

The Nalón Estuary

BOCAMAR:

the seams of the water

las costuras del agua

The Nalón estuary stands out for its high **environmental, ecological, and cultural values**. At the beginning of the 20th century its port infrastructure was used for loading and transporting the coal extracted from Asturian mines, an important industrial activity still rooted in the history and memory of locals.

These vast areas, which in some cases were once natural soils, are currently being used inefficiently, have been degraded, paved with concrete and no-longer adapted to major contemporary issues.

The project aims to:

- **revitalize the port infrastructure areas and transform them** to provide **ecosystem services** through five main axes:
 - a) A **sustainable mobility system** within the estuary and between the two villages, San Esteban (formerly called Bocamar) and San Juan de la Arena.
 - b) A **consistent and rational territorial planning approach**.
 - c) **Employment opportunities** based on **blue and green economy**, with a special focus on sea productivity.
 - d) The **promotion of regulated tourism activities**, particularly water sports and agrotourism / local marine tourism.
 - e) A program to **rehabilitate empty housing**.

- **preserve natural landscape** and cultural heritage, through the restoration of marshes and the recovery of natural zones.

- **adapt** the Nalón estuary, including its port infrastructure, public spaces, and natural areas, **to climate change by developing renewable energy production methods** (West dike) and implementing strategies **to mitigate the effects of storms and floods**.

To achieve these ambitious goals, a deep and detailed **reflection on the formal limits of the estuary** and its adjacent areas has been conducted in order to consolidate a contemporary public space.

Two small urban areas along the estuary are at the heart of the project. Both have very different historical backgrounds, but their own particularities complement each other. This project aims to preserve and strengthen the deep ties between them while **respecting their identities** and addressing the bioclimatic emergency.

The spatial strategy outlined can be reproduced and adapted to each area, with special attention paid to equipment, mobility conditions, and pre-existing public spaces - a common base enriched by each particular situation.

Territorial strategy

On a territorial scale, this area is defined and delimited as a whole system, located on the western edge of the Central Metropolitan area of Asturias. Its location and recent history involve a significant downturn in the second half of the last century and a slight annual decrease in the last decade, regarding Muros de Nalón and Soto del Barco. However, a small upturn can be observed in recent years.

The project aims to foster a controlled and conscious growth through the following actions:

- Development and relocation of the existing sailing club of San Esteban. Asso-

ciation of both sailing clubs to be part of the current Mancommunity of Cinco Villas or Mancommunity of the Bajo Nalón, which includes Muros de Nalón, Pravia, and Soto del Barco.

- Development of the existing marina of San Juan de la Arena, creating a recreational harbor that serves as a reference point at European level (the Bay of Biscay).
- Creation of a productive harbor in the landfill area next to the marshes of La Xunquera (site C2). Its design extends the harbor promenade and allows continuity between the urban area of San Esteban and the southern extremity of the port (old railway tracks). This area will provide space for fishing activity and seaweed production at regional level (Principado de Asturias) and at territorial level (Cantabrian Sea).
- Creation of a tidal power plant on the West dike as a pilot project to study the capacity to generate energy from the natural rise and fall of tides.

Mobility strategy

Individual transportation

The project aims to develop soft mobilities. Paths and ways are designed in order to allow pedestrians and bicycles to wander around and to travel across the site in a total safety. The link between people and sea is highlighted, and all the pathways are in a direct relationship with the sea and the estuary.

A special attention is given to the water routes. The estuary is transformed into a water pathway, connecting all the territory by the sea. A kayak and paddle network is created in order to connect all the uses and to allow people to visit the estuary.

The marshes are particularly preserved, with no footpaths and only a water access. Thus, the territory really becomes a coastal community, linked by the sea, the river, and its mobility.

Public transportation

In order to link San Esteban and San Juan, a **shuttle boat service** is created. It thus fulfills the need of exchange between the two cities. Moreover, a **bus service** is created in order to favorize the need of public transportation. Thus, the need of public parking is reduced, allowing to maximize the surface of recovered nature.

The parking strategy implies **to reduce the size of the parking lots and to spread them** around the site, while hiding them with new trees and vegetation. Those trees will provide large shadowed areas, allowing to create picnic spots and rest areas, sheltered from the direct sunlight.

Site A - Power of the sea

The old dyke of San Esteban constitutes an inadequate infrastructure that shows numerous signs of failure. Large cracks appear in the concrete slabs, revealing the backfill gravel underneath it.

The project aims to reclaim this space and offer it back to the nature, transforming concrete surfaces into natural areas.

In order to make the dyke safer to walk and more sustainable, the project aims to remove the slabs and to dig the gravel out, transforming this structure in a deep basin. This pond is connected to the open sea and becomes a natural pool.

This pool can be used as a leisure infrastructure (swimming and sunbathing), as well as a productive asset (breeding pond for seaweeds and seafood).

Thanks to all the gravel removed from the inner part of the dyke, the outer part is reinforced by using the gravel as a stabilizer for the concrete blocks.

The basin helps the dyke to adapt to the rise of the sea level by removing all the failible material and offering a controlled path to the rising water, in order to handle the flood.

Thanks to the existing retaining walls made of hard concrete, the pool acts as a dam reservoir, and transforms the dyke in a tidal power plant, producing blue energy out of the power of the sea.

Site A - Renaturing the embankment

The existing landscape is made of asphalt and concrete, with large under used parking areas. The project aims to give these surfaces back to a natural and permeable state.

The existing separation bank of the pool is completed on the other side in order to create a smooth and natural separation. This bank is made of earth and widely planted with trees and bushes.

The parking spaces are reduced to a more adequate number (200 spaces), and are dispersed into the site. The parking strategy implies to reduce the size of the parking lots and to spread them around the site, while hiding them with new trees and vegetation. Those trees will provide large shadowed areas, allowing to create picnic spots and rest areas, sheltered from the direct sunlight.

In order to allow an optimal growth of this vegetation, backfill gravels will locally be removed and replaced by vegetal earth. The tree species will be adapted to the coastal climate and will be salt and wind resistant in order to resist to the elements.

The ground surface of the parkings will be permeable and natural (compacted sand). A floating pedestrian deck made of wood will allow pedestrians to wander across this new natural landscape. All the species will be endemic and adapted to the coming climate change, with a emphasis given to a mediteranean palette. (Pinus Pinaster - Cupressus macrocarpa - Querus Ilex).

Site C1 - Reordering the present context . Systematization and urban environment

The first steps towards cohesion between San Esteban and San Juan is the creation of inter-municipal infrastructures and facilities. It is important to understand that these complement each other and, however different they may be, it must be understood that one supplies and benefits from the other, and vice versa. It is for this reason that they must be interpreted as a whole.

Three infrastructures (site C) are created by means of **wooden porticoes** with inclined roofs. These will be formally permeable and structure resistant to water and wind.

Starting from the south of the area, the first construction will be destined to the **reorganization** of the current industries located in the shipyard, and the creation of new economic activity

Heading north, past San Esteban, we find the next one which will contain the new centre for **naautical activities** which will group together the various - nowadays dispersed - sailing schools or places for renting kayaks and stand-up paddle. It will be used for storage and rental, and will also have rooms for meetings, courses, viewing terraces and even a specialised library.

In the majestic and spacious Plaza de San Juan, a **covered market** is proposed in continuation of the existing ship repair building. This will be freed up and moved to the set of the first porticoes mentioned above, located in the current shipyard. This will make way for the creation of public toilets and storage facilities necessary for public activities. The covered market will be a new meeting place, where all kinds of popular activities can be held (festivals, feast of gluttony, covered market, open-air cinema, etc.). It is also conceived with the idea of re-valorising La Rula, the identity of the place; the covered market will have an outside place to open up to.

The car parks in the Plaza de San Juan will be moved and the square will be characterised by its pedestrianisation (paving the road at the same level as the roadway, thus making vehicles slow down), the creation of a bicycle lane (also paved and at the same level) and the permeability of the ground facing the estuary.

Solar collectors will be installed on all the roofs so that the facilities can be powered by them, thus reducing the ecological footprint.

Site C2 - Reordering the present context

Leaning on the shipyard of *La Xunquera*, the project aims to reevaluate this part of the urban fabric to generate efficient spaces for the residents, considering the surrounding qualitative environment.

The starting point of the project involves reorganizing the group of buildings that are not directly connected to the city.

The idea is to replace it between the road connecting the South and the docks, and also to renaturalize the soils that had been developed.

To integrate the human scale, at first, a promenade continuing the existing one along the shore of San Esteban is created. This could provide a pleasant path for citizens and tourists, either by foot or by bike, connecting the city to the marshes through the industrial and heritage area.

A **wooden structure capable** of integrating different functions and uses is proposed. The structure is designed to be modular, with dimensions in plan measuring 20 meters by 10 meters, and it can also be divided into levels in section, with a ridge height of 9 meters. These dimensions offer ample area and volume along the docks, allowing for the creation of a 5-meter-wide pathway and a promenade that envelop the structure.

The main advantage of this system is its direct link to the city. Furthermore, depending on how each module is covered, it can host different functions, such as storage areas, restaurants, or greenhouses. Additionally, it creates a porous connection between the docks, the city, and nature, as well as interconnectedness between the modules themselves.

In this way, inner gardens or squares, whether closed or open, can be incorporated, and the spaces between the modules can generate intimate, domestic-scale environments.

In summary, the structure's purpose is to adapt to the various functions and uses associated with the city and industry while considering its urban location, natural surroundings, and the well-being of locals, tourists, and users who will experience it.

Site B - La Xunquera and La Llama beach

The project aims to preserve natural areas through the restoration of marshes and the recovery of natural zones. Different actions are carried out :

- Removal anthropic elements : lighting network (La Xunquera)
- Landfills cleaning (La Xunquera and La Llama)
- Partial deconstruction of old concrete docks
- Brushwood groynes to control sedimentation and floods
- Seaweeds to absorb heavy metal of the Nalon estuary.
- Preservation of plant species of the marshes : *juncus maritimus*, *juncus gerardi*, *Scirpus maritimus* var. *compactus* communities, *Phragmites australis* communities, *Elymus pycnanthus*, *Ruppia mar*, *Sarcocornia perennis* and *Salicornia europaea* communities, *Puccinellia fasciculata*.
- Preservation of fauna : *Rallus aquaticus* (rascon), *Acrocephalus scirpaceus* (carricero comun), *Acrocephalus arundinaceus* (carricero tordal), *Emberiza schoeniclus*(escribano palustre)...

It is crucial to preserve this natural and protected area because it has a very important role against the effects of climate change : to mitigate the effects of storms and floods and to store organic carbon.