicily, Crete, Cyprus...

The European continent has a very rugged and irregular coastline:

The effect of the wearing away of soft rocks by the waters or because the waters enter ancient valleys.

- Examples are the Norwegian fjords or the high estuaries of Galicia.

When the mountains reach the sea, cliffs appear.

Coastal lowlands (coastal lowlands): these are formed if the land is flat and reaches the sea (Netherlands, Denmark and Germany).



In low-lying coastal lowlands, rivers form deltas



(Ebro, Rhone, Po and Danube).

## Spain

Diversity is the main characteristic of the Spanish coastline. Along its more than 9000 km length, there are different climatic domains, different types of rocks, different oceanographic conditions, and a great diversity of cliffs and rocky platforms, beaches, dunes, marshes, coastal lagoons, salt marshes, estuaries and deltas. Here is a list of all the names of the coasts of Spain, from north to south. Costa Brava: it is located in the autonomous community of Catalonia and is one of the most popular coastlines in Spain. It is about 300 km long and is made up of a series of small coves and sandy beaches. Costa Dorada: is also located in Catalonia and is known for its beautiful golden sandy beaches. The Costa Dorada is about 200 km long. Costa Blanca: is located in the autonomous community of Valencia and is one of the most popular coastlines in Spain. The Costa Blanca is about 200 km long and consists of a series of beautiful white sandy beaches. Costa del Sol: is located in the autonomous community of Andalusia and is one of the most popular coastlines in Spain. The Costa del Sol is about 150 km long and is made up of a series of beautiful golden sandy beaches. Costa de la Luz: is located in the autonomous community of Andalusia and is known for its beautiful golden sandy beaches. The Costa de la Luz has a length of about 100 km.

### → [More Info about Spanish coasts \(ES\)](#)

In **Andalusia** we can speak of 5 coasts, the well-known Costa del Sol (in Malaga), the so-called Costa Tropical (in Granada, the coastal area of the villages of Almuñecar, Motril, Salobreña...), the impressive Costa de la Luz in Huelva, the unknown to many Costa de Almeria and the magnificent Costa de la Luz in Cadiz.

The main transitional ecosystem types along the **Huelva** coastline are coastal beaches and dunes, coastal marshes and estuaries, coastal lagoons, pine forests, and wetlands. At the national level, those already known were included in the first wetland inventory, while more knowledge was acquired as the identification and mapping of habitat types in Natura 2000 sites progressed, following the Habitats Directive. In the province of Huelva, the Natura 2000 Network offers protection to a great multitude of ecosystems, on the coast alone we can find: Doñana National Park, the lower Guadalquivir, the Dehesa de Torrecuadros and Arroyo de Pilas, the Dehesa del Estero and Montes de Moguer, the Estero de Domingo Rubio, the Palos and Las Madres lagoon, the Odiel Dunnes, the marshes and banks of the River Tinto and its estuary, the Odiel marshes of Carboneras, the Portil lagoon, the Enebrales de Punta Umbría, the marshes of the River Piedras, its estuary, and the arrow of Rompido, and the marshes of Isla Cristina.

While coordinated efforts to address them are long overdue, some of these coastal communities, which are in a highly vulnerable position, are already starting to feel the effects of climate change. Particularly in these coastal regions, where the tourism industry has grown significantly, climate change has negative effects. Nevertheless, there





is still little pertinent multi-level research on the effects of climate change, erosion, and sea level rise, despite the importance of coastal zones<sup>10</sup>.

What are the coasts? Spanish student from IES Bitácora

 [QUE SON LAS COSTAS PART2 - YouTube](#) - Video ES

→ [More info - Save the coast! Report](#)

## Greece

Since ancient times, the sea and the coasts have always been a source of life. They offered natural resources, proximity to the sea and its benefits, favourable conditions for many vital human activities and prosperity, as well as a beautiful and harmonious environment with splendid landscapes that inspired many artists and cultural life.

The coastal and marine environment of **Greece** is characterised by its beautiful landscapes and important ecosystems with numerous rare species needing protection. At the same time, it is vulnerable because of some natural hazards, such as erosion, as well as pressure due to some human activities and conflicting land uses (overexploitation of natural resources, urbanisation, pollution etc.).

Three main types of coasts can be recognized throughout the whole country: beaches, rocky coasts and coastal wetlands (deltas, lagoons, etc.), which are considered the most vulnerable types of coastal areas.

### • Beaches and sand-dunes

A variety of fauna and flora can be found along these areas. Due to their natural characteristics, they represent the areas where most human activities are located. Sand dunes constitute a particularly sensitive ecosystem because they change easily under minor environmental pressure. Their value is ignored most of the time, which results in losses of many dunes in coastal zones that are nowadays overpopulated<sup>11</sup>. Tourist growth puts a lot of pressure on dunes, and the same stands for recreation installations, road constructions for rapid access, urbanisation etc. Sand dunes in several cases have been destroyed. It is only during the last decade that the value of these ecosystems has been widely recognized. Still, no significant measures for their protection have been adopted.

### • Rocky coasts

They represent 70% of the Greek coastline. The fauna and especially the flora of these areas are significantly different, but still appear to be of high biodiversity.

<sup>10</sup> (Verdugo, E. M. C., Palomo, C. J. L., Martín, A. V., Vázquez, A. P., Álvarez, A. G., & Pérez, M. C., 2011)

<sup>11</sup> (F. der van Meulen, T. W. M. Bakker & J. A. Houston, 2004)

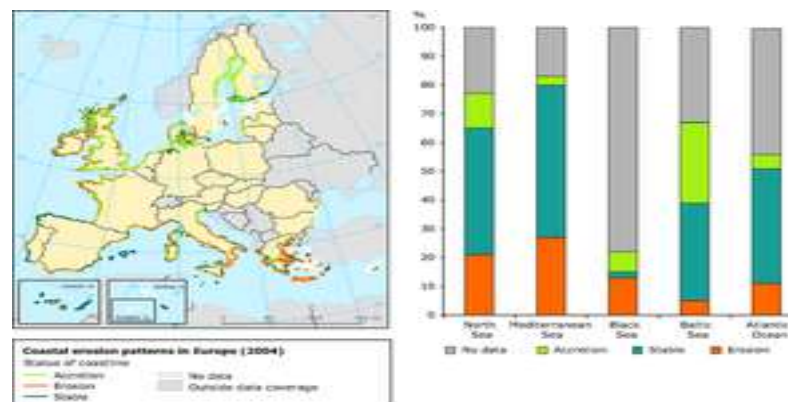


## • Wetlands

Different types of wetlands can be found throughout the whole country. It should be noted that some of the wetlands can be considered as groups including other smaller wetlands. Many rare species of birdlife can be found there, such as the white-tailed eagle, the spotted eagle, and the dalmatian pelican. Along the coast numerous lagoons and marshes can be found. There are also 8 large deltas. These ecosystems are exceptionally fragile and constitute the biotope of a big number of species<sup>12</sup>.

*The map and the graph show the coastal erosion patterns in Europe (2004)*

The **Mediterranean Sea** covers 2.500.000 km<sup>2</sup> with an average depth of 1.500 metres the deepest point being over 5.000 metres. The coastline extends 46.000 km running through 22 countries. The Mediterranean Sea is a residual sea between Europe, Africa and Asia as the result of the tectonic plate's motion. Today, 82 million people live in coastal cities; by 2025 there will be an estimated 150-170 million. Over 100 million tourists flock to Mediterranean



beaches every year and this number is expected to double by 2025<sup>13</sup>. This causes high pressure on the environment. In general, erosion of the beach and impacts on tourism are a threat to valuable property and increase the risk of flooding. Part of the erosion problem is not the erosion itself, but the growing investments in the coastal zone. The comfortable climate boosts the many tourist towns along the Mediterranean Area. The residential housing of local inhabitants is expanding as well.

**The Greek coasts** constitute a natural resource and heritage of Mediterranean and international importance, which should be safeguarded for the present and future generations in a perspective of sustainability. The Greek coastal and marine ecosystems are characterised by high productivity, in particular, the wetlands and sand dunes, and they accommodate numerous species of fauna, the survival of which is particularly important for the conservation of biological diversity<sup>14</sup>.

<sup>12</sup> (R. Gibson, R. Atkinson, J. Gordon, 2007)

<sup>13</sup> (G. Randazzo, J.S. Raventos, L. Stefania, 2013)

<sup>14</sup> (V. Argyropoulos, A. Strategia, 2019)

Specifically, in the area of western Greece, the Kotychi, Prokopos, and Araxos lagoons as well as the Lamia marsh are protected by the Ramsar Convention (1971) according to which they are characterised as wetlands of international importance and in need of protection.

In the northwestern part of the protected area is the famous forest of Strofylia, which is the most extensive pine forest in all of Greece and one of the largest in Europe.

The coastal zones often include coastal forests and bushes that create, in combination with the sea, a landscape of high aesthetic value, while they contribute at the same time to the minimization of floods, erosion and other natural hazards.

→ [More info about Greek coasts](#)



## 4. Main problems affecting coasts

The coastline is showing alarming symptoms of environmental degradation and saturation of the physical space, exceeding the carrying capacity of the territory, both in terms of the number of people and infrastructures. The **causes** are well known: overexploitation of fishing resources and illegal trawling; excessive water consumption for agriculture and tourism; pollution, both marine and terrestrial; the alteration of morphodynamic balances (construction of breakwaters) which is causing erosive damage in many parts of the coast; urban and tourist pressure, unsustainable in many coastal areas and the repeated failure to comply with coastal laws <sup>15</sup>

*Main problems affecting coasts description. Spanish student from IES Bitácora*

 [Principales problemas que afectan a la costa I - YouTube](#) - Video ES



- Coastal areas have suffered the most intensely from the impact of increasing human pressure, urbanisation and tourism development.
- Massive urbanisation and the construction of different infrastructures associated with it have caused a radical transformation of the coastline and the disappearance of many sandy beaches.
- The construction of buildings, roads, promenades, etc. on the sandy surface of the beaches, the execution of inadequate land and maritime works, and the extraction of aggregates are some of the most frequent activities causing this transformation.
- Demographic pressure and the concentration of economic activities on the coast, with the cultivation of red fruits on the coast of Huelva being one of the activities that have the greatest impact, lead to an increase in the consumption of water resources to the point of overexploitation.
- The toxic phosphogypsum ponds and the heavy metals that mining contributes to the Tinto and Odiel rivers.

→ [More Info \(Threats to the coastal zone\)](#)

A specific **pollution problem** in coastal areas, as a consequence of overexploitation, is the salinisation of coastal aquifers due to seawater intrusion, one of the problems that most affect the Doñana National Park. The current model

<sup>15</sup> (Barragán, J. M., Boy, Á., Carballo, A., Colina, A., Doménech, J. L., & Juanes, J. A., 1991).



of human development in coastal areas is hardly sustainable in the terms in which it has taken place until now. If the current rate of growth of the main human activities were to continue, the resulting environmental problems would be of such magnitude that we can expect a decrease in the current quality of life and a strong weakening of the productive sectors.

*Main problems affecting coasts description. Spanish student from IES Bitácora*

 <https://youtube.com/shorts/K1B7e8rj1Ks?feature> - video ES



The most recurrent threat that endangers the coast of Huelva is the consequences of a **tsunami** which, as announced by various experts in the field, is certain to occur, although it is not known when with certainty. The impact of a tsunami on our coasts would be an environmental catastrophe of great magnitude, which is why the Andalusian Regional Government has announced the drawing up of a **Contingency Plan for the risk of tsunamis in Andalusia**. What the scientific community is asking for: an evaluation of the effects of a possible tsunami and an action plan to react to the emergency. Almost the same thing that the Huelva City Council, since December 2019, is carrying out in a pioneering way in Spain, circumscribed to the local area. The Contingency Plan is insurance for the protection of the coasts. Until now it did not even exist, even though 23 million people live in the area. That is, 58% of the population is in an area of 7,660 square kilometres, and it is estimated that those affected by a tsunami on the coast of Huelva would affect a total of 112,700 victims<sup>16</sup>. After years of delay and the deployment of specialists, the State Plan places Spain at the forefront of Europe in this area. The plan aims to detect the phenomena as early as possible and to inform the population so that they can evacuate and protect themselves before the water reaches land.

On the other hand, one of the biggest problems facing Huelva is the **disappearance of freshwater in the Doñana National Park**, which is home to one of the largest wetlands in Europe and is being threatened by intensive agriculture (particularly the cultivation of red fruits). Scientists claim that the park's water supply has declined dramatically due to climate change and excessive water abstraction by neighbouring strawberry farms, often through illegal wells. This issue strongly divides those who want to preserve the park and the farmers.

Juan Romero, a representative of 'Salvemos Doñana' said: "The overexploitation of groundwater will destroy the wetlands of Doñana if there are no radical changes. And the radical changes would be: to stop overexploiting the aquifer, and close wells, that's what the administration has to do. They have to limit current extractions and reduce them by half. Despite repeated calls by activists, experts and even UNESCO to stop illegal groundwater extraction (WWF has catalogued more than 1,000 illegal boreholes), little has been done to address the problem. The effect of aquifer exploitation is most evident in the disappearance of the dune pools, which are directly dependent on the water

<sup>16</sup> Ronchel, J. (2021)

table and are home to endemic species of plankton and rich communities of amphibians and dragonflies. However, when the aquifer is recharged, it also overflows into the marsh system that supports waterbirds, including greater flamingos, and this flow has been greatly reduced by drilling. To make matters worse, on 9 February 2022, the Andalusian regional parliament voted in favour of a plan to legalise 1,500 hectares of irrigated land and thus legitimise the operations of illegal farmers, despite open opposition from the Spanish central government, the EU, UNESCO and several non-governmental organisations.

### → [More information about Doñana's threats \(a WWF report\)](#)

At the start of the **21st century**, the critical issue of the spatial regulation and organisation of coastal and marine areas is a key priority for Europe, the Mediterranean and Greece in an era of climate change and environmental shifts. There can be no doubt that the Mediterranean's coastal and marine areas are facing ever greater risks from natural disasters and human pressures alike. The coastal environment is under serious threat from activities (like tourism, transportation etc.) carried out without recourse to even the most elementary principles of sustainability; as a result, developmentally and environmentally, these activities are anything but beneficial. Marine transportation and coastal and marine tourism constitute sources and focal points for pollution on land and at sea and lead to the degradation of marine and coastal ecosystems<sup>17</sup>. Moreover, the building up (legally or illegally) of the coastal zone, especially near or on the foreshore and seashore, sharpens the downgrading of these areas, which are also basic tourism assets.

People have significantly changed coastal environments and created a need for effective coastal management. **Anthropogenic change** is a result of

- 】 population and urban growth causing coastal squeeze and reducing the area in which natural coastal processes can function.
- 】 infrastructure development, such as buildings, quays and ports, on sensitive coastal sites such as coastal dunes and estuaries that interrupt natural sediment cycles.
- 】 pollution from urban and rural land-use activities including agriculture, shipping, urban stormwater runoff and tourism reduces coastal amenities and values.
- 】 climate change resulting from increased CO<sub>2</sub> emissions causing rising sea levels and more frequent and intense extreme weather events.
- 】 biological stresses such as introduced species that can destabilise coastal ecosystems and landforms.

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<sup>17</sup> (D.Tegar, R.O.S. Gurning, 2018)





Coastal systems are vulnerable to changes to coastal processes, causing **alteration of coastal morphology, erosion, sedimentation and changes to water quality**. Ecology and human infrastructure are at risk from erosion, flooding and storm events. The vulnerability of a given population, system, or place to harm from exposure to a hazard or a threatening event (e.g., a coastal flood, a pollution event from the shipping of hazardous materials) or an ongoing process (e.g., wave action moving sand along a coast, excess fertiliser runoff from agricultural lands), directly affects the ability to prepare for, respond to, and recover from hazards and disasters<sup>18</sup>. Social vulnerability focuses on those coastal communities or demographics and socioeconomic factors that increase or weaken the impacts of hazard events on local populations.

The water on the surface of the Earth appears as rivers, lakes, wetlands, and seas, all of which are important ecosystems supporting a variety of human needs, such as agricultural and biogeochemical activities, that must be preserved by humanity in the coming years. Due to the recent climate changes, wetlands can be considered some of the most threatened ecosystems, affected by sea level rise, storm and river flooding as well as human activities<sup>19</sup>.

**Coastal lagoons** represent a transitional zone where freshwater and marine ecosystems are linked to each other. They are usually oriented parallel to the shore and formed in topographically low regions behind coasts. Depending on their degree of water exchange with the sea, lagoons can be classified as:

- Drowned
- restricted,
- and leaky.<sup>20</sup>

Choked lagoons occur on coasts where a littoral drift has emerged due to high wave action, restricted lagoons communicate with the sea through two or more inlets, and leaky lagoons have many entrance channels.

Pollutants that degrade Kotychi lagoon<sup>21</sup> are known. It is that of waste disposal and its main urban and stormwater management. Fertiliser and residues of pesticides, sewage and garbage, livestock waste, shrapnel and cartridges from poaching. All the pressures exerted on the lagoon will be presented below from human activities in the area.

Poaching often coincides with the official hunting period (August 20 to the end of February). Large-scale poaching incidents take place in Kotychi with watercraft lines. Poaching during spring migration is a serious problem for the bird fauna of the area. Waste disposal is one of the most important issues and needs special attention. In the wider area of the municipalities involved, there is no organized sanitary landfill of waste resulting in certain points of the area being turned into waste disposal sites, in landfills.

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<sup>18</sup> (A. Parthasarathy, U. Natesan, 2015)

<sup>19</sup> (P. Avramidis, G.Iliopoulos, et al., 2014)

<sup>20</sup> (B. Kjerfve, 1986)

<sup>21</sup> (D.N. Apostolopoulos, D. Giannikopoulos, et al., 2023)

These landfills work for years in violation of Community and National Legislation, causing great and irreparable damage to the environment and to the health of the inhabitants. They pollute the water table, soil and air since most of them get burned. Unfortunately, there is no integrated system in the area of the municipality of Lechaina sewage network, as well as the biological treatment that was built at a distance of a few kilometres east of the lagoon, did never work.

What is more, according to a survey <sup>22</sup> from 1945–2016, the lagoon’s water surface area showed significant shrinkage as it seemed to have been slowly silting up and transitioning into swampy areas and finally dry land. This shrinkage was probably due to a combination of impacts, such as intensive cultivation, construction of the Pinios dam, and reduction of the supply channels. It’s important to come up with comprehensive strategies that add value at both a local level to protect communities that are the most threatened and also at an international level with comprehensive policies.

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<sup>22</sup> (D.N. Apostolopoulos, D. Giannikopoulos, 2023)

## 5. Pieces of advice, additional resources and contributions from participants

Here are some options for simple, fun and practical activities for you to do with the little ones at home, to awaken their desire to take care of the environment:

- **Separate rubbish** into plastic, glass, paper and other waste. If you can, have separate bins for each type of waste. If they don't want to touch the rubbish, they could be in charge of sticking posters in the bins and even decorating them.
- **Teach them to save energy** by delegating responsibility. For example, younger children can be in charge of turning off the TV and older children can be in charge of unplugging them.
- **Take care of the plants** with them. Explain to them that they are also living beings and need sun, water, peace and quiet and even a melodious voice to grow healthy and strong. You could decorate the pots or paint them together.
- **Recycle** unused objects and create new things together. For example, they can use toilet paper rolls to make ornaments, coffee cans to make potholders, or they could even create a doll out of plastic bottles. Encourage them to create toys from scratch using recycled materials.



## Recommendations for outdoor recreation

Coastlines and oceans around the world are fragile, so here are simple tips on the actions you can adopt for your eco-friendly beach holidays:

In addition to choosing an eco-friendly holiday accommodation, choose one that is close to the beaches, **go there on foot or by bike**.

If you decide to practise a water activity, choose **eco-friendly water sports**. Paddle, surf, kite surf, or simply snorkel. In addition to the noise pollution and carbon footprint that motorized activities generate, they also disturb marine wildlife.

To avoid bringing garbage to the beach, adopt the same **zero waste reflexes** as you would in town.

- Avoid plastic bottles and take your reusables with you, there are now many models available, which will keep your favourite drinks cool all day long.
- Avoid individually wrapped products and take the children's treats in airtight containers
- Choose heavy material bags, and bring no lightweight plastic which is likely to fly away in the wild.

Did you know that **sun lotions** have been recognised as one of the causes of coral reefs' devastation? It's been a few years now that we know sunscreen has a devastating effect on marine life. A study published in 2008 in *Environment Health Perspectives*<sup>23</sup> pointed out that the use of petrochemical-based sunscreens was affecting coral reefs. What mainly happens is that the corals are bleaching with the consequence of slowly dying. Sunscreens containing mineral filters do not penetrate the skin, are non-allergenic and limit the impact on oceans. If you have to wear sunscreen, that's definitely a better option. They might be a little more expensive than "regular" ones, but it is worth it.

Shells, pebbles, and sand form the ecosystem of our coastlines. Sea leashes (e.g: algae, driftwood, cuttlefish bones) play a role and often serve as a food reservoir for birds. **Taking shellfish**, and bringing back sand, or pebbles are harmful and weaken this ecosystem.

If you visit a popular beach, you will probably see specific access, like boardwalks or stairs designed to get there. If you are more interested in secret beaches or quiet coves, this may not be the case. Whatever happens, take the marked paths to the beach and don't give in to the temptation to go through the dunes to get to the sea faster. **The dunes** are home to a fragile ecosystem. Birds often choose them as nesting areas. Also, the rare plants that grow there and may seem harmless, are often protected species and play an essential role against dune erosion.

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<sup>23</sup> (R. Danovaro, 2008)





Each year 8 million tonnes of plastic are found in the oceans. **Take action and do your part.** Start by leaving nothing behind you. If the beach you are going to is dotted with plastic, take two minutes to do a little cleaning or join a beach clean-up organised by an association in the town you're visiting.

We've all witnessed sea gull's appetite, and maybe felt like giving them a taste of our breadcrumbs but protecting biodiversity also means, **not feeding birds.** Firstly, because it is disturbing for them, and can be harmful to their digestive systems, but essentially because they will lose the habit of chasing for their food. Birds fed by humans will constantly come back in search of food, and this increases bird waste on the beach. Which can be disruptive to the ecosystem's balance and cause environmental damage to the beach.

For plastics alone, the economic and ecological cost is considerable when including beach clean-ups, tourism losses, and damages to the fishing and aquaculture industries. In spite of strong legislation such as EU directives, sea and coastal pollution remains high, and prevention and innovative coast and sea clean-up schemes remain a challenge. Many solutions are available to tackle these sources of pollution, including recycling, wastewater treatment, teams of collectors, and specific equipment such as skimmer boats, beach cleaning machines or algae harvesting devices. However, there is a pressing need to develop powerful innovative methods and processes to clean coasts and oceans and to restore the ecosystems to a healthy and clean state. The primary challenge is not only to remove litter and pollution but to transform the collected waste into a resource stream according to the concept of the circular economy.



[→ More info about sustainable tourism](#)

## 5.1. Informative videos on our oceans and coastal protection from official sources

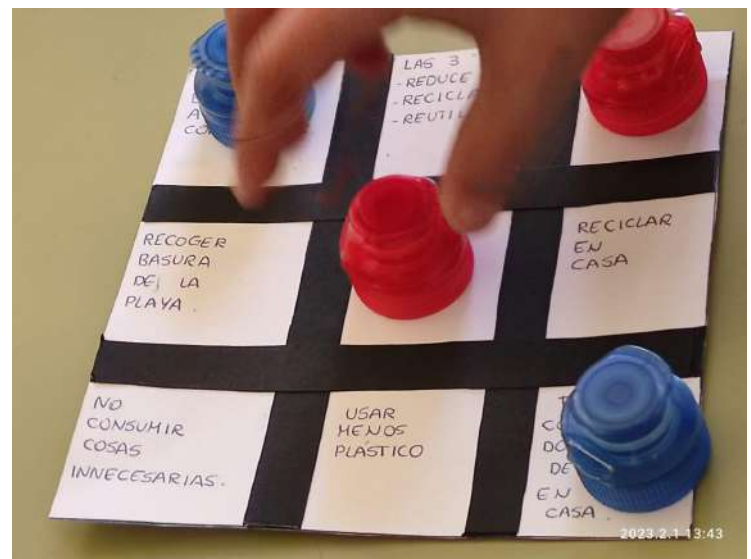
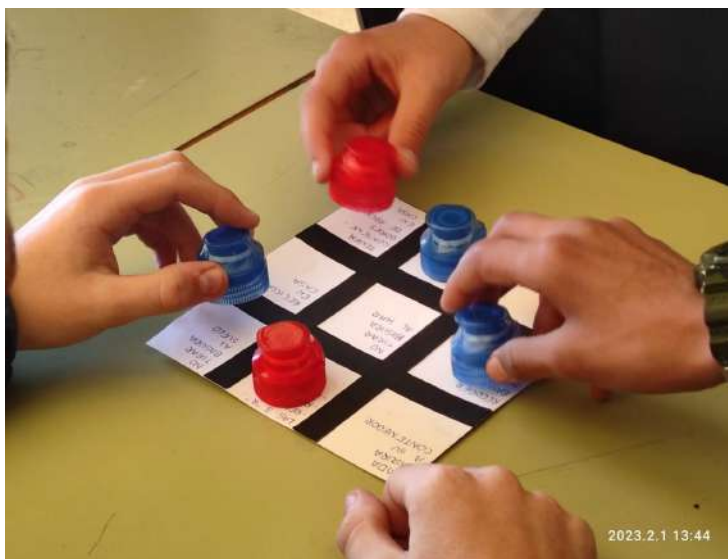
- ▶ [Get-to-know marine strategies video \(Spanish\)](#)
- ▶ [How to save our coastal seas \(English\)](#)
- ▶ [Protecting Seas and Oceans also protect our human rights \(English\)](#)
- ▶ [Historic oceans treaty agreed at United Nations after decades of talks – BBC News](#)

## 5.2. Proposed games

### 1. Tic-tac-toe game eco-friendly

📌 Colegio la Hispanidad 1º ESO. Date 01/02/2023

📄 Description: The game consists of the traditional tic-tac-toe game, but with an ecological theme. On the game squares, you can read phrases like "use less plastic" or "recycle at home". The tokens to play with are reused bottle caps.



## 2. Recycling Parcheesi

📌 Colegio la Hispanidad 1º ESO. Date: 01/02/2023.

🎲 Description: This game is an adaptation of traditional Parcheesi but with the novelty that when the player lands on a safety square he/she has to answer a question about the environment such as "What is the green bin for?" If the player fails the question, he/she moves back 3 squares if the answer is correct, he/she moves forward 2 squares.





3. The Ecological Goose Game

Colegio la Hispanidad 1º ESO. Date: 01/02/2023.

Description: The Ecological Goose Game is a quiz game, it combines the traditional games of goose and trivial. The participating students have developed a very interesting set of questions, among them, you can read "Do you think we are suffering the consequences of our actions?", "What is global warming?" or "Do you know the environmental effects of the food you eat?"

**PREGUNTAS**

1-¿Qué cosas hay en los contenedores de reciclaje?  
 2-¿En qué contenedor se tira una botella de plástico?  
 3-¿En qué contenedor tiramos un balón que se res a roto?  
 4-¿Malditos o Fritos? Si recibimos el papel exterior que tienen los platos?  
 5-**Aumenta los coches**  
 6-¿Qué debemos hacer siempre que vamos a la playa?  
 7-¿Malditos o Fritos? las botellas de cristal se tiran al contenedor amarillo?  
 8-¿En qué contenedor tiramos una caja de cartón?  
 9-¿Como podemos reutilizar una lata?  
 10-Ordena estos países: TUGAYR.¿En qué contenedor se tiran los?  
 11-¿Malditos o Fritos? los paños se depositan en el contenedor verde?  
 12-¿Como crees que será la tierra dentro de 50 años por la contaminación?  
 13-**Aumenta los coches**  
 14-¿Qué hay que hacer para no dañar el planeta?  
 15-¿Qué son los plásticos del medio ambiente?  
 16-¿Porque es importante el cuidado del medio ambiente?  
 17-¿Crees que estamos sufriendo las consecuencias de nuestros actos?  
 18-Menciona 3 motivos por los que el agua se debe salvar al medio ambiente.  
 19-¿Como aprovechar los recursos naturales?  
 20-Menciona 3 elementos que están relacionados con el medio ambiente.  
 21-¿Como contribuye el medio ambiente a tu bienestar?  
 22-¿Qué piensa de la situación del medio ambiente en la zona?  
 23-¿Sabes cuantos tipos distintos de residuos se reciclan en la comarca?  
 24-¿Qué pasaria si se destruyeran los árboles?  
 25-¿Como podemos cuidar el agua?  
 26-**Aumenta los coches**  
 27-¿Como podemos disminuir la contaminación con coches?  
 28-¿Malditos o Fritos? la ropa de abrigo de otro verano, e incluso que no usamos.  
 29-¿La extinción de animales es grave a debido del medio ambiente?  
 30-¿Que seremos ante la deforestación?  
 31-¿Como aprovechar los recursos naturales?  
 32-¿Participar en dicho actividades de la empresa?  
 33-¿Tendrán prototipo oq o herramienta en un de empresas?  
 34-¿Cuales otros tipos de basura de la playa?  
 35-¿Conocen los efectos sobre el medio ambiente de los alimentos que comen?  
 36-¿Qué pueden ser la contaminación?  
 37-¿Las cosas que encontramos que que no usamos?  
 38-¿Qué hay que hacer cuando vamos a la playa?  
 39-¿Qué hay que hacer para reducir?  
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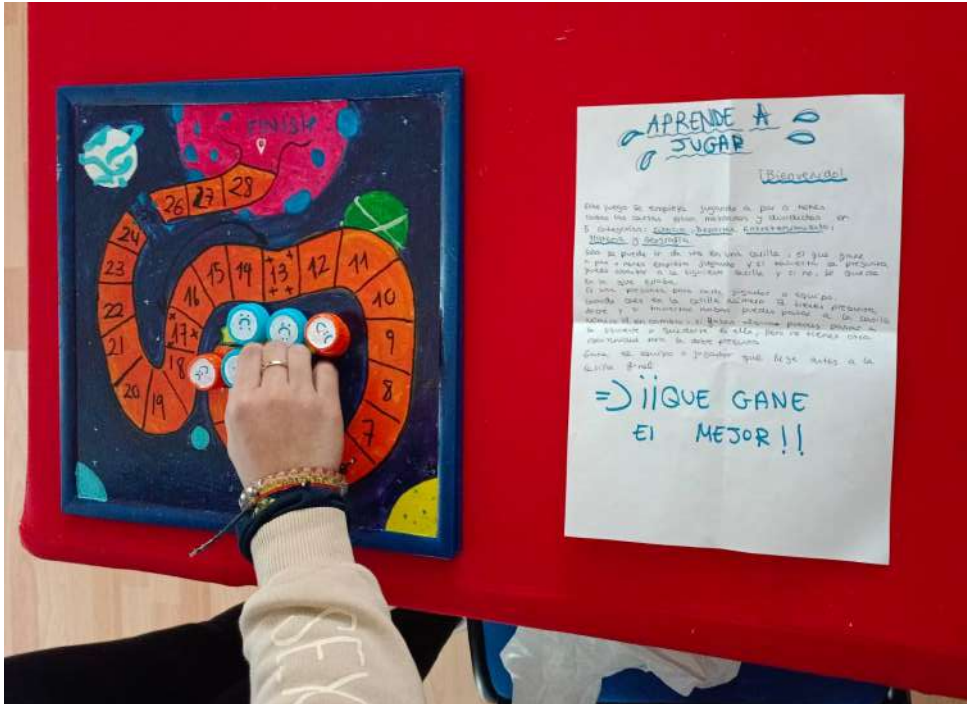




#### 4. The inquisitive snake game

Colegio la Hispanidad 1º ESO. Date: 01/02/2023.

Description: This board game is a quiz game created by the participants of the Litoral project, it is played without dice, the player moves through the squares and has to answer a series of environmentally themed questions.



#### 5. Three recycling in a row

Colegio la Hispanidad 1º ESO. Date: 01/02/2023.

Description: This is the traditional tic-tac-toe game but with a recycling theme, to win you have to make 3 in a row with objects of the same material.



## 6. Mobile rests made of reused plastic

📌 Colegio la Hispanidad 1º ESO. Date: 01/02/2023.

🌍 Description: This object is a mobile phone holder made from a plastic bottle. With this action, the student aims to raise awareness of the need to reuse and/or reuse objects that are no longer useful in order to give them a second life.



## 7. The Isle of Pollution, The Story.

By Aitana, Belén, Alba and Airoa, students from Colegio La Hispanidad

### La Isla de la contaminación

Este cuento relata la historia de Noa y Samuel



Eran 2 amigos que se criaron juntos, sus padres se criaron juntos eran muy amigos, por eso decidieron darle la sorpresa de irse de vacaciones juntos.

El destino era una isla paradisíaca pero... no sabían lo que les esperaba.

Cuando llegaron a la isla se encontraron toda la isla llena de plástico. Se quedaron sorprendidos ya que no se esperaba una isla tan sucia.



Apenas había vida marina por eso decidieron juntar a todos los habitantes de esa isla, para empezar un proyecto: recoger la basura.

Los niños se fueron a su casa feliz, ya que, ayudaron a reducir la contaminación marina y cobrar vida.

Aunque parecía imposible tras semanas de mucho esfuerzo la playa parecía más limpia.



Cuatro meses después la playa poco a poco comenzó a cobrar vida marina



La conclusión de este cuento es que reduzcáis los plásticos y la contaminación, y así ayudemos a tener una vida mucho mejor.





## 8. Journey to the Island, The Story

By Ainhara and Daniela, students from Colegio La Hispanidad

# EL VIAJE A LA ISLA

Hola, somos María y Mario, os venimos a contar una historia que nos pasó hace 10 años, en ella nos la pasamos muy bien pero a la vez sufrimos un poco. De pequeños ninguno de los dos estábamos bien económicamente; nuestros padres se llevaban muy bien y un día nos dieron la fantástica noticia de que íbamos a visitar la mejor isla del mundo, la isla Celestial. Es una isla difícil de visitar y no todo el mundo puede ir a ella, ya que era muy cara. Nuestros padres llevaban ahorrando mucho tiempo. Por fin llegó el día, cogimos el barco todos juntos, por el camino estábamos muy nerviosos, después de mucho tiempo de espera por fin llegamos a la isla, era preciosa. Vino una guía para enseñarnos la isla. Vimos nuestras habitaciones, eran muy grandes. Por la tarde fuimos a merendar a la mejor cafetería de la isla, estaba todo buenisimo, luego fuimos al parque acuático y nos lo pasamos muy bien. Por la noche hicimos una barbacoa en la playa, fue super guay, jugamos, cenamos, reímos y sobre todo disfrutamos muchísimo. A la mañana siguiente, antes de desayunar fuimos los dos solos a dar un paseo por la isla, por el camino nos encontramos mucha basura y empezamos a recogerla, ya que nos daba mucha pena, seguimos andando hasta llegar a un camino que no conocíamos, ya que estábamos pendientes a la basura. No sabíamos por donde ir, y ahí nos dimos cuenta de que nos habíamos perdido, nos asustamos y miramos para todos los lados nerviosos. Aún así seguimos recogiendo la basura hasta que vimos la cafetería de ayer, fuimos corriendo y nos encontramos el camino correcto para llegar a las habitaciones.





Cuando llegamos, nuestros padres estaban muy preocupados, ya que estuvimos mucho tiempo aguera solos y llegamos muy sucios y con mucha basura. Se lo contamos todo y se quedaron preocupados. Nos dijeron que ellos se encargaban de ir a tirar la basura mientras nos duchábamos. Cuando nos arreglamos, fuimos a hablar con los responsables de la isla para contárselo todo. Ellos decidieron darnos una gran recompensa, nos ayudaron económicamente y nos dieron una vivienda para cada uno de gran calidad, también nos regalaron otra visita a la isla para dentro de unos meses. Luego fuimos a desayunar y después hicimos una de las actividades que más nos gustaba, nadar con delfines. Era todo precioso, parecíamos que estábamos en un cuento de hadas. Los días iban pasando y cada vez nos lo pasábamos mejor. Las vacaciones se nos pasaron volando y ya era hora de irnos. Llegamos muy tristes a nuestras casas pero nos esperaban unas largas mudanzas. Al llegar a las casas nuevas vimos que eran preciosas, tenían muchísimas plantas, piscina, cine, estanco de peces... Era un sueño hecho realidad. Lo mejor de todo es que estamos vecinos. Ahora en el presente seguimos viviendo en estas casas y damos gracias a la vida por esta gran oportunidad.



ANIHARA Y DANIELA 1<sup>ESO</sup>A



## 8. The magic of recycling, The Story

Created by Cristina, Mateo and Leonor

### *The magic of recycling*

Once upon a time, and it's not a lie, there was a town called Tirona. It was a place where people didn't know what to do with the rubbish and threw it in the street. Soon, everything was covered with rubbish and the sweepers couldn't do so much rubbish and keep everything clean. There was no more space to play, everything smelled bad, birds didn't fly over the city and people started to get sad and sick.

The protagonists of this story did not like this situation at all.

Ana, Kamel and Juan talked and talked, but they have yet to find a solution. Nobody had shown them how to solve the problem. Then, a little bird who heard them told them this:

- "Don't worry as you have it easy, wait a little longer and you will get help!

They were delighted and, suddenly, unique music could be heard.

- "If you want to help, learn to recycle, clear, clear, clear, learn to recycle".

Ana, Kamel and Juan were amazed.

- "Oh, who will sing?" - In the distance a magician approached and introduced himself.
- "Hello! I am the magician who grants everything! Anything you would like me to grant you?"
- "Yes" - said Kamel
- "We need the city to be clean, please" - said Juan.

Suddenly, the wizard raised his wand in the air and a flash was seen....

- "The city is clean" - said Ana

The wizard disappeared and the three of them looked at each other in amazement. Finally, the citizens were able to do things they couldn't do before because of the rubbish.

**THE END**

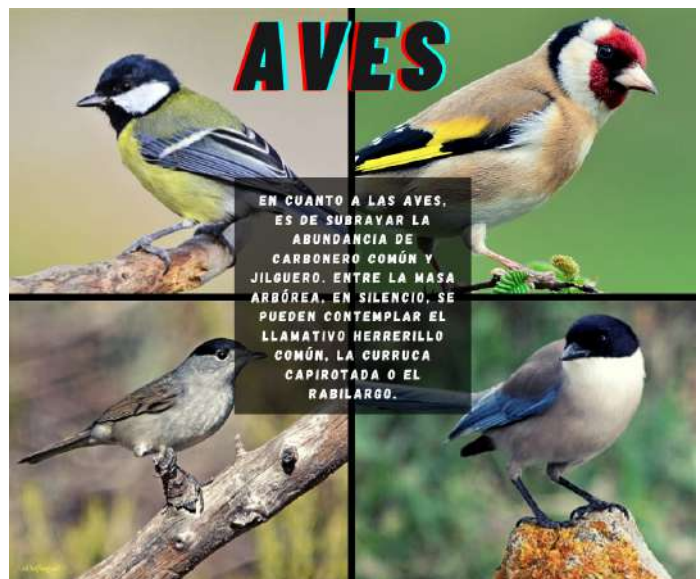




### 5.3. Presentations

#### 5.3.1. Presentation of the natural site Los Enebrales

By Pablo Toscano, students from IES Bitácoras





## 10. Presentation of Doñana Natural Park

By Alex and Iria, from Colegio la Hispanidad



### DOÑANA PRESENTACIÓN

#### 5.3. Presentations

5.3.1 Awareness-raising video about the litter in nature made by the project participants.

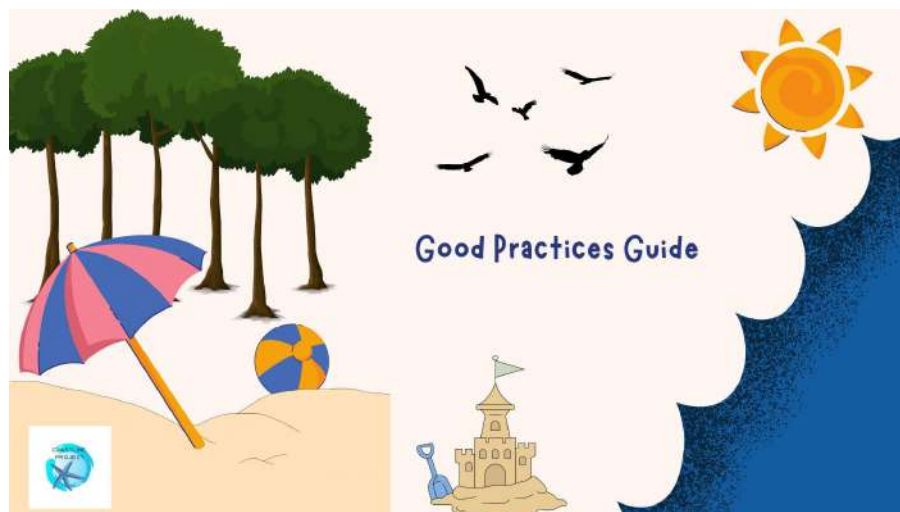


 Video de concienciación ambiental sobre la basura en la naturaleza.





### 5.3.2 Acting with Awareness, Respect Nature





Good practices guide



## 5.4. Informative workshops

Liofyllo's workshop

 VERGI Educational Group

 23-24 January 2023





## Pacto Verde's workshops

📍 Place: Colegio La Hispanidad (Huelva) & IES Bitácoras (Punta Umbría)

📅 Date: 01/02/2023 & 17/02/2023



## 6. Conclusions

In summary, it is crucial to take a long-term view when planning coastal development and to protect the coastline and its valuable resources, considering the needs of future generations. Shoreline changes, influenced by erosion and growth, are natural processes that occur on different time scales. These changes can be the result of short-term events, such as storms, wave action, tides and winds, or long-term events, such as glaciations that can significantly alter sea level (rise/fall) and tectonic activities that can result in the collapse or uplift of coastal land. Most coasts are therefore dynamic in nature, and erosion cycles play an important role in their ecological character. The natural forces of wind, waves and currents are essential to moving sand and unconsolidated soils in the coastal zone, resulting in rapid changes in the location of the shoreline.

Coastal regions are home to a great diversity of ecosystems unique on Earth. These include coral reefs, kelp forests, seagrass beds, salt marshes, mangroves, estuaries, salt marshes, wetlands and coastal forest habitats. Numerous animal species, including migratory species, depend on the coasts for breeding, feeding and shelter. In addition, rivers flow into coastal areas, mangroves interact with the ocean to exchange nutrients, and tides play a vital role in these environments. People also depend on coasts, as they provide fisheries resources, protection from storms and store carbon to help mitigate climate change.

Reducing the input of pollutants and waste into waterways is essential to minimise the impact on our coasts. It is unfortunate to see marine life suffering due to the presence of plastics and pollutants that have been improperly disposed of. Every individual can do his or her part to protect marine life and the oceans.

Ultimately, the aim of this project is to educate, innovate and inform young people, fostering their environmental awareness and promoting coastal preservation to the best of their ability.

[→ More info about the role of coastal regions](#)





# GLOSSARY

## **Agricultural activities**

Agricultural activities mean agricultural uses and practices including Producing, breeding, or increasing agricultural products, rotating and changing agricultural crops.

## **Asset**

This refers to something of value and may be environmental, economical, social, recreational and so on.

## **Biodiversity**

The richness and variety of wildlife (both plant and animal) and habitats on earth.

## **Coastline**

The coastline is a line that is considered the boundary between sea and land. This is the common definition for Coastline, other definitions can be discussed in the article. The terms coastline and shoreline are often used indiscriminately as synonyms.

## **Consolidation**

The action or process of making something stronger or more solid.

## **Ecological footprint**

The impact of human activities is measured in terms of the area of biologically productive land and water required to produce the goods consumed and to assimilate the wastes generated.

## **Ecosystem**

Ecosystem means the complex of a community of organisms and its environment functioning as an ecological unit.

## **Endemic Species**

Endemic species (or habitats or ecosystems) are those that are native to and occur only in a particular area or locale. Endemic species generally have very specific adaptive requirements that are linked to particular habitat or ecosystems that are, themselves, rare.

## **Environmental Management System (EMS)**

An Environmental Management System (EMS) is a set of processes and practices that enable an organisation to reduce its environmental impacts and increase its operating efficiency.

## **Erosion**

The loss of land due to the effects of waves and, in the case of coastal cliffs, slope processes (such as high groundwater levels). This may include cliff instability, where coastal processes result in landslides or rock falls.

## **Glaciation**

Glaciation is the formation, movement and recession of glaciers. Glaciers are accumulations of snow transformed into solid ice.

## **Groundwater**

Groundwater is the water beneath the surface that often collects between soil and rock -- it reappears on the surface through wells and springs.



## **Landfill**

Landfill is a disposal site or part of a site at which refuse is deposited.

## **Mangrove forest**

Mangrove forests are productive wetlands that occur in coastal zones. Mangrove forests grow mainly at tropical and subtropical latitudes because mangroves cannot withstand freezing temperatures. With the ability to store vast amounts of carbon, mangrove forests are key weapons in the fight against climate change, but they are under threat worldwide.

## **Marine**

Marine means pertaining to tidally influenced waters, including oceans, sounds, straits, marine channels, and estuaries.

## **NGO**

NGO stands for non-governmental organisation. Typically it is a voluntary group or institution with a social mission, which operates independently from the government.

## **Ramsar**

The Conservation of wetlands, signed in Ramsar, Iran, in 1971 is a treaty between governments which provides the framework for national action and international co-operation for protecting wetlands and their resources.

## **Shorelines**

The transition between land and water, in practice often taken as the intersection of mean high water and the shore.

## **Spatial regulation**

Spatial regulation refers to the methods used to balance demands for development with the need to protect the environment, and to achieve social and economic objectives.

## **Sustainable Society**

A “sustainable society” is one in which we do not damage the environment or overuse resources, and are therefore able to leave a beautiful, peaceful, and bountiful earth that future generations can continue to inhabit.

## **Tidal flats**

Tidal flats are found on coastlines and on the shores of lagoons and estuaries in intertidal areas (areas that are flooded at high tide and exposed at low tides).

## **Tsunami**

An ocean wave produced by geological changes that displace water, such as from submarine earthquakes, landslides, or volcanic eruptions. These waves may reach enormous dimensions and can have sufficient energy to travel across entire oceans.

## **Urbanisation**

Urbanisation is the increase in the proportion of people living in towns and cities. Urbanisation occurs because people move from rural areas (countryside) to urban areas (towns and cities). This usually occurs when a country is still developing.

## **Wetlands**



Wetlands take many forms including rivers, marshes, bogs, mangroves, mudflats, ponds, swamps, billabongs, lagoons, lakes, and floodplains. Most large wetland areas often include a combination of different types of freshwater systems.