

Flood!

flood card stack

2030

2050

2070

Measure!

Sea-level rise Damage ●●●

Storm Surge Damage ●●●

Wave Damage ●●●

Erosion Damage ●●●

Biodiversity ●●●

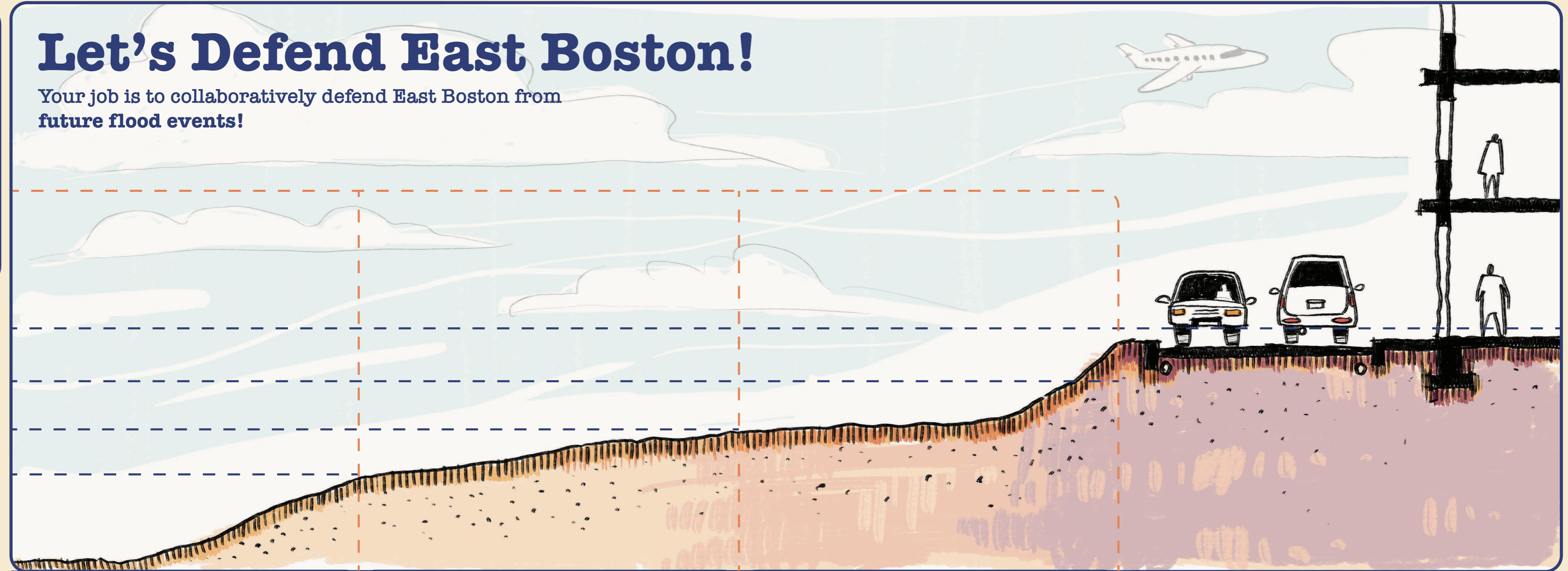
Community Uses ●●●

2030 2050 2070

Act!

Let's Defend East Boston!

Your job is to collaboratively defend East Boston from future flood events!



@danieloprata (2022), MCP'23, DUSP@MIT

LOW 2030 2050 2070

LOW 2030 2050 2070

Sea

Shoreline

Land

Neighborhood

Decide!

now

2030

2050

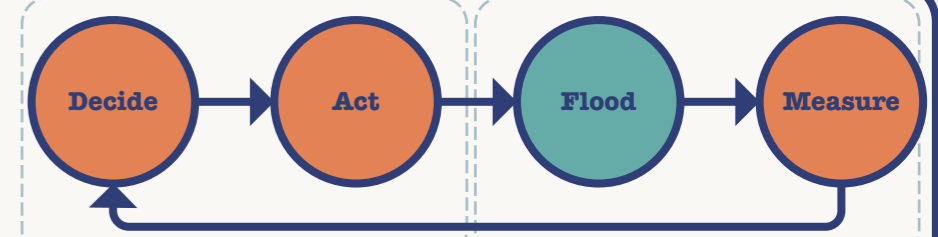
2070

Where The Land Meets The Water

donde la tierra se encuentra con el agua

Instructions (see booklet for detailed instructions):

1. Team up with 2 other friends!
2. Decide who wants to be Maria the Organizer, Mike the Landscape Architect, or Mel the Engineer. Remember, the three of you are playing this game collaboratively against "the nature"
3. For your turn, discuss among yourself and decide on one strategy from either Maria's, Mike's, or Mel's hand. Put the chosen card in the 'Decide!' section
4. Then, act upon your strategies by placing the card in the 'Act!' section. Place them strategically by thinking about the vertical and horizontal positioning of your action. The dash lines and color codes will give you a clue about where to place your action.
5. Now it is nature's turn. The sea-level rise is going to rise up one level.
6. Pick a card from the 'flood' card stack. It will be either a wave surge, storm surge, or erosion.
7. Measure your damage! If your previous action defends against the flood type, draw a smiley in the appropriate measurement circle. If your action placement is taller than the sea-level rise, you also draw a smiley face in the sea-level rise circle. If not, draw a sad face.
8. Repeat the process from step 3. In 2070, count how many smileys and sad faces you have.



Your turn

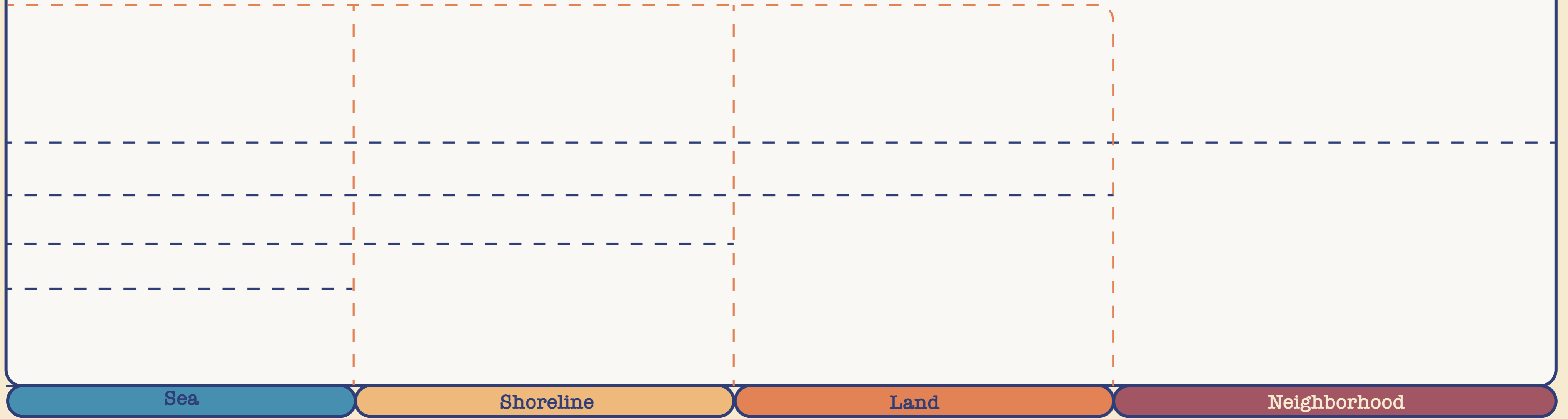
Nature's turn

- Instrucciones (consulta el folleto para obtener las instrucciones detalladas):
1. ¡Haz equipo con 2 amigos!
 2. Decide quién quiere ser María la Organizadora, Mike el Arquitecto Paisajista o Mel el Ingeniero. Recuerda, este es un juego colaborativo y ustedes 3 están jugando contra "la Naturaleza".
 3. En su turno, ustedes deben dialogar y elegir una carta de estrategia de la mano de María, Mike o Mel. Deben colocar la carta elegida en la sección '¡Decide!'.
 4. Luego, sigan sus estrategias para colocar la carta en la sección '¡Actúa!'. Deben pensar estratégicamente pensando en el posicionamiento vertical u horizontal de su acción. Las líneas discontinuas y los códigos de color les darán una pista sobre dónde colocar su acción.
 5. Ahora, es el turno de la Naturaleza. El nivel del mar va a aumentar en un nivel.
 6. Roba una carta del mazo de cartas de "Inundación". Las posibles cartas que pueden robar serán un oleaje, una marejada ciclónica o erosión.
 7. ¡Mide tu daño! Si su acción anterior defiende el barrio contra el tipo de inundación, dibujen un emoticón en el círculo de puntuación apropiado. Si su acción es más alta que el aumento del nivel del mar, también dibujen una cara sonriente. En caso contrario, dibujen una cara triste.
 8. Repitan el proceso desde el paso 3. En 2070, cuenten cuántas caritas sonrientes y tristes tienen.

Let's Defend East Boston!

Your job is to collaboratively defend East Boston from future flood events!

low 2030 2050 2070



Sea

Shoreline

Land

Neighborhood



Maria is a youth community organizer living in East Boston. She understands that her friends, her neighborhood, her community, and her future is affected by an imminent flood. She understands that in order to defend East Boston from future floods, we need to adapt our shoreline. However, she believed that without public participation and community uses, any coastal adaptation measures are futile.

Personal goal:
Protect East Boston from any floods while maximizing community uses



Maria

The youth community organizer

Mike works with plants, water, and lands. He understand that nature is something to befriend with and to enjoy. He believed that natural approaches are the most appropriate way to mitigate natural disaster. He also believed that a rich biodiversity ecosystem is essential for our environmental and social sustainability.

Personal goal: Protect East Boston from any floods while maximizing biodiversity uses



Mike

The landscape architect

This image is a presentation slide with a green background. It features a 3D cartoon character of a man named Mike, who is a landscape architect. The slide includes a personal goal and a paragraph of text. The slide is framed by a dark green border and contains several registration marks and color calibration bars.

Mel is a tech-savvy civil engineers that utilized maths and design skills to create infrastructure-based solution to defend against floods. She understand that the livelihood of East Boston residents need the most protection against natural disaster. She understands that sometimes bulky infrastructures look unpleasant for the neighborhood, but it is necessary for their own protection. If only there's a way to make them enjoyable.

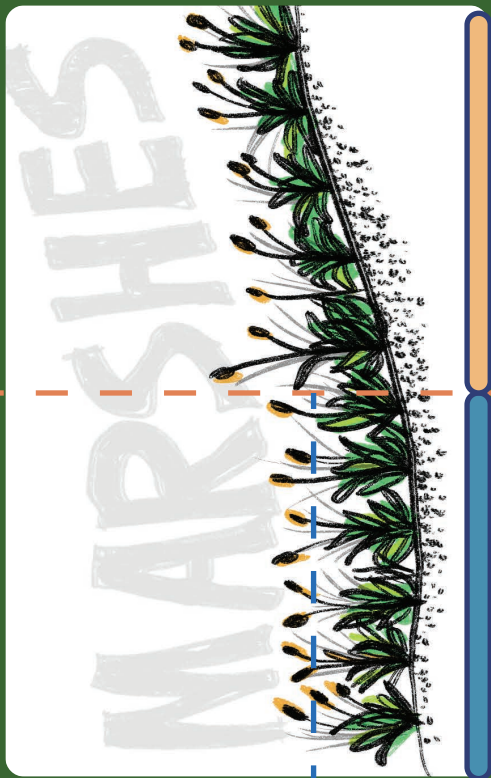
Personal goal: Protect East Boston from any possible floods by combining multiple defense mechanism



Mel

The civil engineer







Marshes



Marshes are wetlands dominated by grasses, rushes, or reeds often found in the edge of waterbodies. The presence of marshes in a watershed helps to reduce damage caused by floods by slowing and storing flood water. They can buffer storm damage, slow erosions, and often provide shelters for migratory birds.



Storm Surge Damage



Wave Damage



Erosion Damage



Biodiversity







Oyster Reef

Oysters purify water and filter out pollutants. Oyster reefs provide a habitat for all kinds of sea creatures, and food for humans. Oyster reefs function similarly like purpose-built structures: they can help to prevent erosion of shorelines by dampening the power of waves.



Storm Surge Damage



Wave Damage



Erosion Damage



Biodiversity







Floating Wetland

Floating treatment wetlands (FTWs) are a technology used to increase water quality of ponds and lakes. Creating floating wetlands to a pond can increase the biodiversity by providing additional living space for wildlife. The floating mat also allows sediment and elements to settle by reducing water turbulence and mixing by wind and waves.

Storm Surge Damage

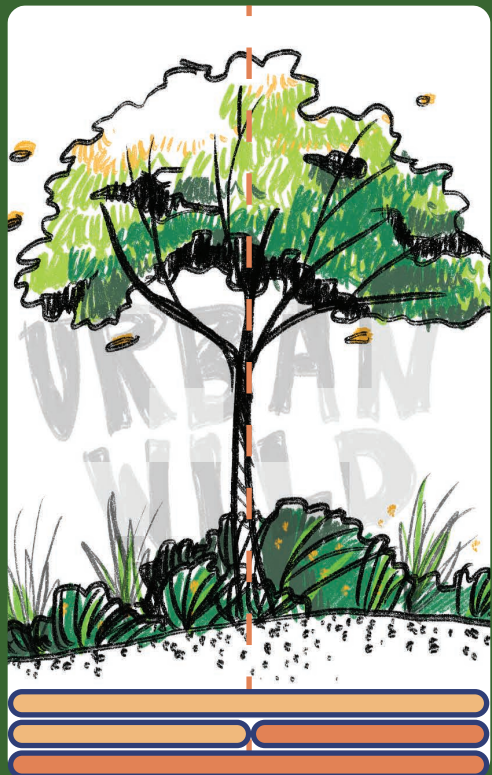


Wave Damage



Biodiversity







Urban Wild

Urban wilds, especially those covering several acres or more, are often healthy ecological systems capable of filtering urban run-off, storing and delaying stormwater flow, mitigating the warming effect of urban development, and overall improving local air quality.



Storm Surge Damage



Wave Damage

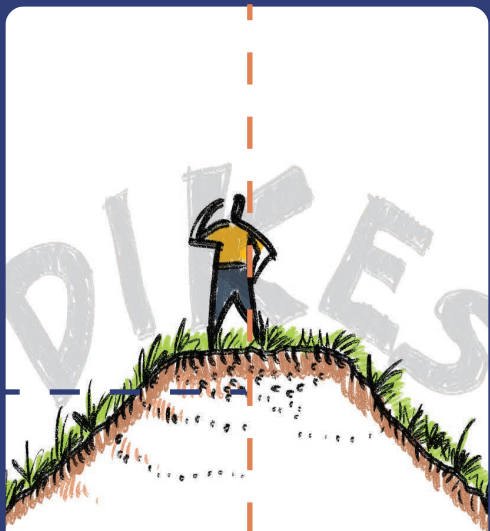


Erosion Damage



Biodiversity







Dikes

The primary function of sea dikes is to protect coastal areas from inundation in extreme conditions. These structures help to resist water pressure, reduce wave loadings and prevent overtopping by flood waters. They may also be referred to as dykes, embankments, levees, floodbanks and stopbanks.



Sea-level rise Damage

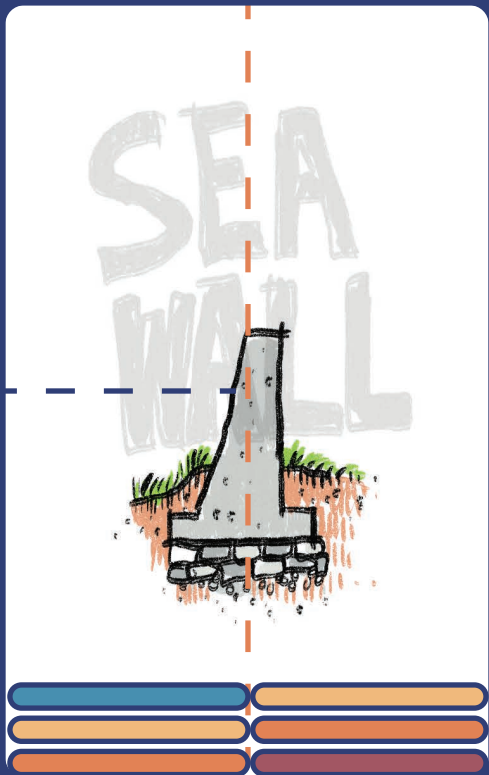


Storm Surge Damage



Wave Damage







Sea-Wall

A seawall is a wall structure made of concrete, masonry or sheet piles, built at the transition between the beach and the mainland, to protect the inland area against wave action and water intrusion to inland areas. Seawalls are usually massive structures designed to resist storm surges.



Sea-level rise Damage

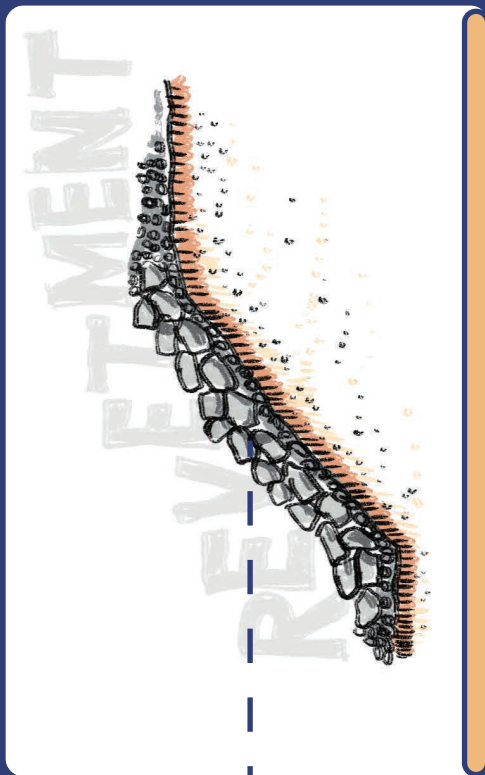


Storm Surge Damage



Wave Damage







Revetment

A revetment is a passive structure, which protects against erosion caused by wave action, storm surge and currents. The main difference in the function of a seawall and a revetment is that a seawall protects against erosion and flooding, whereas a revetment only protects against erosion.



Storm Surge Damage

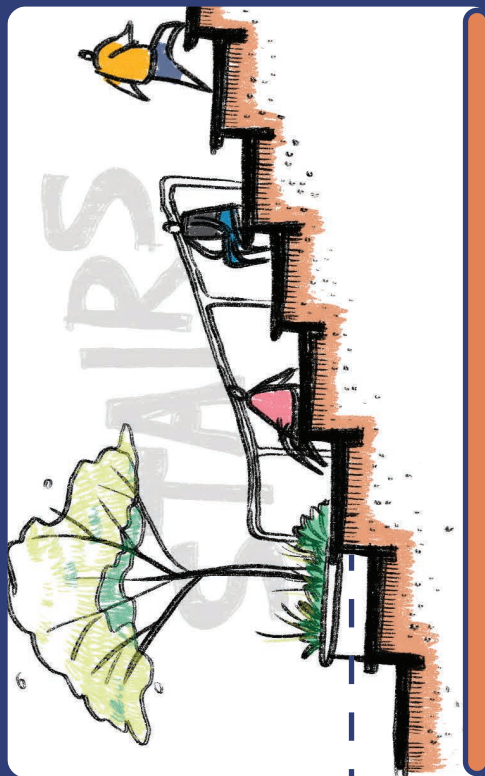


Wave Damage



Erosion Damage







Stairs



Stairs in coastal areas can be function similar to a revetment. However, the design can be changed to accommodate community uses such as seating areas and barbeque areas. This area can be flooded to protect against erosion.



Storm Surge Damage



Erosion Damage



Community Uses







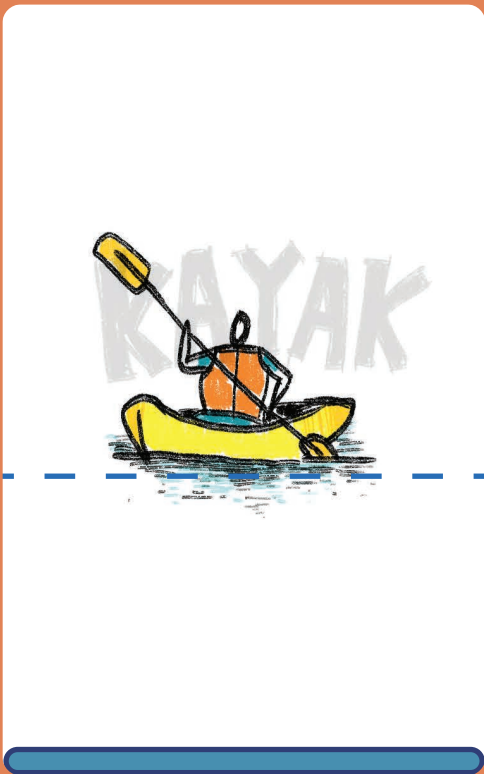
Playground

A playground is a piece of land used for and usually equipped with facilities for recreation especially by children. It can be designed in various ways to accommodate the kind of plays according to the targeted age.



Community Uses







Kayak



A kayak is a small, narrow watercraft which is typically propelled by means of a double bladed paddle. Kayak is a fun activity in gentle water stream where one can race each other or simply enjoy the water from a different perspective.



Community Uses





BOARD
WALK





Board Walk

A boardwalk is an elevated footpath, walkway, or causeway built with wooden planks that enables pedestrians to cross wet, fragile, or marshy land. They provide an desirable walking experience and access to the water where people can enjoy waterfront sceneries.



Community Uses







Urban Farm



Urban agriculture, urban farming, or urban gardening is the practice of cultivating, processing, and distributing food in or around urban areas. It can be adjusted according to community needs to provide a complex and diverse mix of food production activities.



Biodiversity



Community Uses





Wave Surge



Wind waves result from the wind blowing over a fluid surface, where the contact distance in the direction of the wind is known as the fetch. In certain random times, the waves get to a certain height that overtopes existing structures and can cause flooding.







Storm Surge

Storm surge is the abnormal rise in seawater level during a storm, measured as the height of the water above the normal predicted astronomical tide. The surge is caused primarily by a storm's winds pushing water onshore.







Erosion

Coastal erosion is the loss or displacement of land, or the long-term removal of sediment and rocks along the coastline due to the action of waves, currents, tides, wind-driven water, waterborne ice, or other impacts of storms.







Nothing

You got lucky! nothing serious happen
this period! However, the sea-level is
still going to rise.



