

Coast

In Transition - Intermediate State

GROWTH OF GREENHOUSE GAS EMISSIONS



TEMPERATURE INCREASE



RISING SEA LEVELS



Country / City

University / School

Academic year

Title of the project

Authors

Spain / Barcelona

Polytechnical University of Catalonia / ETSAB & ESAB

2019, second academic year

Litoral en transición, estado intermedio / Coast in transition, intermediate state

Lina Marcela Flórez Díaz

TECHNICAL DOSSIER

Title of the project	Coast in transition, intermediate state
Authors	Lina Marcela Flórez Díaz
Title of the course	Final Landscape Master's Thesis
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Department/Section/Program of belonging	UPC / ETSAB & ESAB / MBLandArch
University/School	Polytechnical University of Catalonia



We hear more often about global warming, climate crisis, or climate change. The media role and scientific disclosure in this area have mainly contributed to two things, on the one hand, a registration and visibility of all the events that account for this problem, and, on the other hand, the "normalization" of the situation. Among all this, two words stand out: climate and global. Broadly speaking, the climate is what we can understand as the variation in the patterns of different variables over time, and global as a reference to its scale; however, on the globe, variables and time occur in different ways and on different scales, so we can speak of a common problem to planet Earth that must be dealt with in a particular way in each place.

The history of Barcelona is the history of a city that invents, reinterprets and transforms itself, with the aim of realizing the great ideas of its citizens. And although this process has placed it on the map as a world reference, it has also led it to legitimize dynamics that may be unsustainable.

In a sea level rise scenario, being a coastal city is a great challenge, but so is maintaining an artificial beach along its coastline that suffers from the storms and the annual erosion of beach material. This presents a crucial question, CAN ARTIFICIAL ADAPT TO CLIMATE CHANGE?

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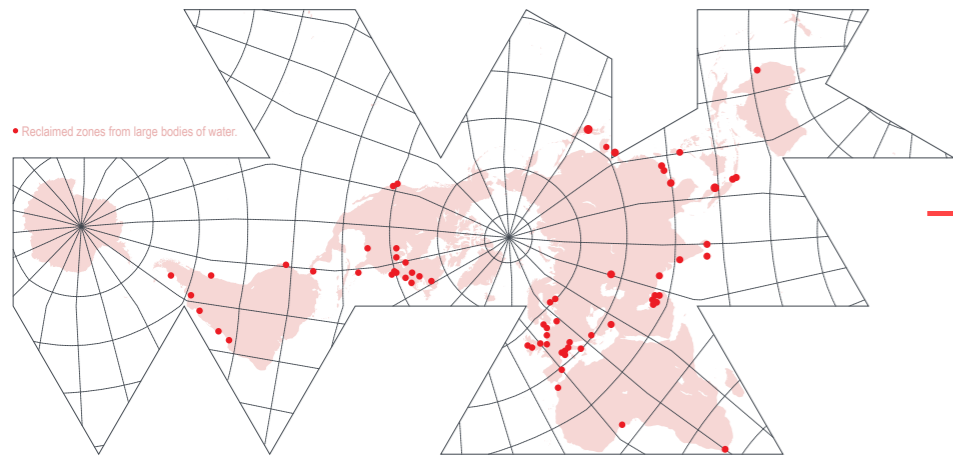


CLIMATE CHANGE AGAIN

11th International Biennial Landscape Barcelona

Barcelona September 2020
SCHOOL PRIZE

LAND RECLAIMED FROM THE SEA.



As if it were a game, we have developed the technology that has allowed us to gain land from the sea and increase the continental surface so that our cities grow "without limits", but we are at a point that is worth asking ourselves if we are ready to adapt when this game becomes less favorable.

A global problem. Local solutions.

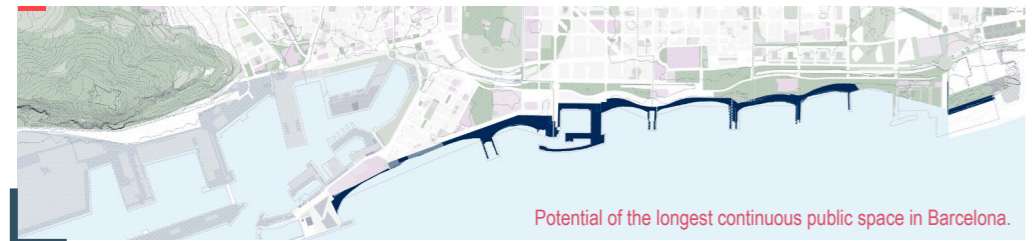
Barcelona is a magnificent city constrained by its geographical limits (Sierra del Collserola, Llobregat and Besòs rivers and the Mediterranean Sea), where its growth PRESSES AVAILABLE PUBLIC SPACES, mediating between the need for housing and public space while it must keep the places destined to attract tourists because of its economic potential.

environmental crisis, projects for metropolitan expansion and city planning should be accelerated and focused on city's coastal condition in the short, medium and long term.

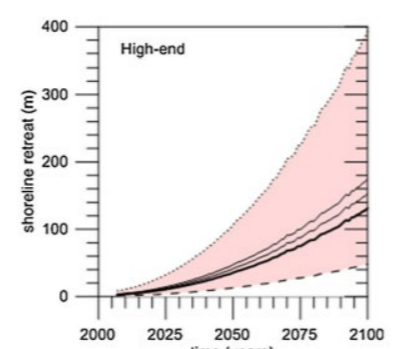
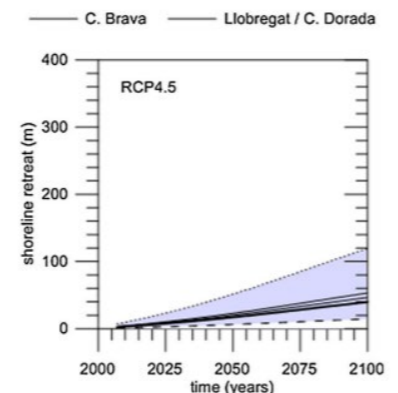
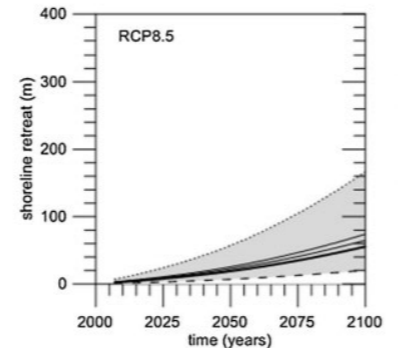
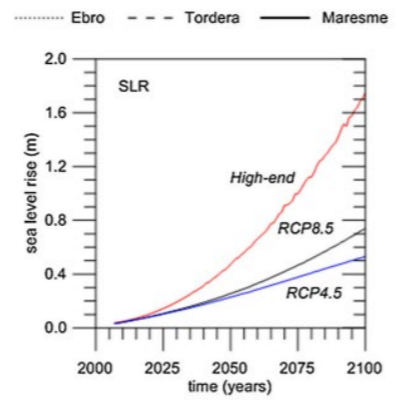
Barcelona's challenge is to change the way of comprehending the coastline, from its city planning to future scenarios, thus understanding that the beach has a potential as the longest continuous public space in Barcelona, and at the same time, is an important change in the viability of the coastal city in the face of the onslaught of the environmental crisis.

Taking into account the projections provided by the IPCC and its different possible scenarios, plus data collected in the "Impacts of sea-level rise-induced erosion on the Catalan coast" study, if we do nothing, Barcelona faces a definitive loss of its beaches putting at risk the lives of the seafront neighbors. With which it is pertinent to propose scenarios in which Barcelona reinvents its ways of understanding a coastal front.

As seen in the graphic obtained thanks to the MUHBA's record, throughout history, Barcelona's coastal dynamics have changed radically even from before the Roman settlements to the present day; However, it is worth noting the 1992 Olympics event as the moment when Barcelona definitely decided to be part of the group of big cities around the world that were betting on winning land to the sea, but now, this has been turned into a difficult situation that increasingly DEMANDS MORE RESOURCES FOR ITS MAINTENANCE, a fact that today puts the debate on the table about whether or not we should continue with this model, and if, due to the conclusiveness of the

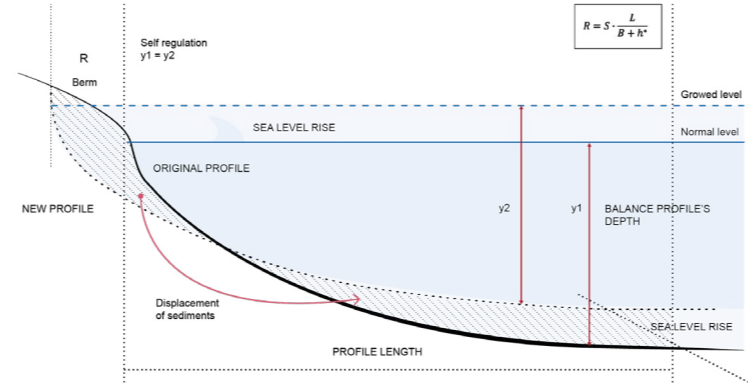


Potential of the longest continuous public space in Barcelona.



Impacts of sea-level rise-induced erosion on the Catalan coast / José A. Jiménez, Herminia I. Valdemoro, Eva Bosom, Agustín Sánchez-Arcilla & Robert J. Nicholls

How the equilibrium profile works according to Brunn's law.



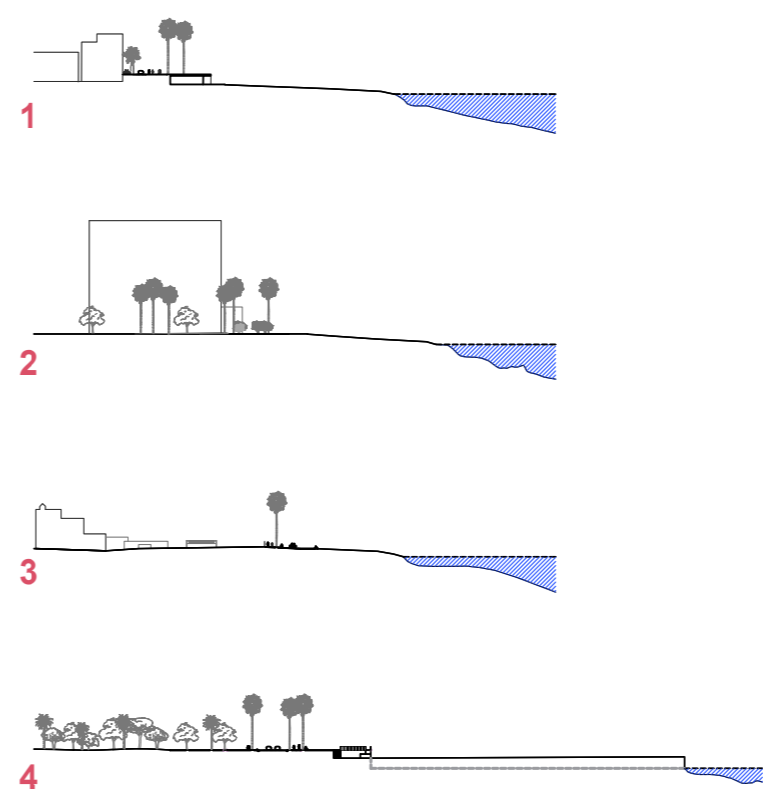
RCP+E.P.A+///+S

Some factors that contribute to beach loss are representative concentration pathways, average annual erosion, storms and subduction effects, among others.

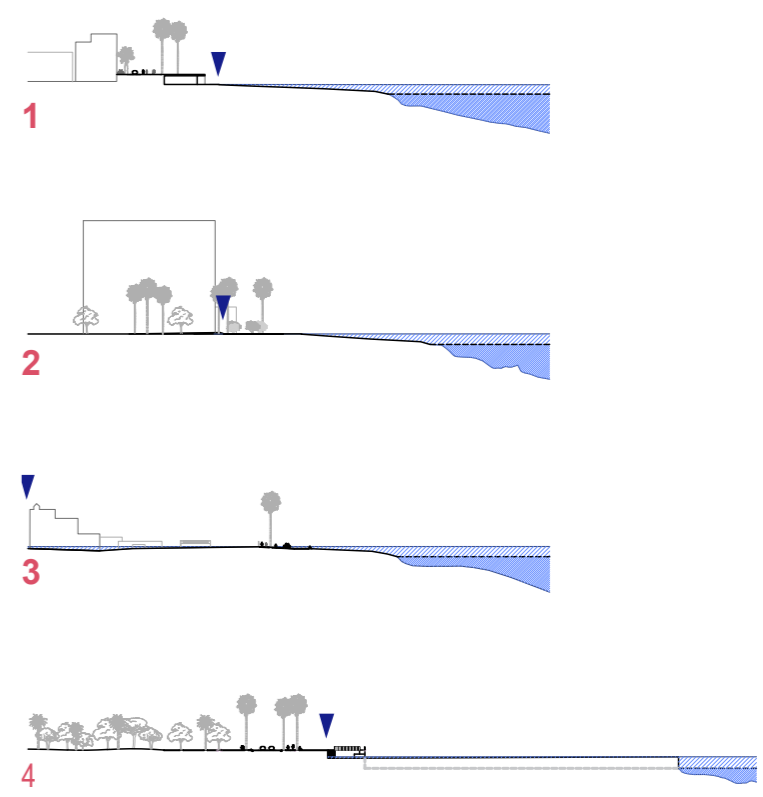


HIGH 2100
8.5 2100

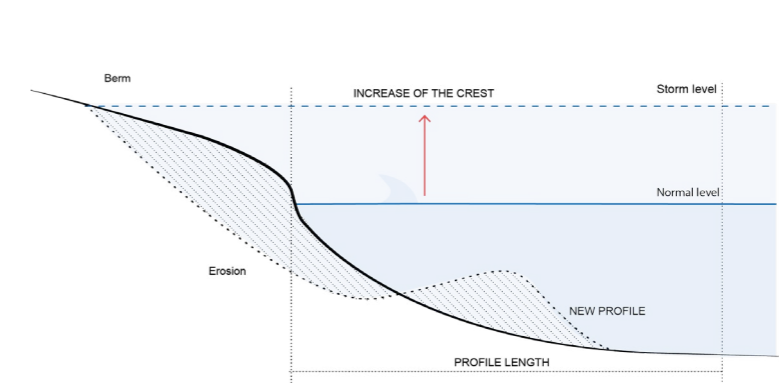
Current state section.

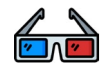


Rise 8.5 for 2100.



Profile dynamics in the storm and erosion period.





Can an artificial coast be adapted to climate change?

Barcelona coastline

“El cambio climático arroja una sombra de inevitabilidad a largo plazo, así como la Fortuna arroja una sombra de imprevisibilidad a corto plazo. Una y otra obligan a repensar como construir las ciudades.”

Tomado de: *Construir y habitar, Ética para la ciudad.* Sennett, Richard. Pág. 344

The bathing beach model established in Barcelona has to be rethought taking into account two important variables. The first one is that the tourism sector in Catalonia represents 33% of GDP and that the average number of visitors to Barcelona's beaches is 4 million people between the months of May and September; and the second is that a third of the total number of tourists per year, arrive to the city by cruise ship and ferry. This means that the model that replaces the current one must respond

not only to changes due to the climate crisis, but also to the economic and social needs of the city.

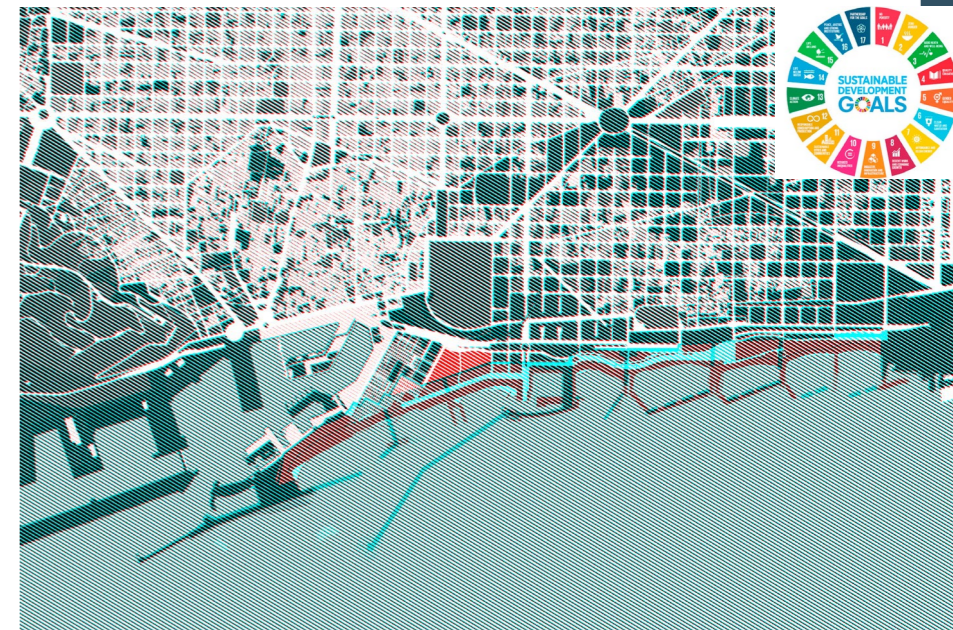
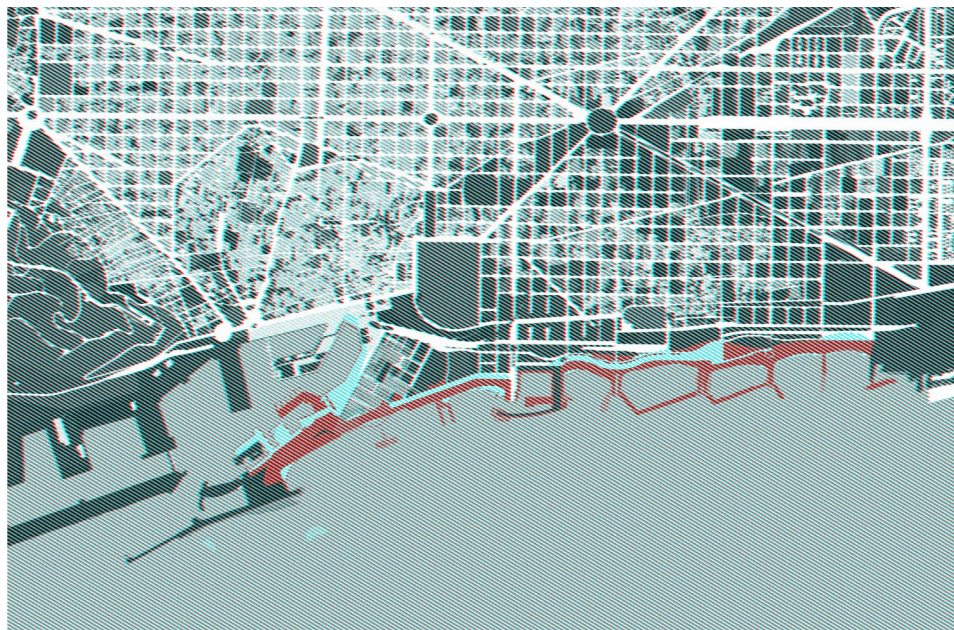
This complex adaptation requires a series of experimental landscapes as possible scenarios that allow us to understand each change with its probable consequences. To explain them in a playful way, I have based my proposals on monsters from popular culture to classify and differentiate the variations among them.

■ Problem | Current comparison between "before" and "after" the erosion of the coastline.



■ Current state.

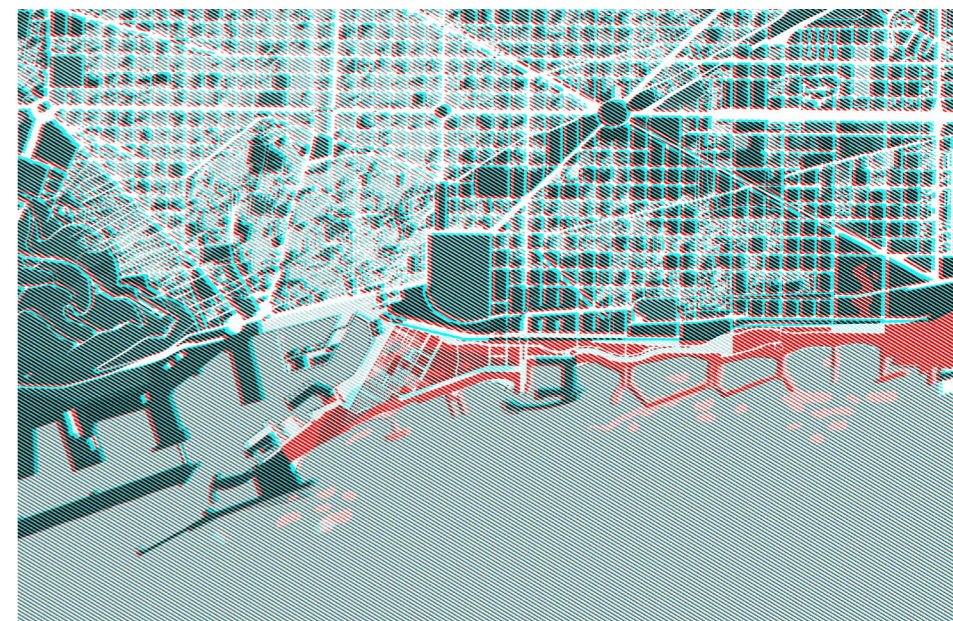
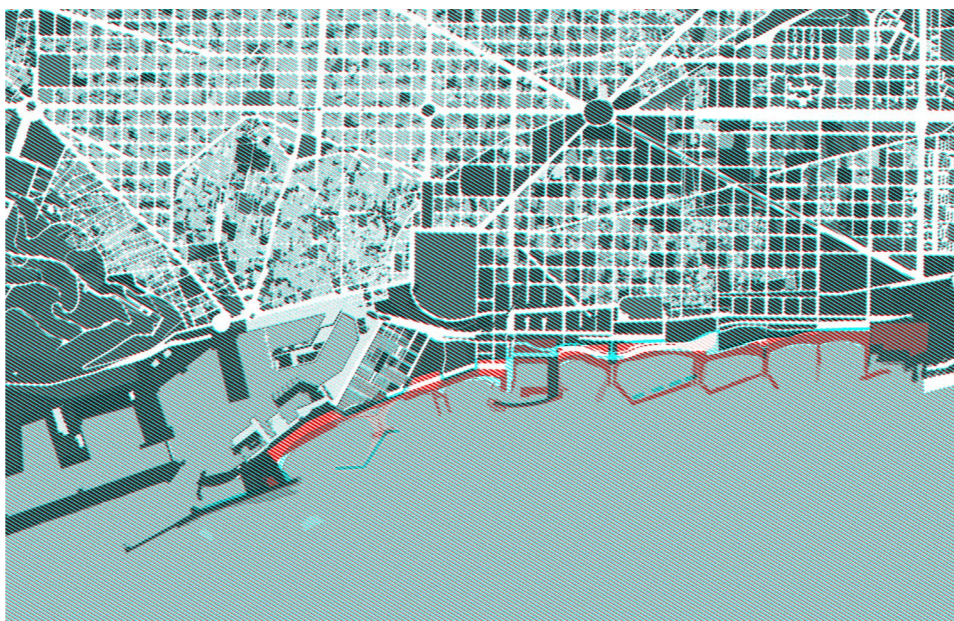
■ Rise 8.5 for 2100.



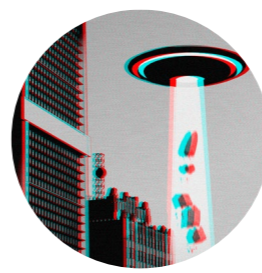
The **Khutulu** scenario is the scenario in which the city of Barcelona does nothing to contain the rise in sea level, mainly affecting the residents of Barceloneta and all the equipment and roads attached to the first line of the sea, as well as the protection infrastructures such as breakwaters and breakers.



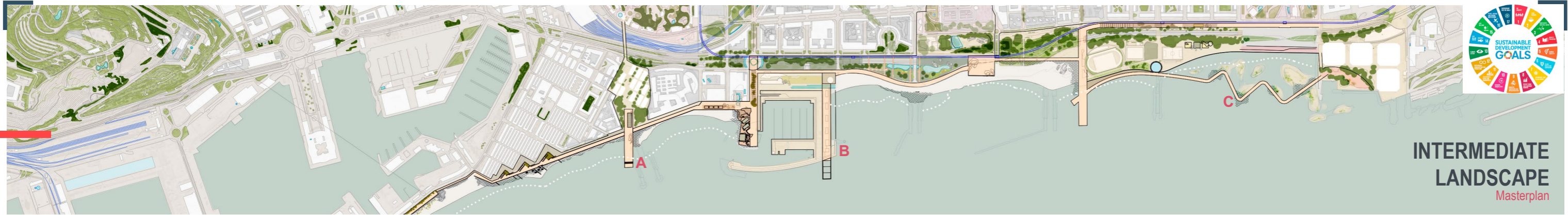
The **Godzilla** scenario is the scenario in which the city is committed to maintaining bathing beaches at all costs, incurring in losing some equipment on the front line to turn it into a beach due to the new sea line, as well as the creation of new infrastructure for protection in the sea in order not to lose sediment, in the long run, completely closed beaches represent a health problem due to poor water and beach conditions.



The **UFO** scenario recalls the stories of abduction. In this scenario some constructions of the first line of the sea are removed to generate small bathing coves, the protections for the Barceloneta area are reinforced, but in general the city coexists with the new sea line.



This is the purely environmental scenario, which leaves aside social and economic concerns and completely retracts the first built sea line with the de-urbanization of the promenade and the attached infrastructure; an intertidal zone of coastal lagoons is generated to attract fauna and guarantee some primary ecological functionalities. This is the most utopian scenario since it implies that infrastructures such as the wastewater treatment plant should be moved.



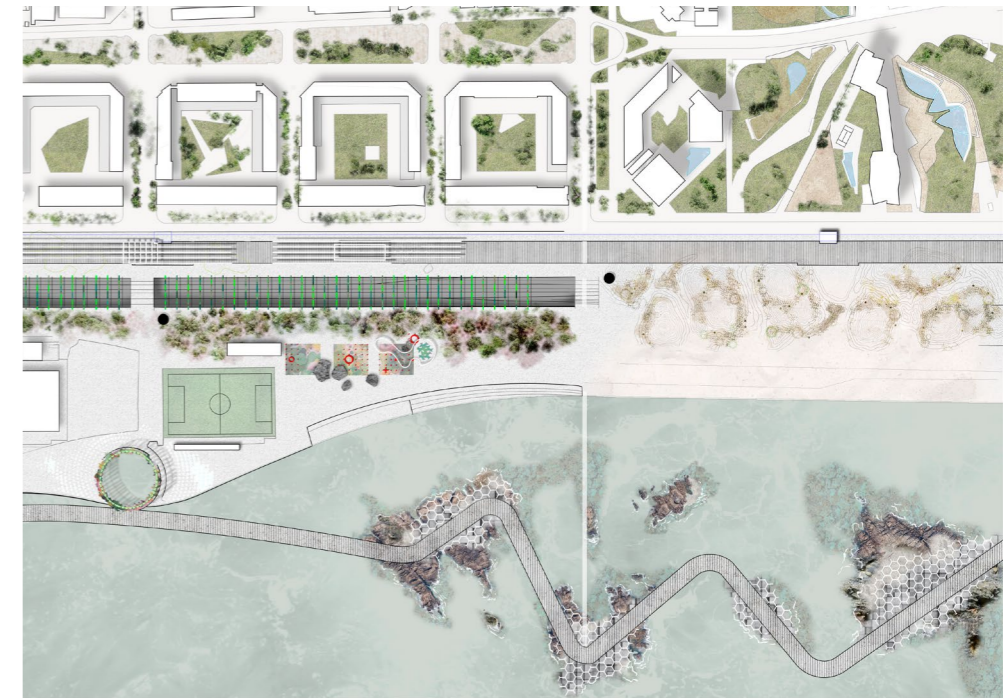
**INTERMEDIATE
LANDSCAPE**
Masterplan



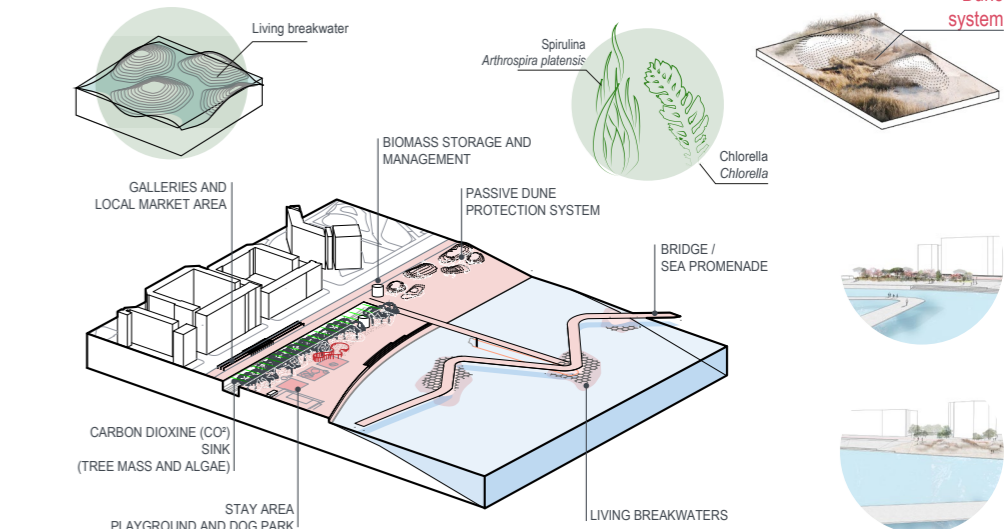
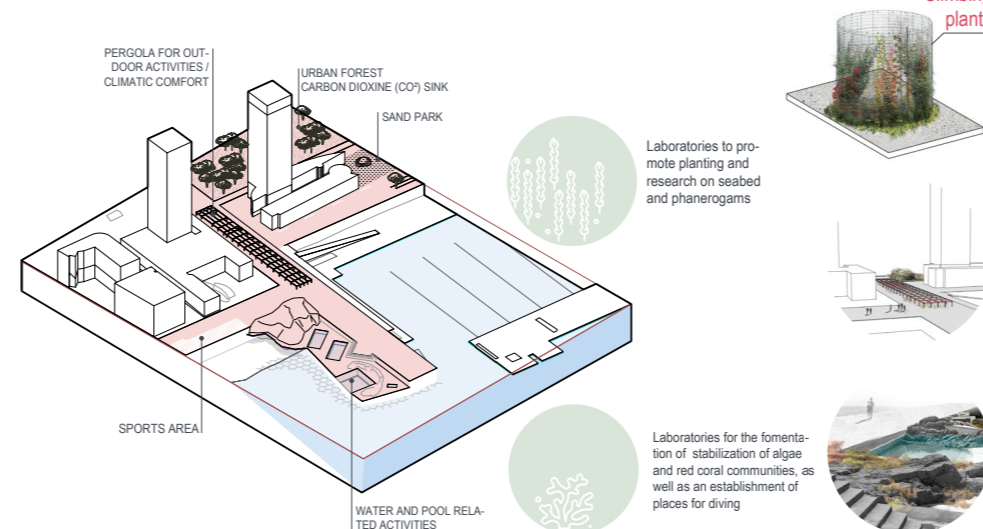
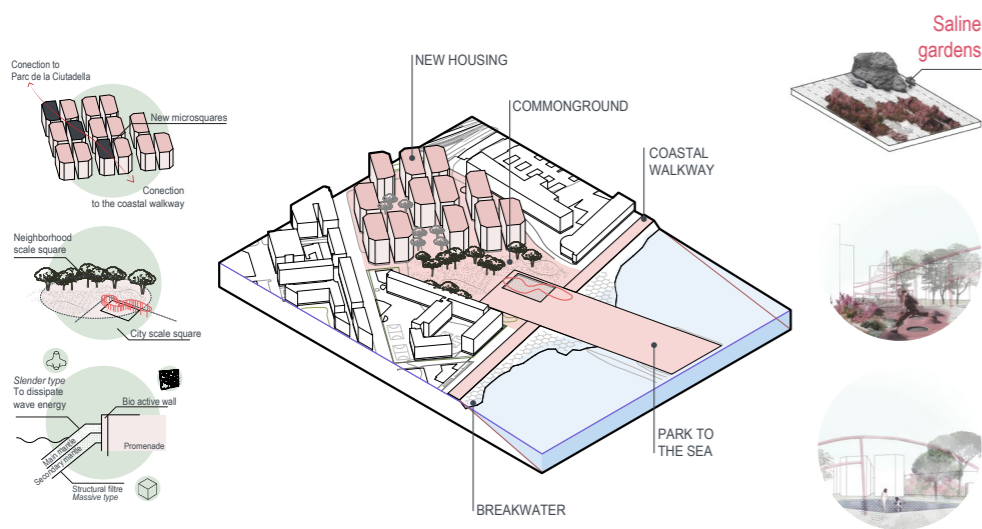
A) Zoom | Promenade at different scales, new home and network of parks



B) Zoom | New services for society, natural public pools, biodiversity laboratory and bathing area.



C) Zoom | Co2 sinks, sports area, bathing and dune protection areas and living breakwaters.



This is the **Intermediate Landscapes scenario**, it recovers the good things from each of the previous and puts them in an appropriate context for the thrive of **Barcelona's coastline facing the climate crisis and the sea level rise**. This proposal is intended to frame an ideal of public space wich is capable of group a range of facilities and activities that serves to the social and ambienal needsings of the city, while it claims the importance of the beaches as an economic suptor for Barcelona and for all the country.

