

beyond adaptation

Exploring an approach to address the climate crisis and shrinkage
on the coastline of the Gulf of Riga

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Master thesis P5 presentation

02.07.2021



In memorium of a tree



In memorium of a tree



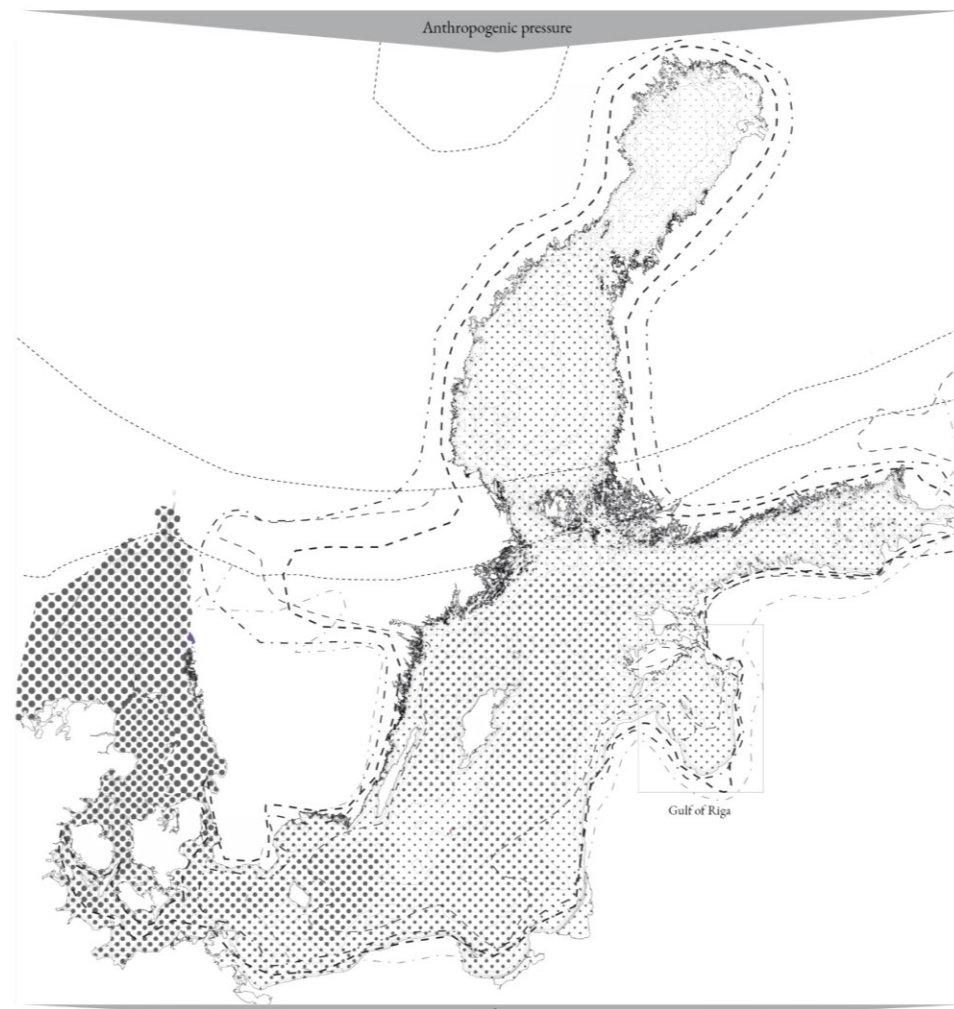
Photo: Jānis Upītis

The voice of nature



The anthropocene

The matter



Coastline changes
 - - Littorina Sea coastline 6500 years ago
 - - Ancilus lake coastline 8300 years ago
 - - Yoldia sea coastline 9800 years ago
 - - Baltic Ice lake coastline 11 500 years ago
 ^-^ Glacier retreat

Seabed salinity level
 □ < 5 psu
 ▤ 5 - 7.5 psu
 ▥ 7.5 - 11 psu
 ▦ 11 - 18 psu
 ▧ 18 - 30 psu
 ▨ > 30 psu

Effects

Eutrophication

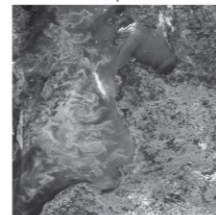


Photo: NASA (2014)

Damage to marine habitats and fishery



Photo: by author

Ice extent loss

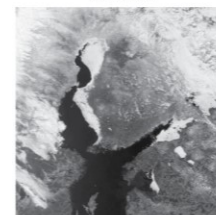


Photo: NASA (2014)

0 100 200km N

The anthropogenic pressures on the Baltic Sea

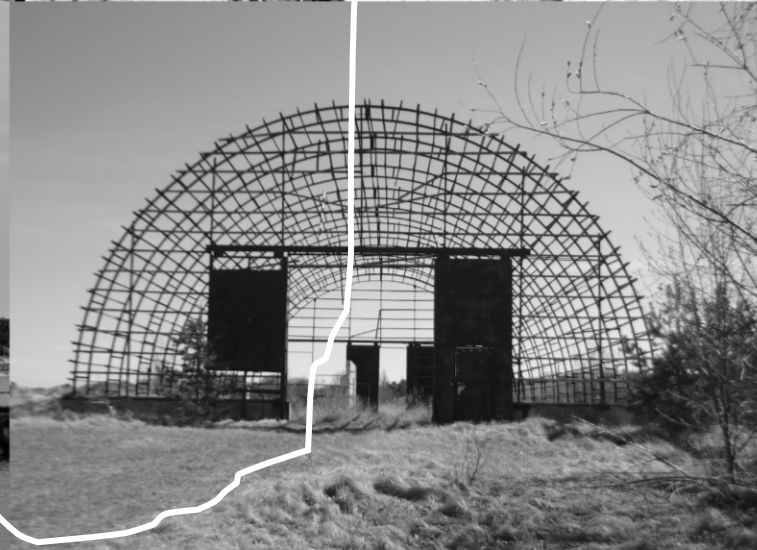
Increasing tourism pressure



Response to coastal erosion

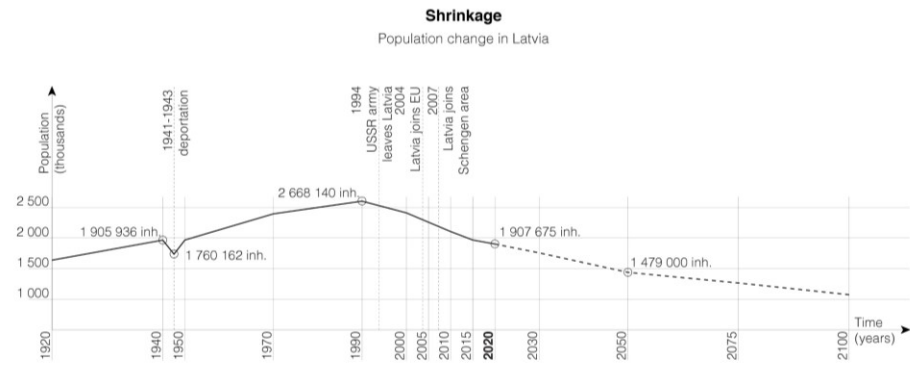


Change from fishery to forestry



Ignorance of shrinkage

Features of the anthropocene on the Gulf of Riga



Data source: UN, CSB



The erasure

Deconstruction

Mater
Topos
Habitat
Geopolitics

Lai ir grūt', kam ir grūt',
Zvejniekam visai grūt':
Lai lij' liet', lai krīt' snieg',
Zvejnieks zvej' jūriņei

Latviešu tautasdziesma

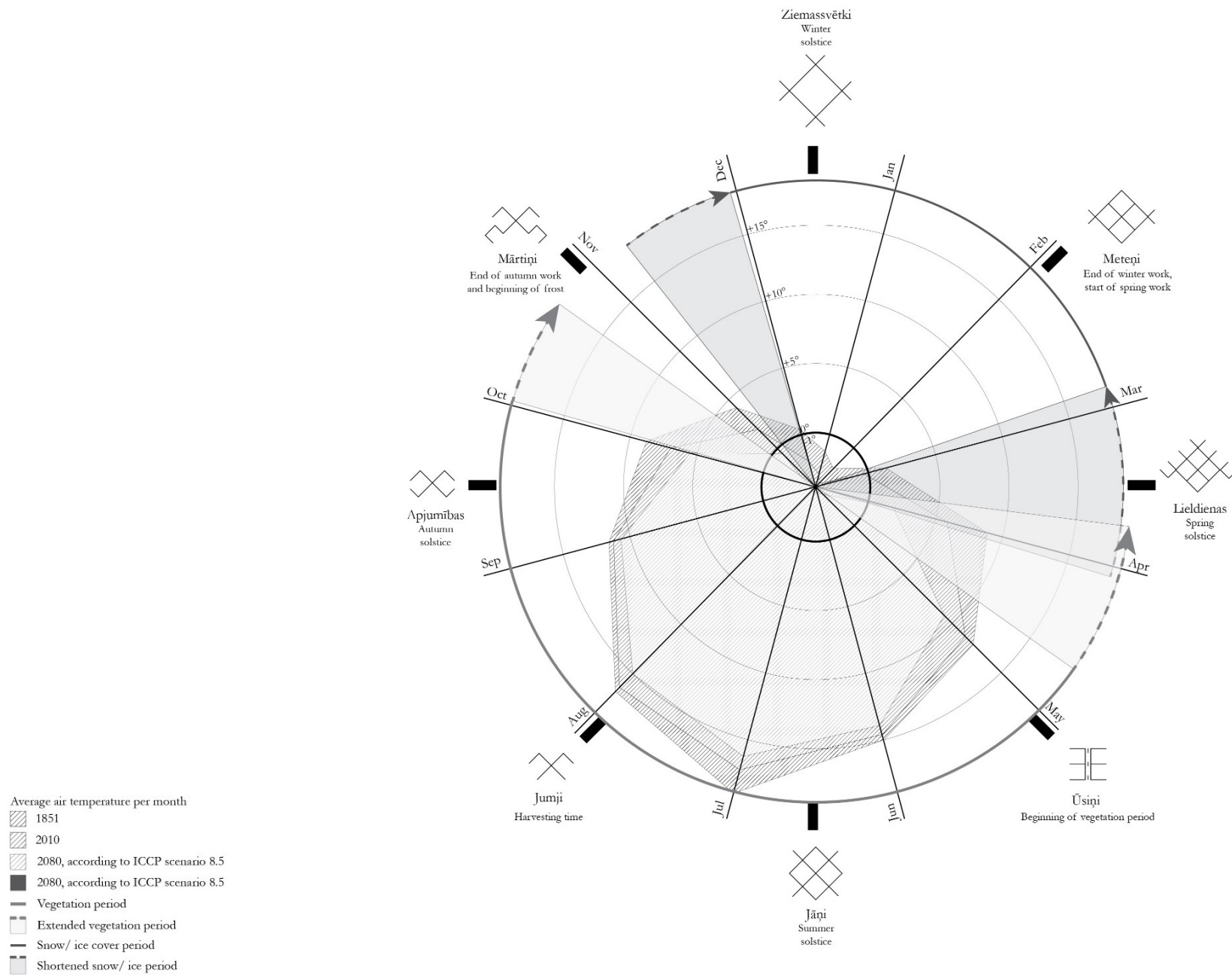
Different winters



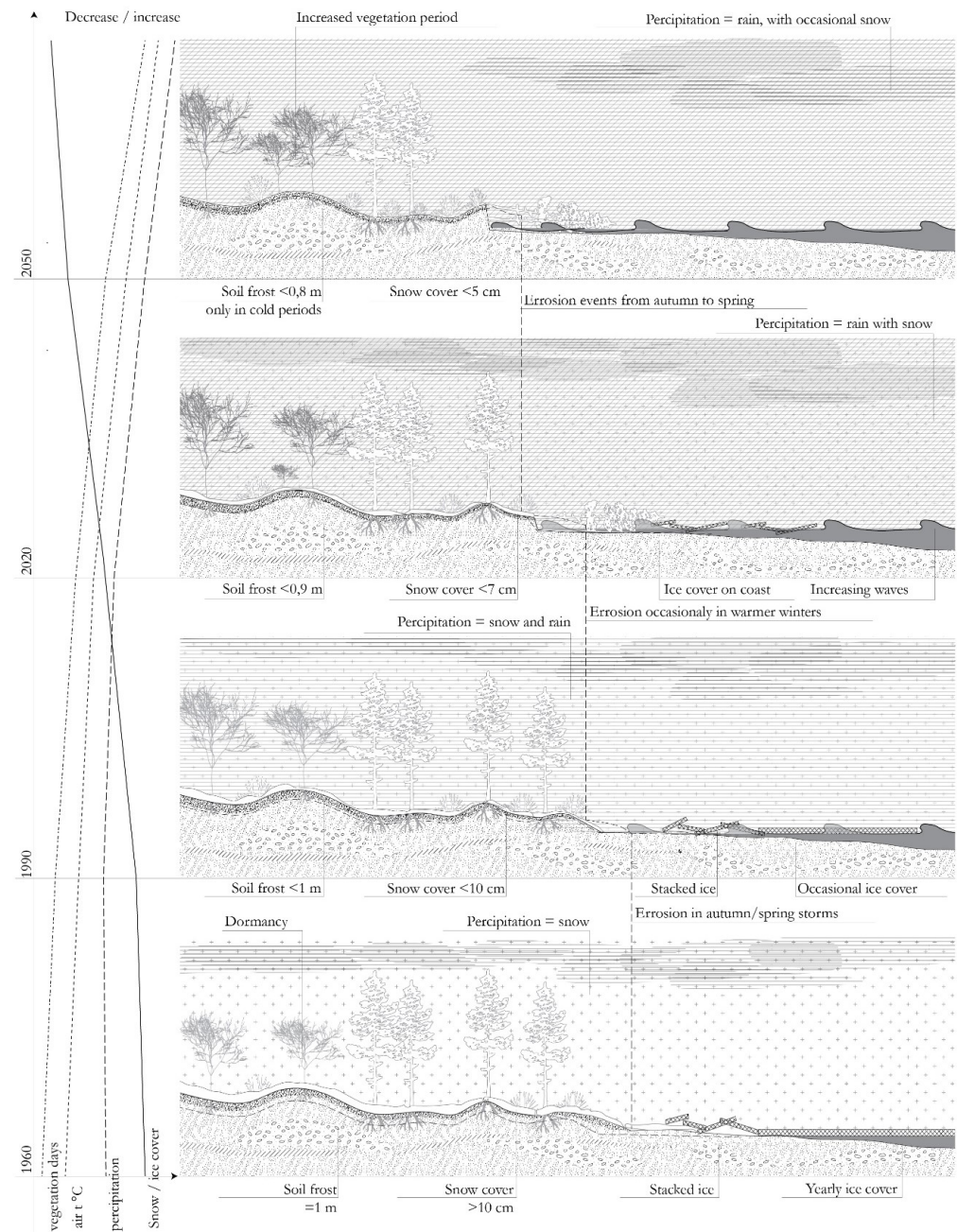
Who has hard life ,
Fishermen has hard life.
Rain is falling, snow is snowing,
Fishermen is still fishing.

Latvian folk song

Mater
Air and water



Influence of climate change on the local culture



Changes in the coastline

Es apgūlu saldu miegu
Jūras kāpas maliņā:
Dzied akmins, raud ūdens,
Vēja māte gavilē

Latviešu tautasdziesma

The new sediment



I laid down in a sweet sleep
At the side of the sea dune:
Rock sings, water cries,
Mother of the wind cheers

Latvian folk song

Erosion risks and terraforming 2010 - 2060

- Coastal erosion risk zone
- Length of the affected coastline
- Land loss, m
- Area affected by coastal erosion
- Terraforming by sand accumulation
- Long shore sediment flow

Anthropogenic limits

- Buildings
- Roads
- Energy infrastructure
- Cemetery
- Protected nature site



Anthropogenic limits on coastal erosion

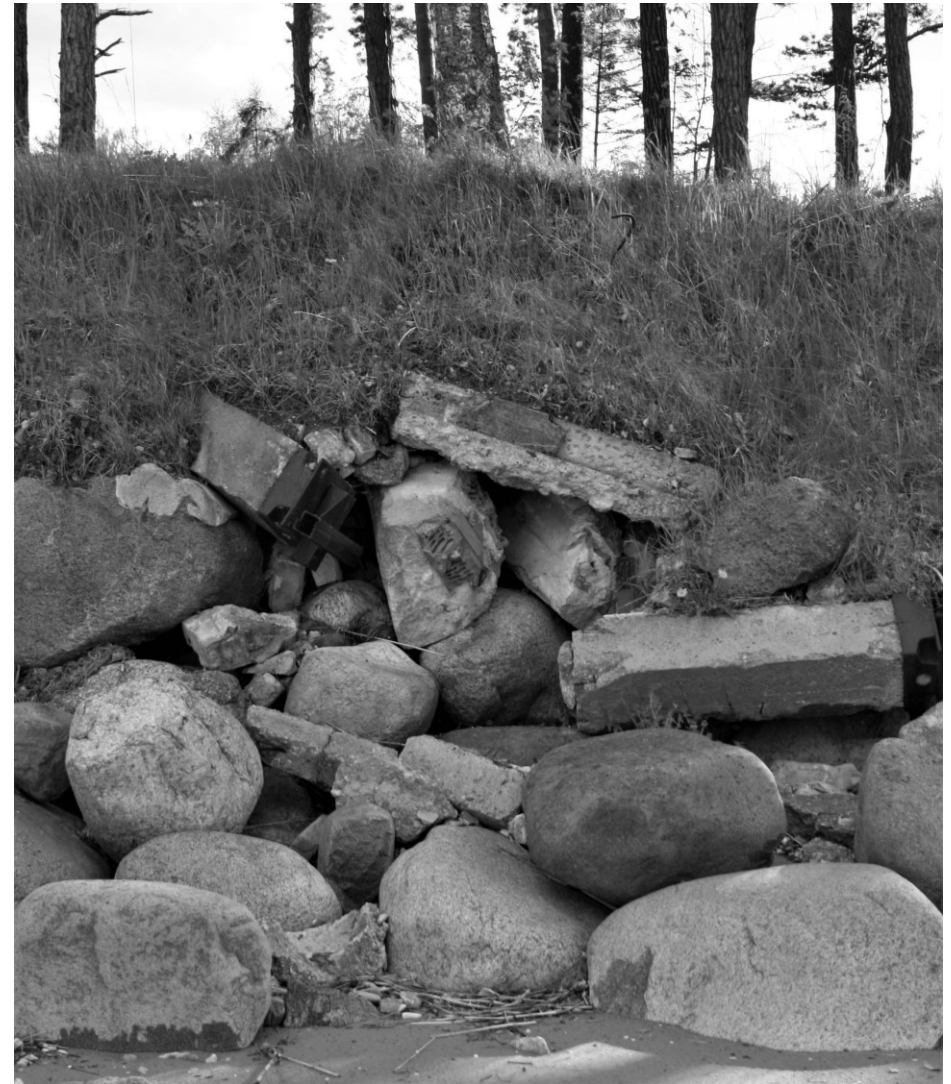
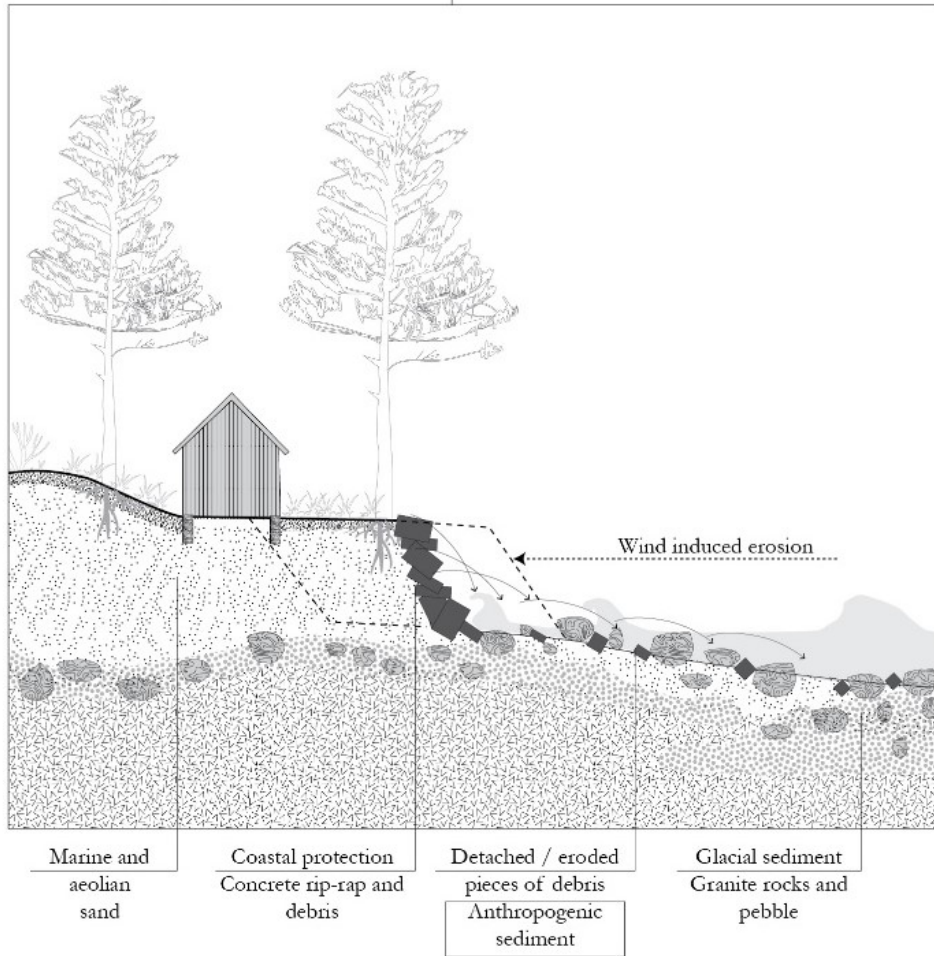


«The concrete blocks protect us very well!
And if the storm comes, we will just rebuild, just like we already did with this shed after the storm in 2005»

I. Lūsis,
owner of a local carpentry

Anthropogenic resistance to erosion

New sediment formation



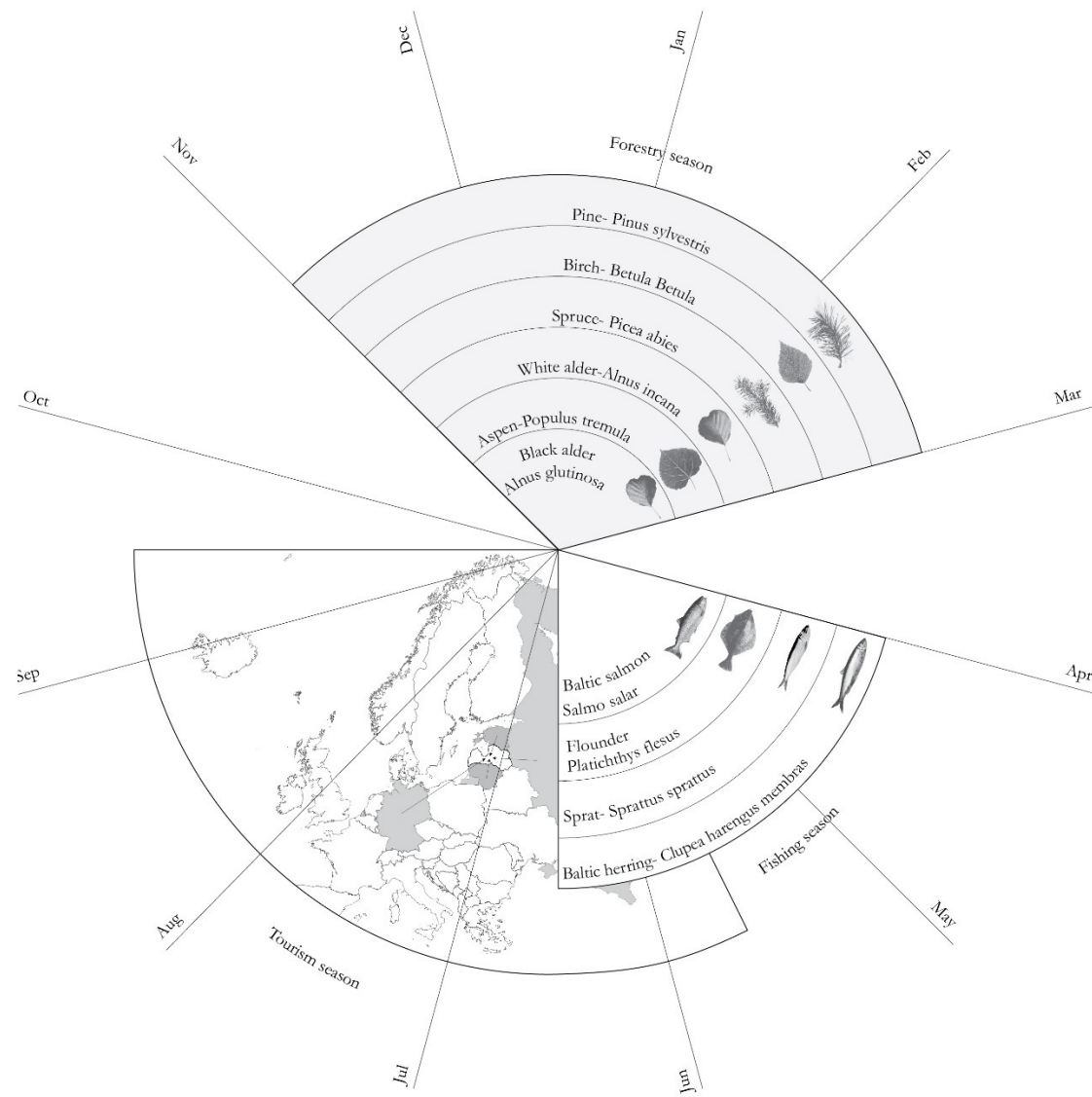
Anthropogenic resistance

Sīka reņģe, brēteliņa,
Nāc ar mani spēlēties,
Tu dziļā jūriņāi,
Es ozola laiviņā
Latviešu tautasdziesma

The catch and the catcher

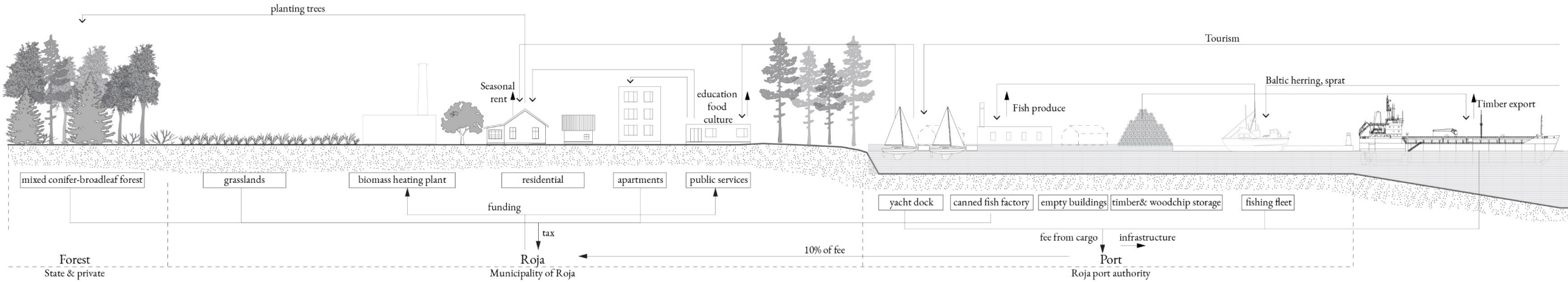


O, you small sprat,
Come and play with me,
You are in a deep sea,
I am in an oak boat
Latvian folk song



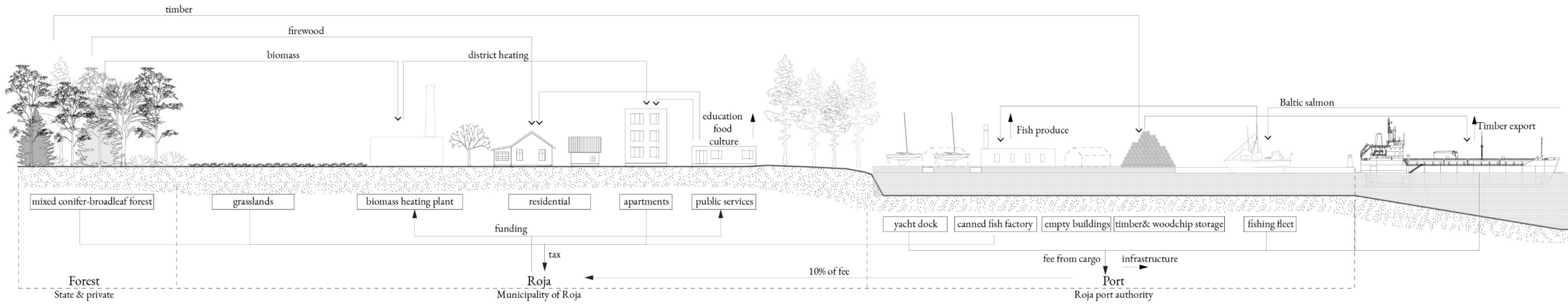
Main seasonal activities

Spring / summer



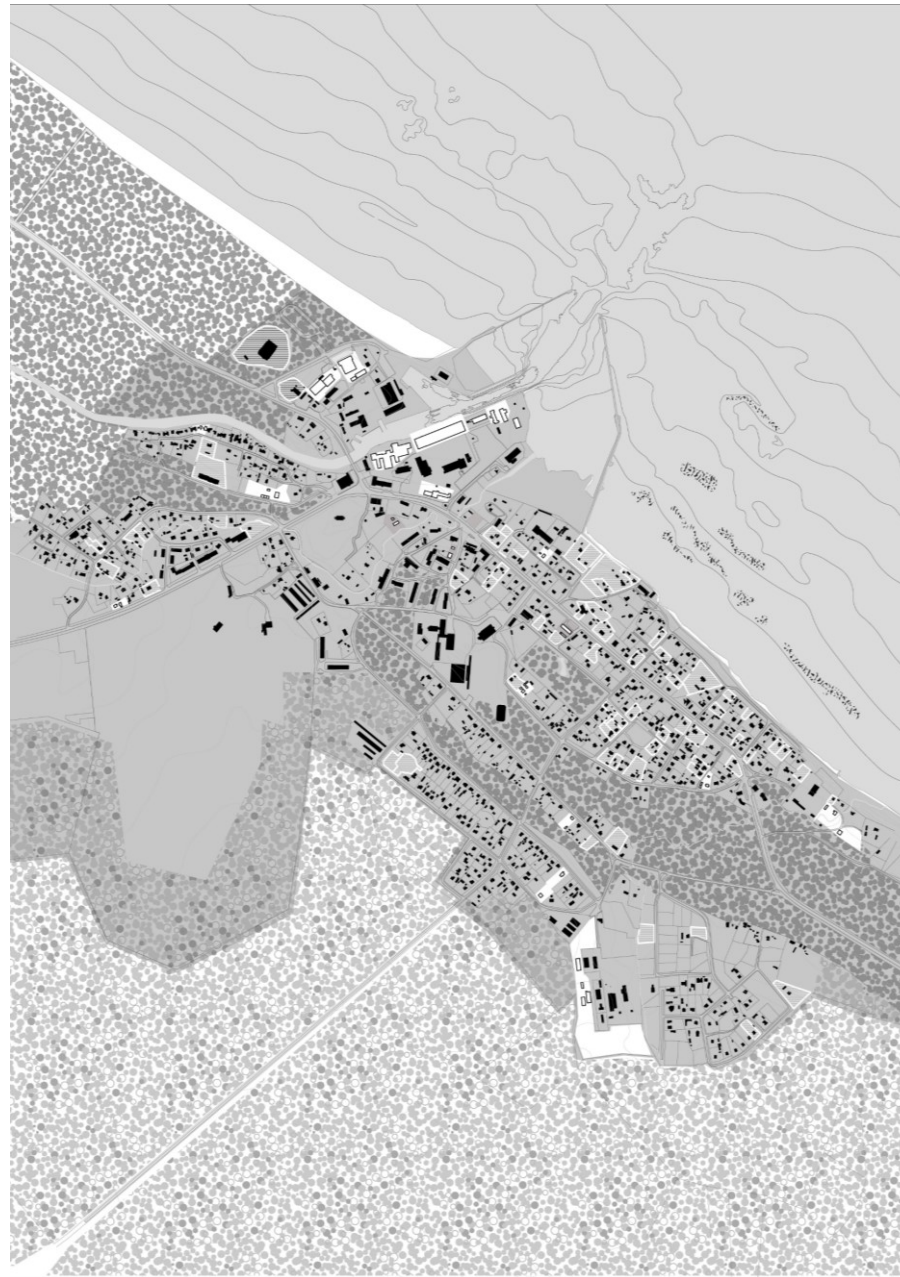
Main seasonal activities

Autumn / winter



Main seasonal activities

- Buildings in use
- ▨ seasonal residential plot
- abandoned industrial plot
- abandoned building
- abandoned residential plot
- border of Roja



Seasonality and abandonment



The gradient of abandonment

Ritual of fishing



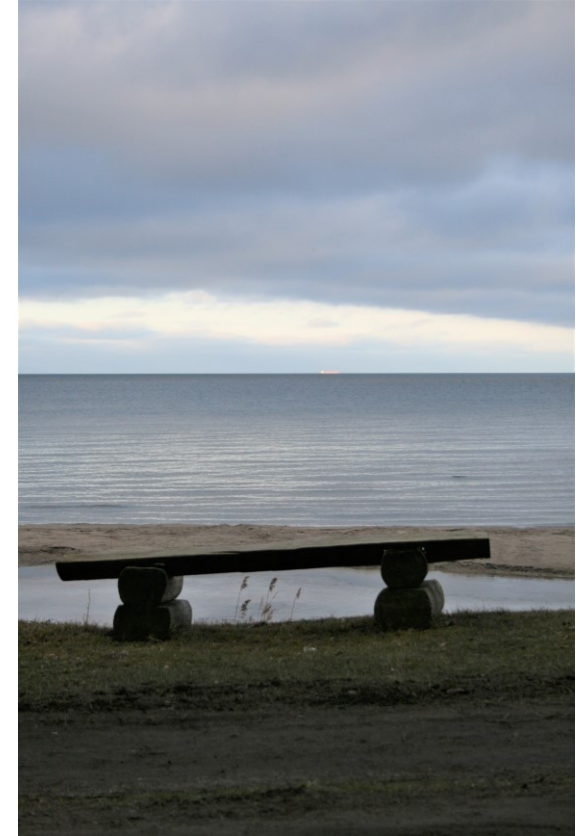
Ritual of taking and giving back



Ritual of energy



Ritual of taking ownership



Rituals in place

Krievi, Krievi, Leiši, Leiši,
Visi manim draugi, radi.
Krievam devu sav' māsiņu,
Pats es ņēmu Leišu meitu,
Iem' Krievos, iem' Leišos,
Visur manim znoti, radi

Latviešu tautasdziesma

The pressure.
Piece of concrete used by Soviet soldiers to identify
footprints of possible border crossers



Russians, Russians, Lithuanians, Lithuanians,
All are my friends, relatives.
To Russian I gave my sister,
I took Lithuanian girl,
Going to Russians, going to Lithuanians,
Everywhere I have sons-in-law, relatives

Latvian folk song



Displacement of orientation

«All around the world the coast is protected with structures! Why Spain, France, The Netherlands can do it, but we can't? It's absurd! I don't get it why the erosion has to happen uninterrupted?»

I. Lūsis, local resident

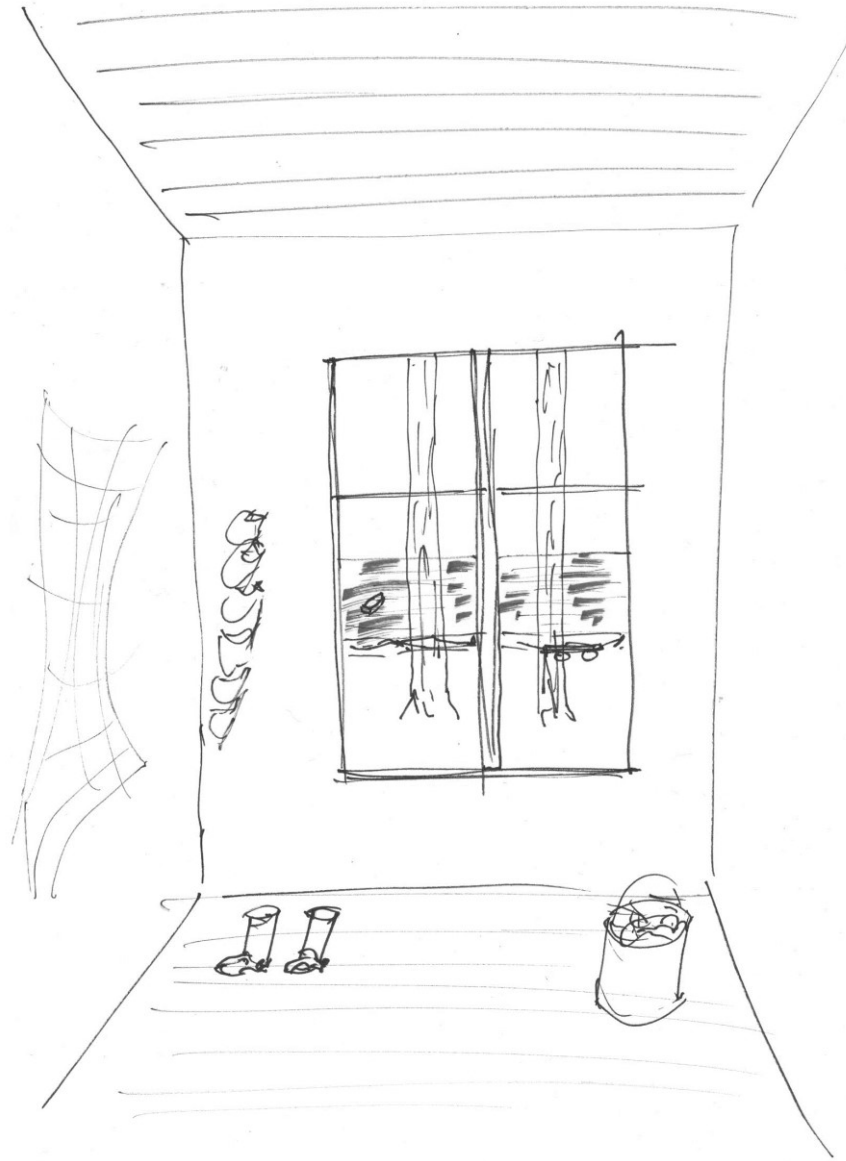


Projection

How to **transition**
the physical and socio-economic **errasure**
on the coastal territory of the western part
of the Gulf of Riga
towards **sustainable degrowth**
by using **acceptance**
as a spatial planning and design tool?



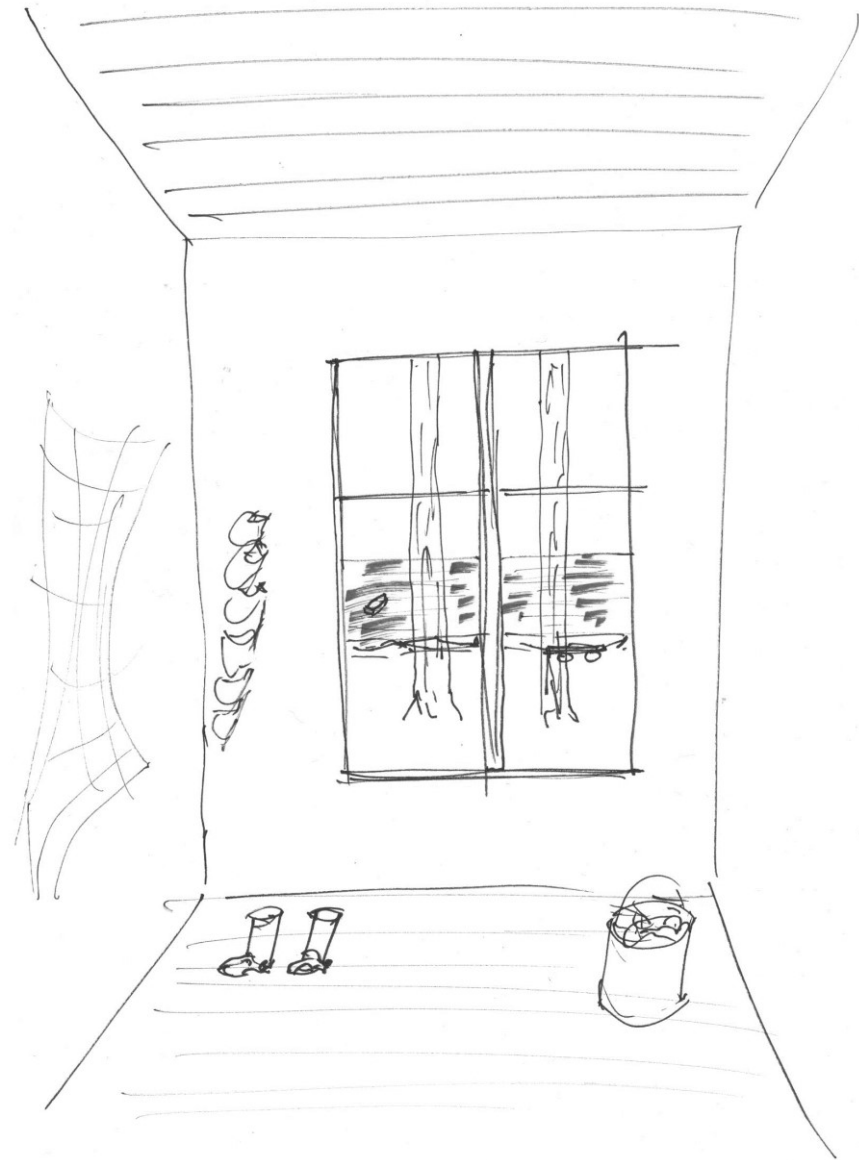
Projection



Acceptance comes from within

Neņem mani, jūras māte,

J. Bērziņš



Do not take me, o mother of the sea

J. Bērziņš

Acceptance comes from within

Neņem mani, jūras māte,
Šavos asos palagos.

J. Bērziņš



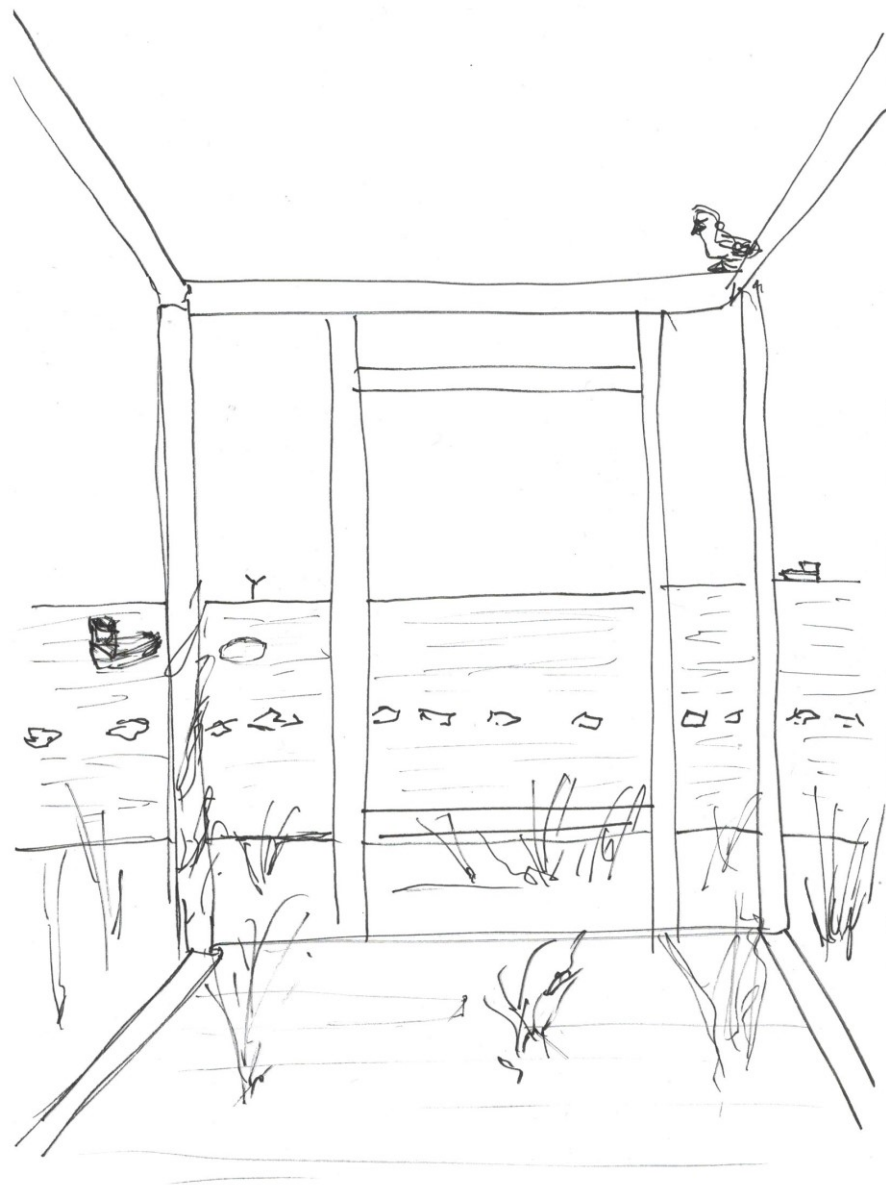
Acceptance comes from within

Do not take me, o mother of the sea
inside your harsh sheets.

J. Bērziņš

Neņem mani, jūras māte,
Šavos asos palagos.
Ļauj rītiņu ieraudzīt

J. Bērziņš



Do not take me, o mother of the sea
inside your harsh sheets.
Let me see the morning rise

J. Bērziņš

Acceptance comes from within

Neņem mani, jūras māte,
Šavos asos palagos.
Ļauj rītiņu ieraudzīt
Tavu krastu ecējam.

J. Bērziņš



Do not take me, o mother of the sea
inside your harsh sheets.
Let me see the morning rise
while I harrow your coast

J. Bērziņš

Acceptance comes from within

- /// productive agricultural
 - ▣ productive forestry
 - urban shrinking
 - new region parish borders
 - asphalt roads
 - gravel roads
 - local fishery ports
 - local fishery routs
 - ▣ timber resource
 - fish resource
- Protective zoning
- - Limited economic activity zone 1 km/ no forest clearcutting
 - - Natura 2000 area
 - - Marine protective area
 - - HEL.COM area

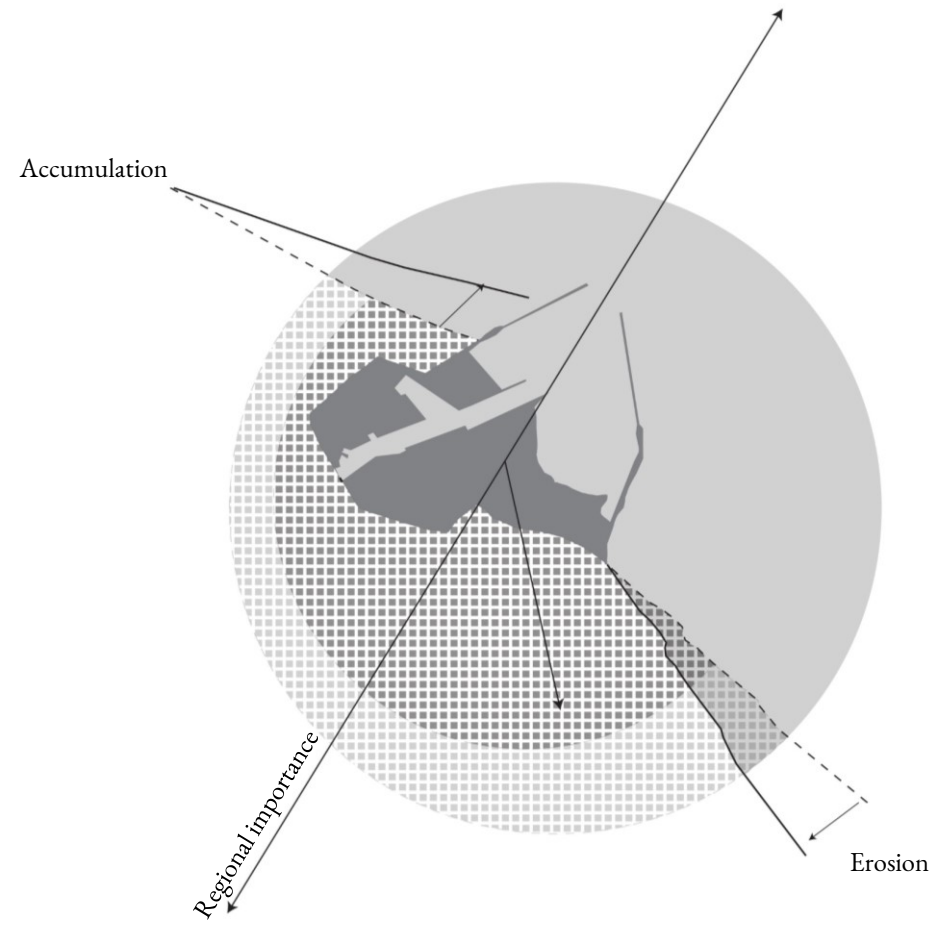


Region in degrowth

- /// productive agricultural
 - ▣ productive forestry
 - urban shrinking
 - new region parish borders
 - asphalt roads
 - gravel roads
 - local fishery ports
 - local fishery routs
 - ▣ timber resource
 - fish resource
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- - Limited economic activity zone 1 km/ no forest clearcutting
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Coastal territory

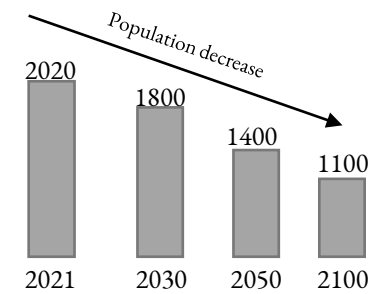


Port and coast relationship

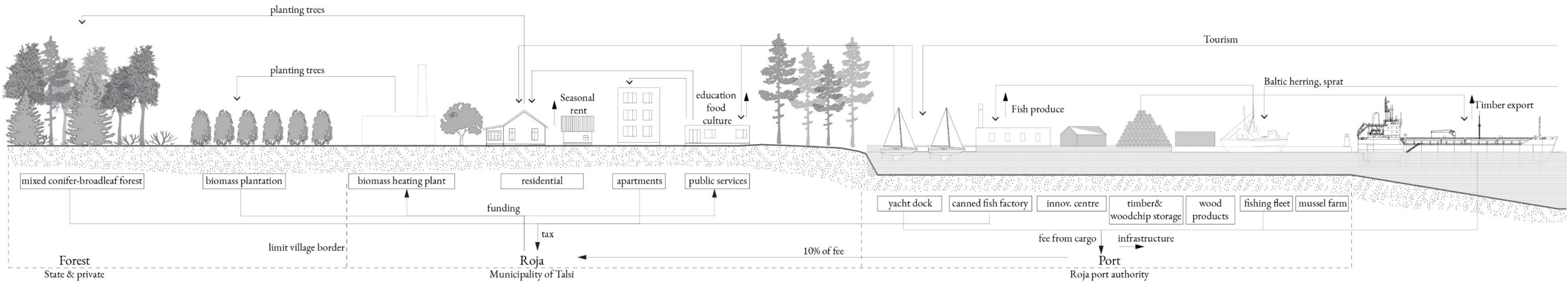
-  Productive forestry area
-  Coastal dry pine forest
-  Mixed conifer-broadleaf forest
-  Coastal meadow / erosion zone
-  Biomass plantation
-  Grasslands
-  existing village border
-  proposed village border
-  Demolished buildings
-  Revitalized buildings / Production
-  Revitalized buildings / Public use
-  Mussel farming
-  Seasonal tourism
-  Port territory



Roja in 2100

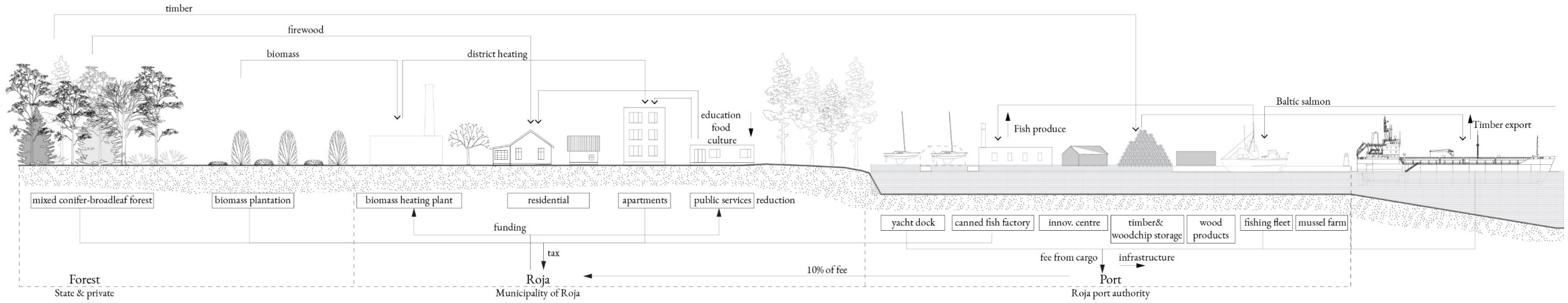


Spring / summer



Seasonal relations between the port and the village

Autumn / winter



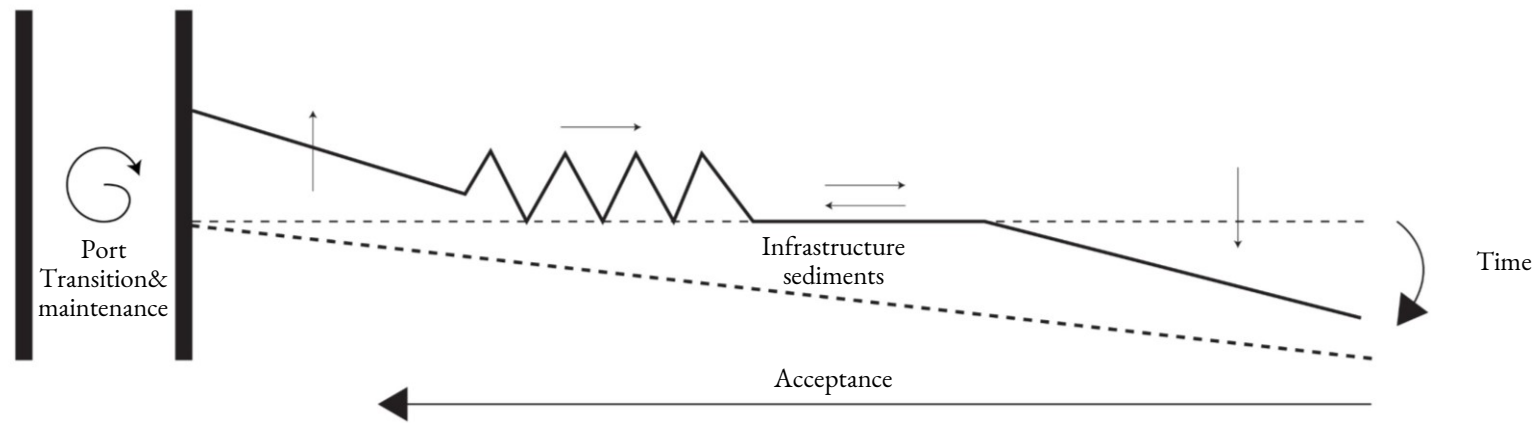
Seasonal relations between the port and the village

2021

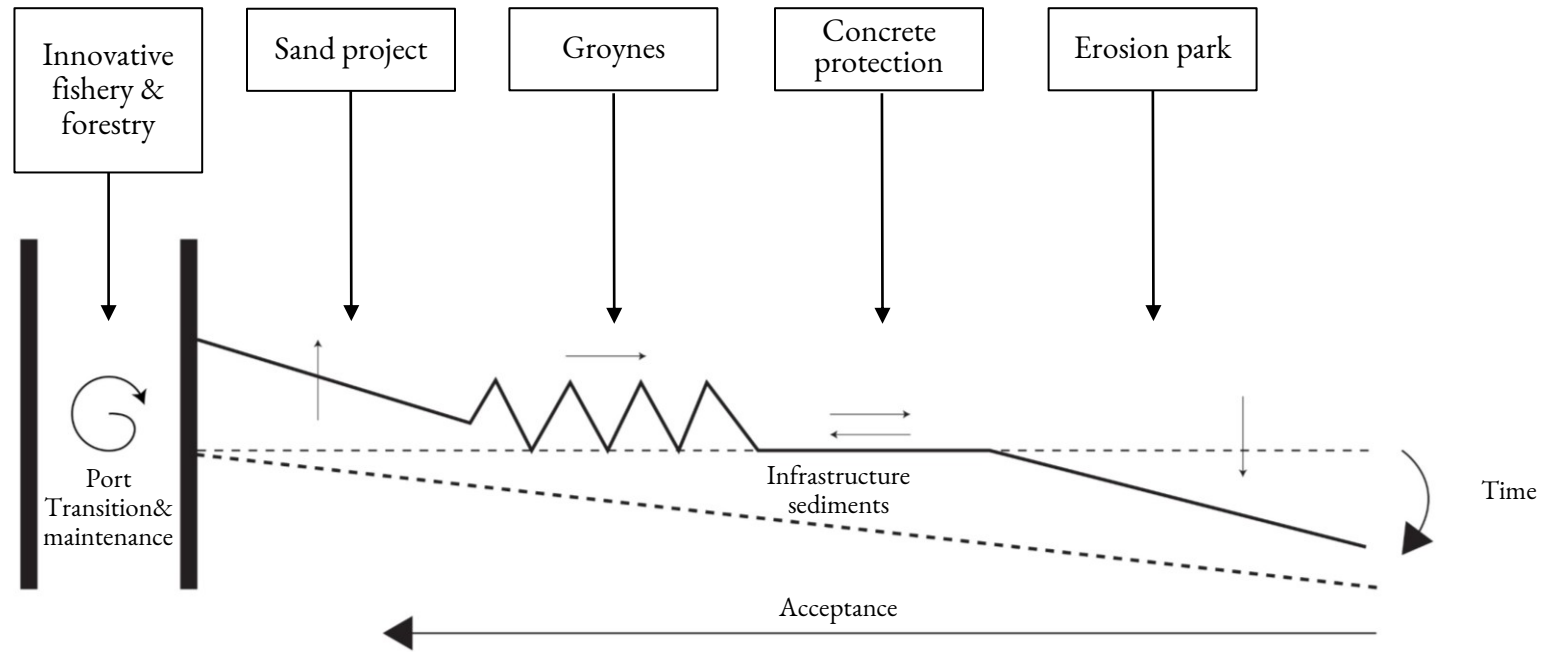


- | | | | |
|-----------------------------|------------------|----------------------------|--------------------|
| ■ Buildings used all year | ■ Asphalt road | ▨ Extensive gardens/locals | → Sediment flow |
| ▨ Seasonally used buildings | ▨ Gravel road | ▨ Seasonal resident garden | → Coastal dynamics |
| ▨ abandoned buildings | ▨ Temporary road | ▨ Coastal meadow | |
| ▨ Temporary use | ▨ Wooden path | ▨ Pine forest | |
| ▨ Demolished buildings | | ▨ Reeds | |
| □ Erosion zoning | | ▨ Grassland | |

Existing situation



Project composition



Project composition

2025



- | | | | |
|-----------------------------|------------------|----------------------------|--------------------|
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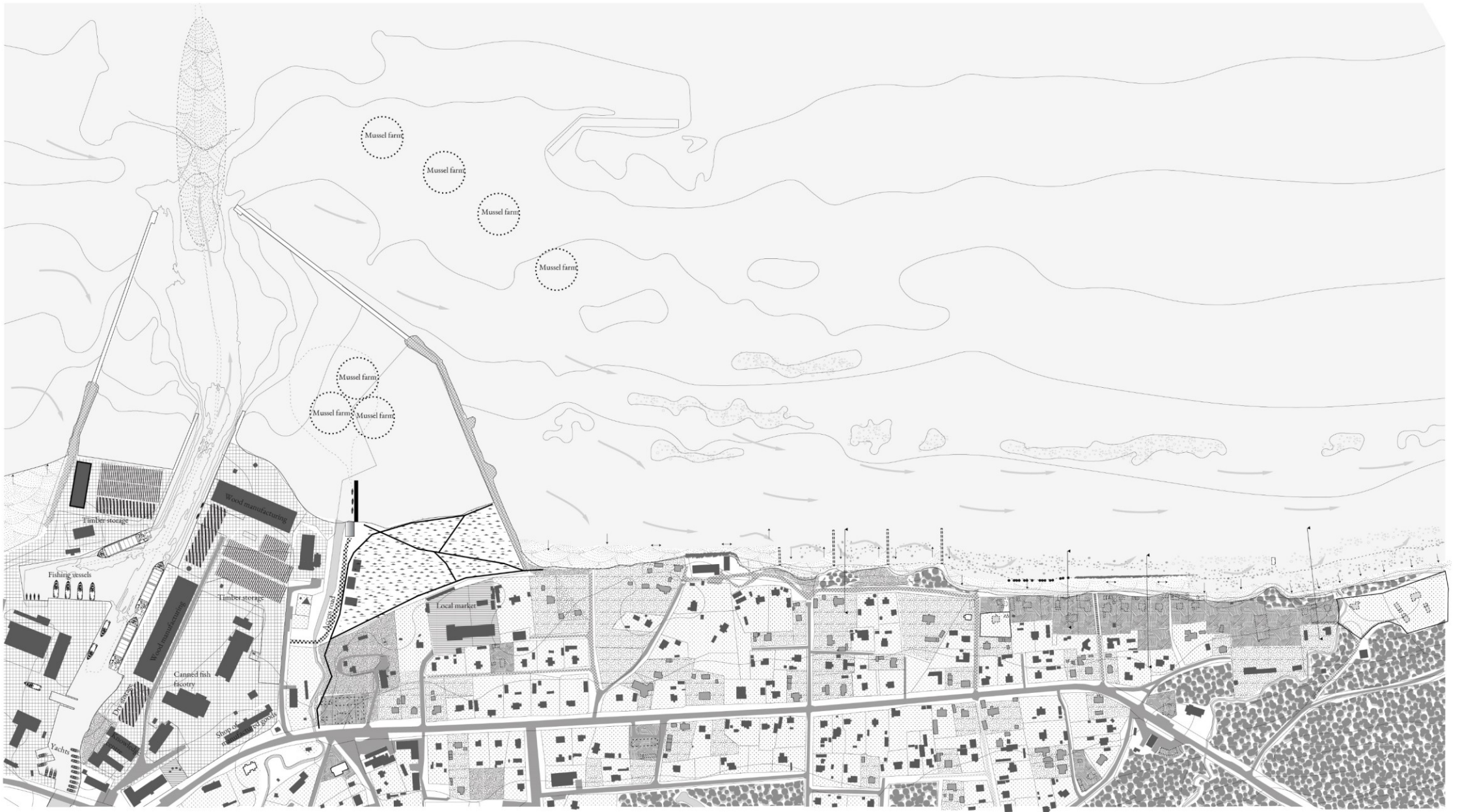
The transition

2040



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|-----------------------------|------------------|----------------------------|--------------------|
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The transition



2060

- | | | | |
|-----------------------------|------------------|----------------------------|--------------------|
| ■ Buildings used all year | ■ Asphalt road | ▨ Extensive gardens/locals | — Sediment flow |
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The transition

2080



- | | | | |
|-----------------------------|------------------|----------------------------|--------------------|
| ■ Buildings used all year | ■ Asphalt road | ■ Extensive gardens/locals | → Sediment flow |
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| ■ Abandoned buildings | ■ Temporary road | ■ Coastal meadow | |
| ■ Temporary use | ■ Wooden path | ■ Pine forest | |
| ■ Demolished buildings | | ■ Reeds | |
| □ Erosion zoning | | ■ Grassland | |

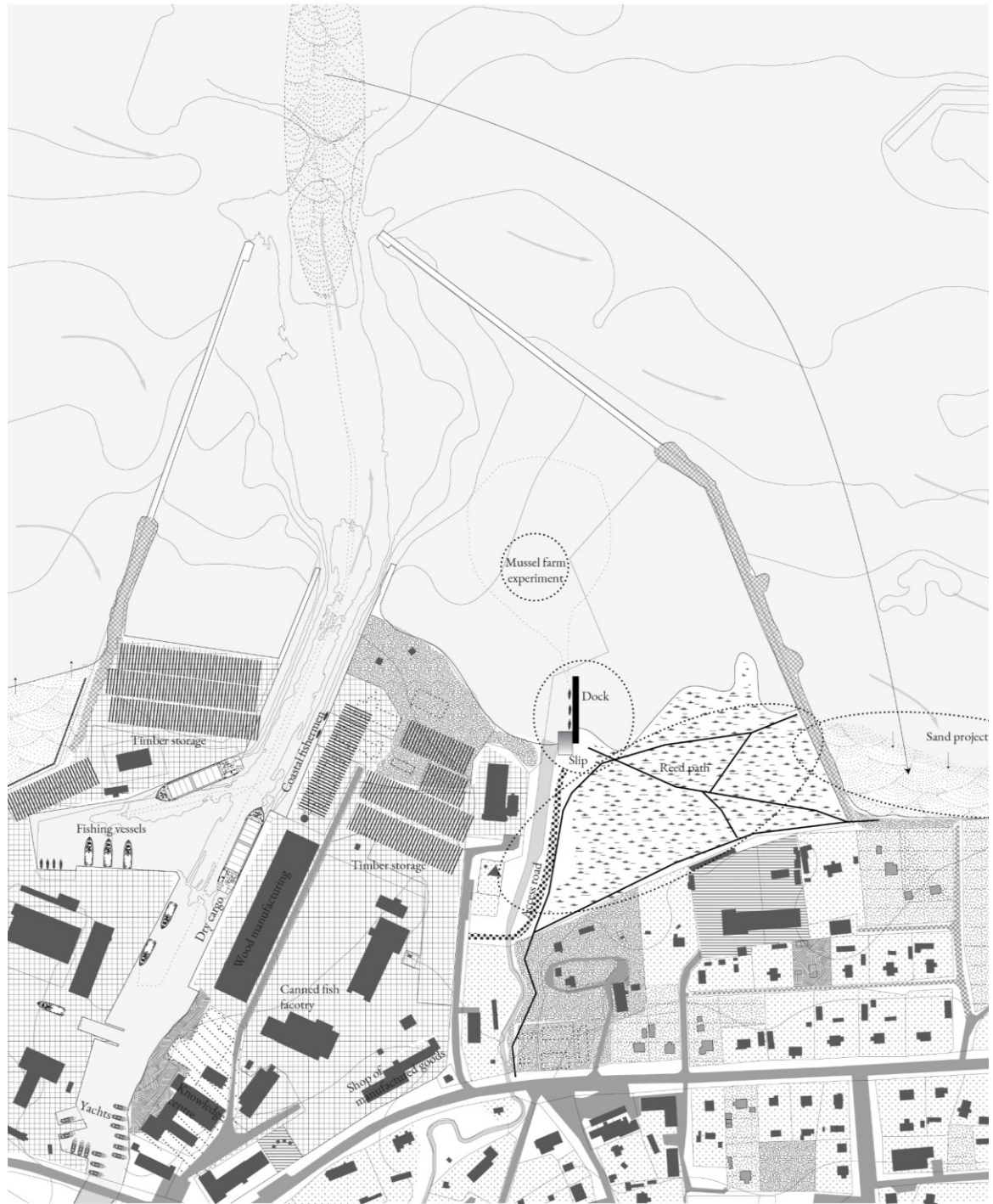
The transition

2100



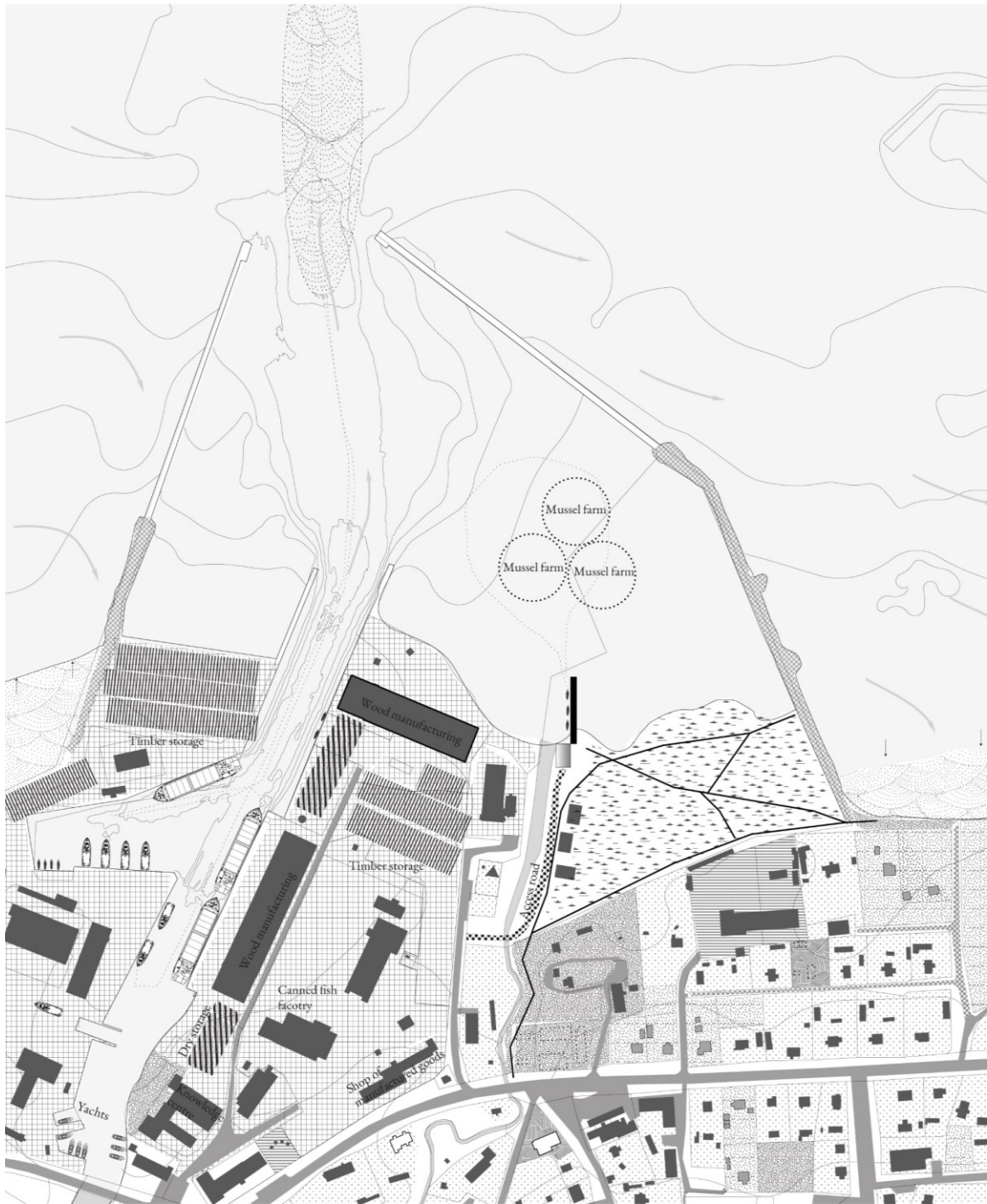
The transition

The transitions in port
2025



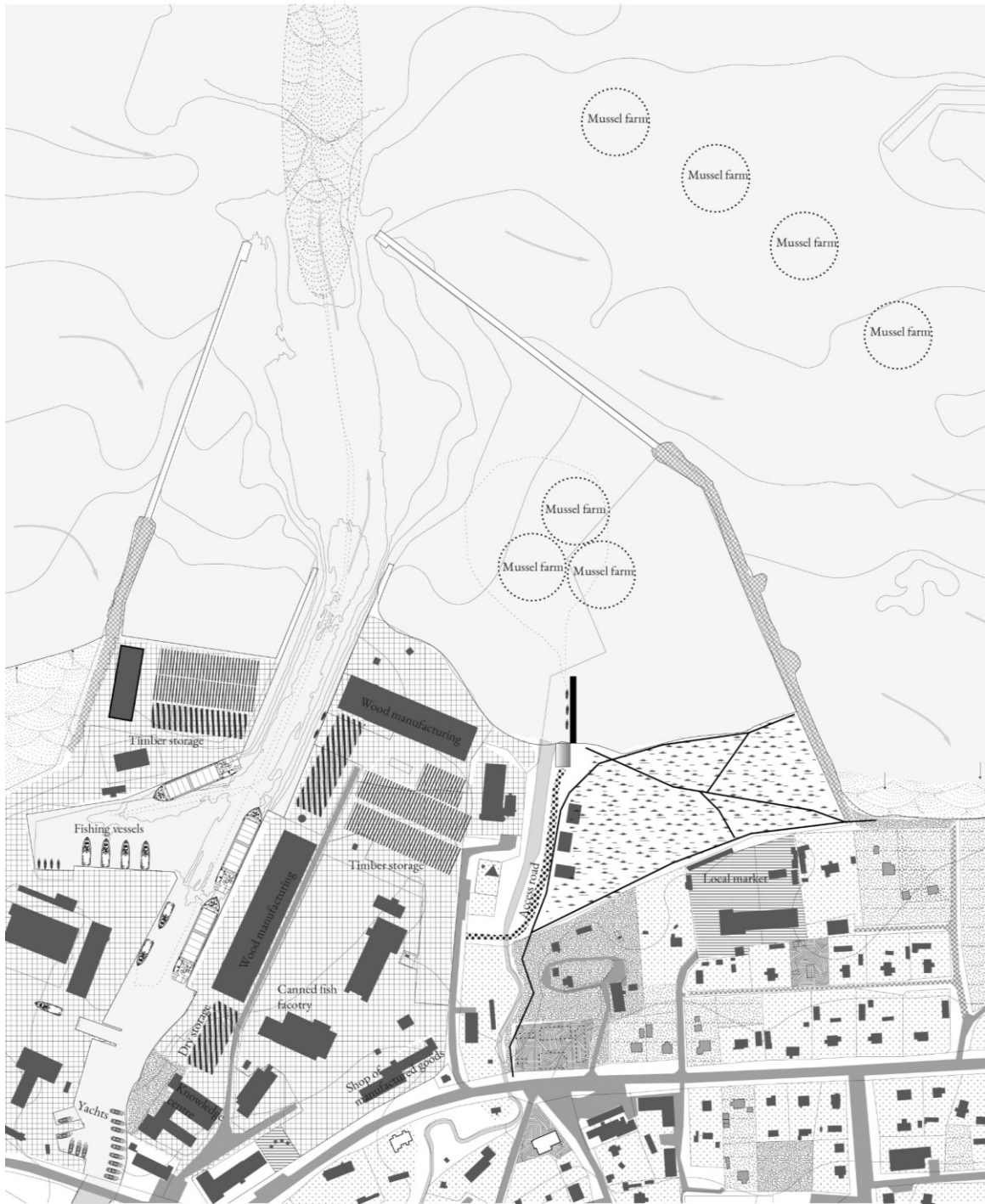
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| ▨ Demolished buildings | | ▨ Reeds | |
| □ Erosion zoning | | ▨ Grassland | |

The transitions in port
2040



- Buildings used all year
- ▨ Seasonally used buildings
- ▧ abandoned buildings
- ▩ Temporary use
- Demolished buildings
- Erosion zoning
- Asphalt road
- ▨ Gravel road
- ▧ Temporary road
- Wooden path
- ▨ Extensive gardens/locals
- ▩ Seasonal resident garden
- ▧ Coastal meadow
- Pine forest
- ▩ Reeds
- ▧ Grassland
- Sediment flow
- Coastal dynamics

The transitions in port
2060



- Buildings used all year
- Seasonally used buildings
- abandoned buildings
- Temporary use
- Demolished buildings
- Erosion zoning
- Asphalt road
- Gravel road
- Temporary road
- Wooden path
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- Pine forest
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- Grassland
- Sediment flow
- Coastal dynamics





2025



- | | | | |
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Sections along the edge

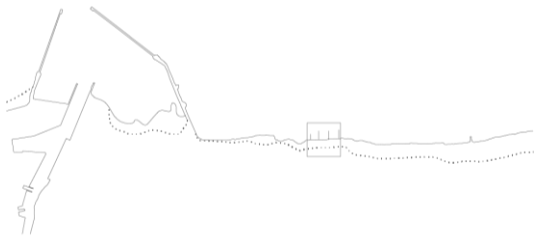
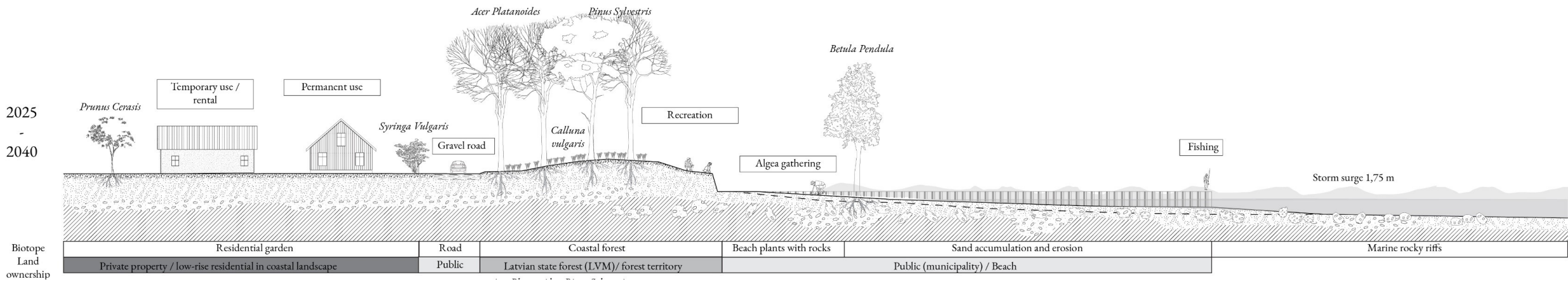




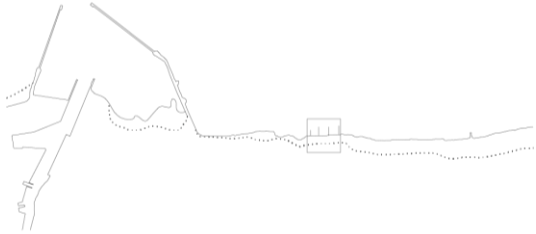
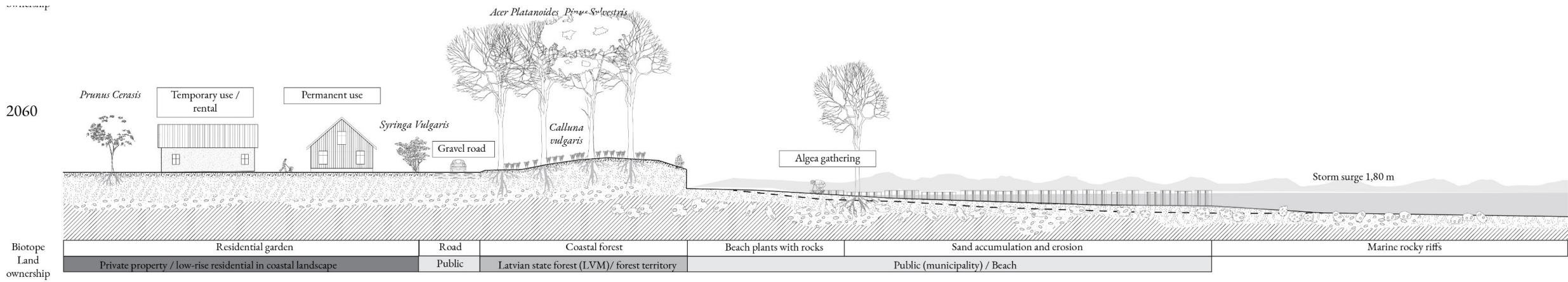






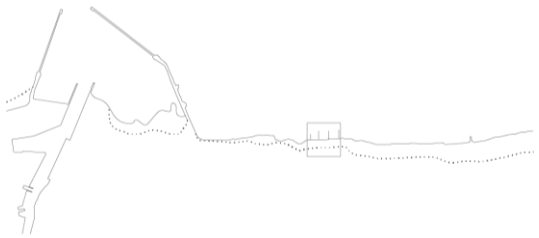
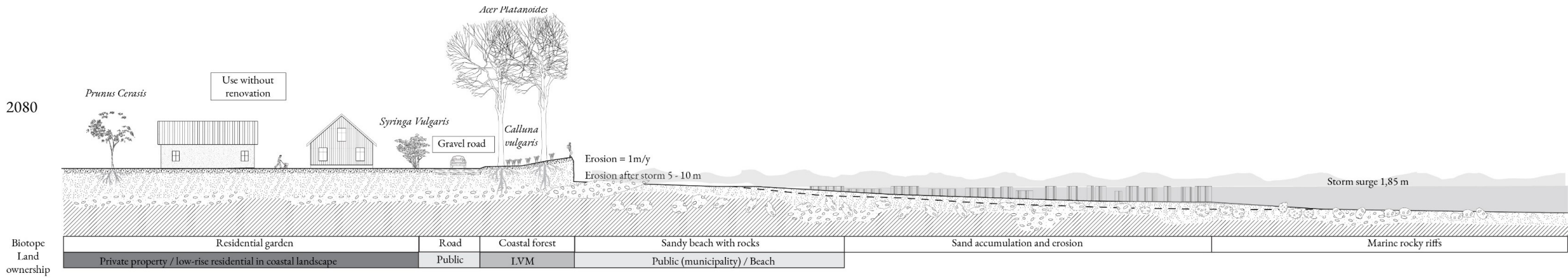


Groynes



Groynes

2080



Groynes

2100

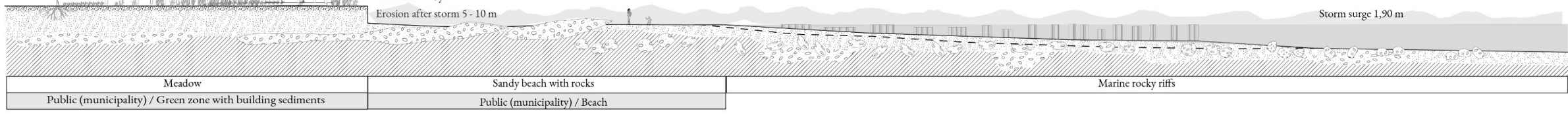
Prunus Cerasis

Demolished buildings

Erosion > 1m/y
Erosion after storm 5 - 10 m

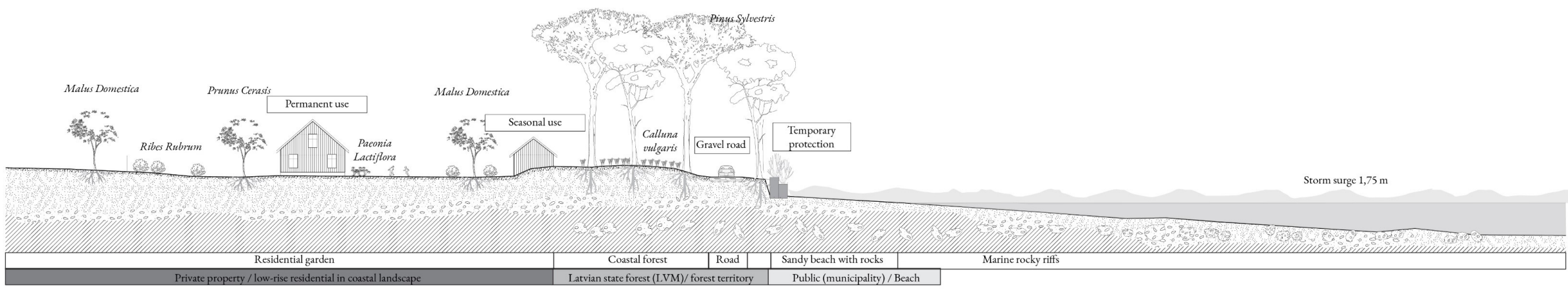
Storm surge 1,90 m

Biotope
Land
ownership

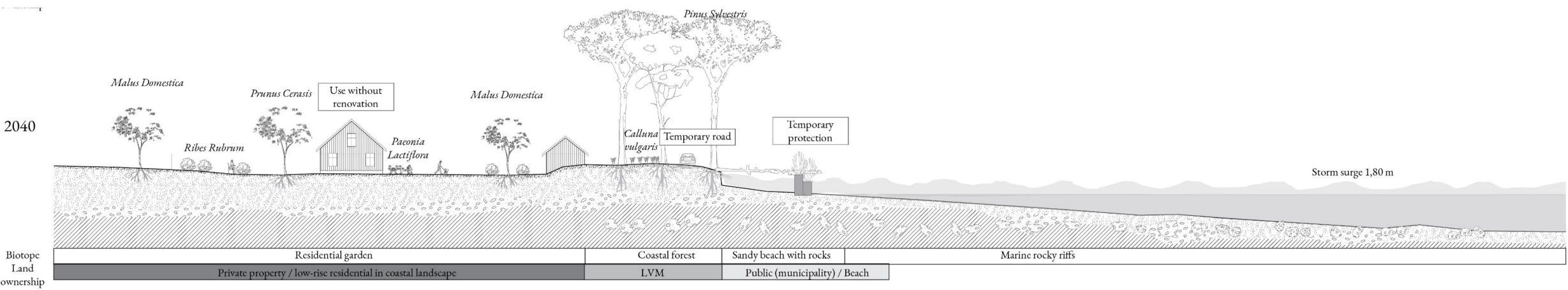


Groynes

2025



Road



Road

2060

Malus Domestica

Prunus Cerasis

Malus Domestica

Demolished buildings

Concrete deteriorates

Erosion = 1m/y
Erosion after storm 5 - 10 m

Storm surge 1,85 m

Biotope
Land
ownership

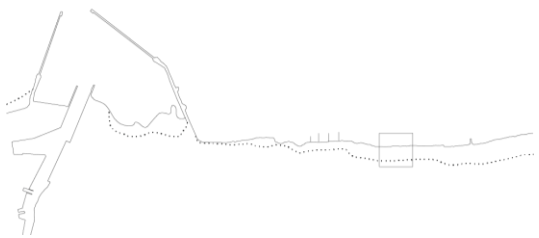
Grassland

Sandy beach with rocks

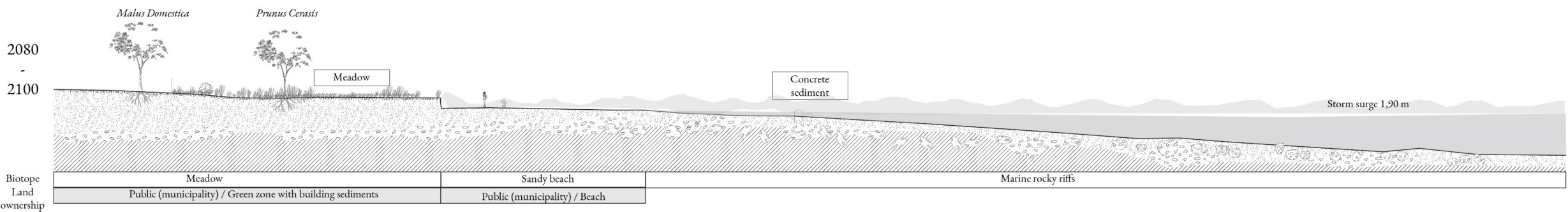
Marine rocky riffs

Public property / erasing buildings, leaving fruit trees / turn into meadow

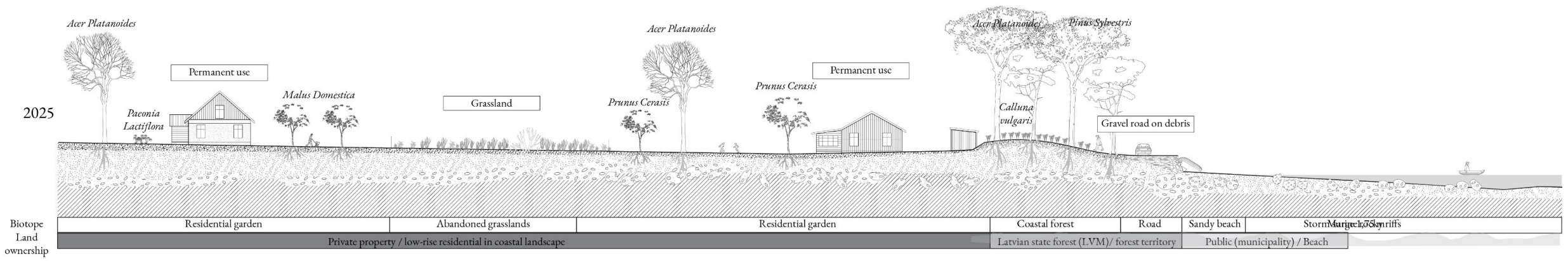
Public (municipality) / Beach



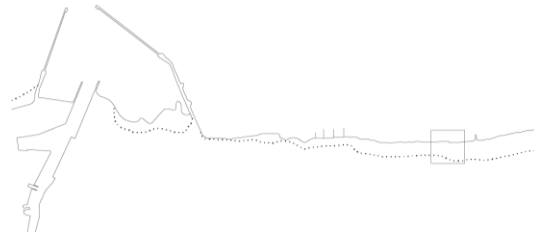
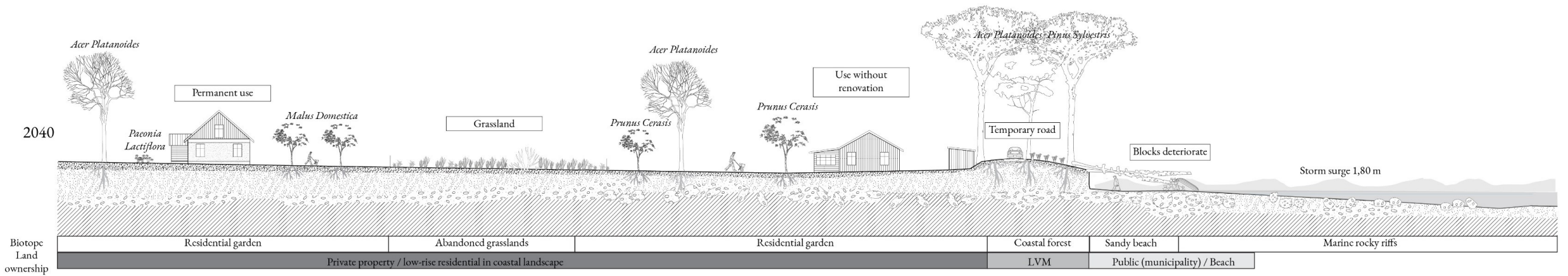
Road



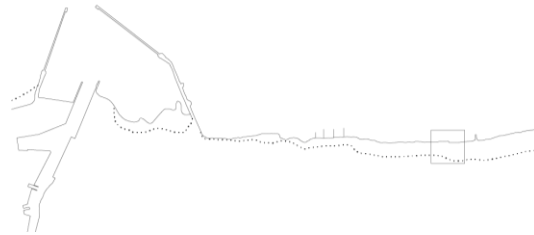
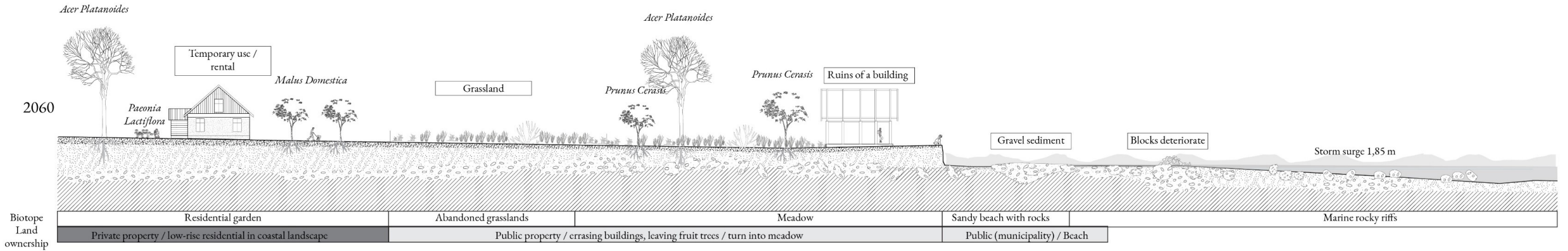
Road



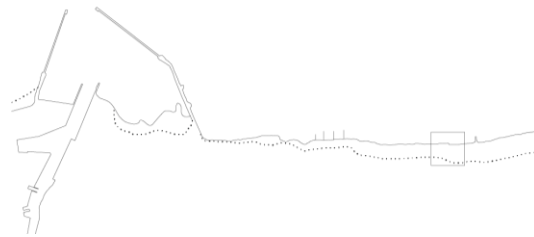
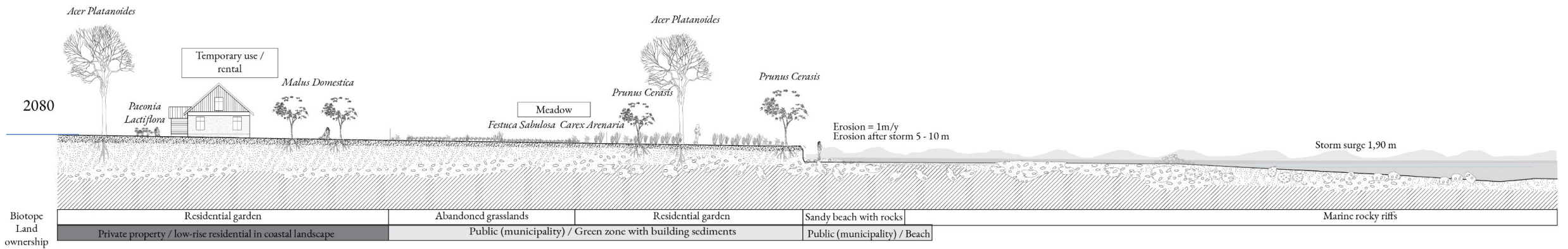
Blocks



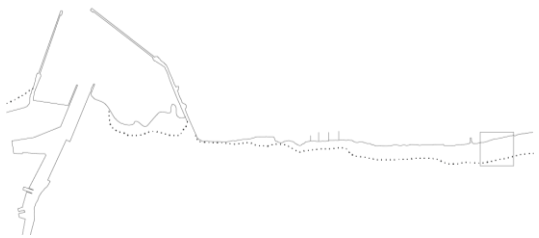
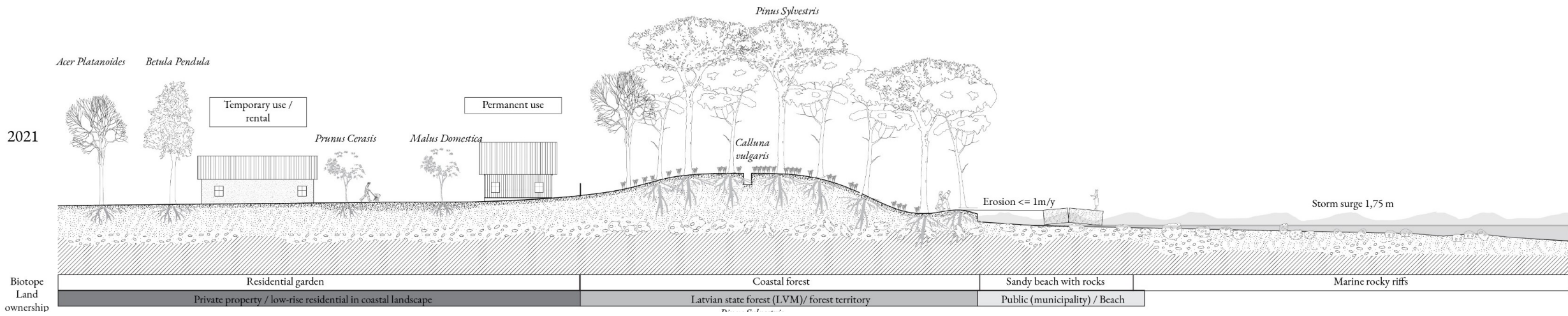
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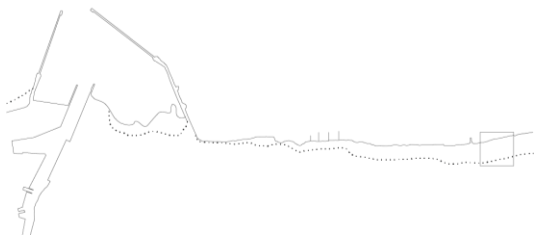
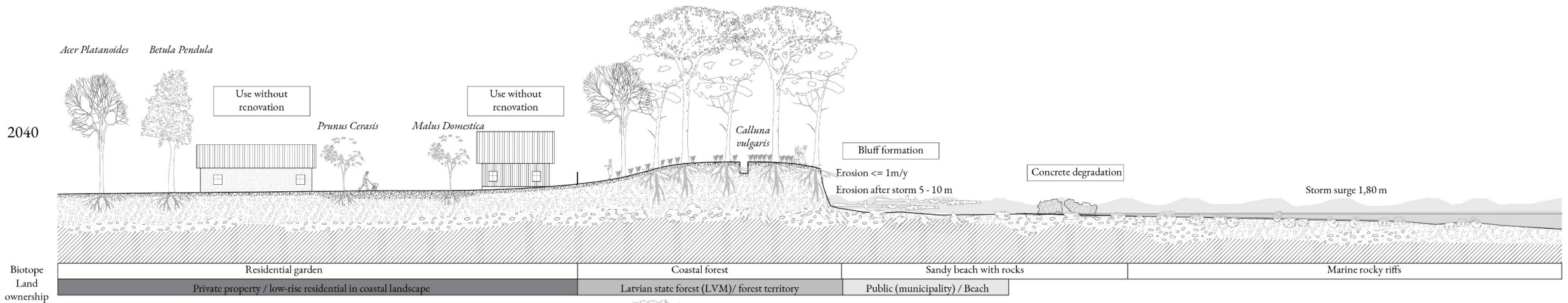
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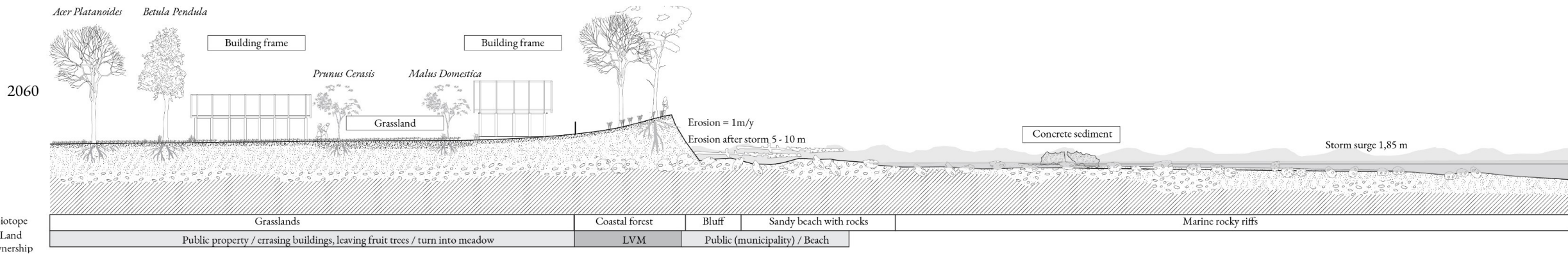
Blocks



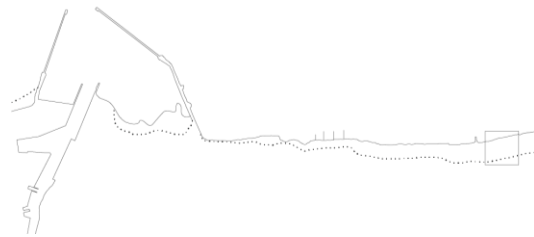
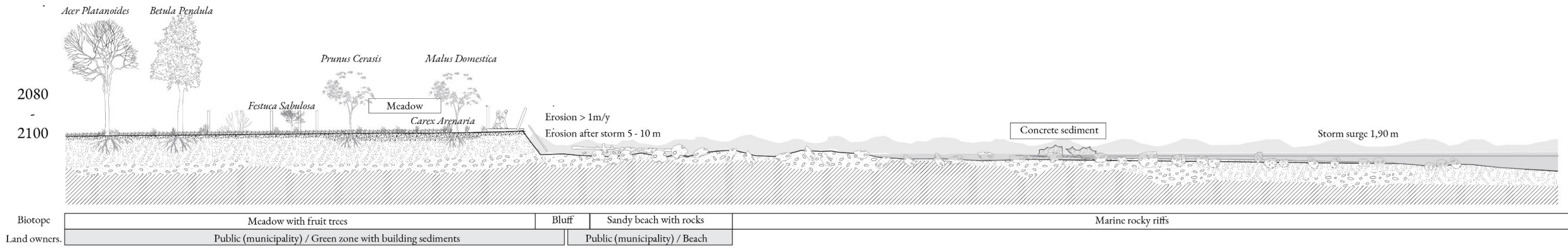
Erosion park



Erosion park



Erosion park

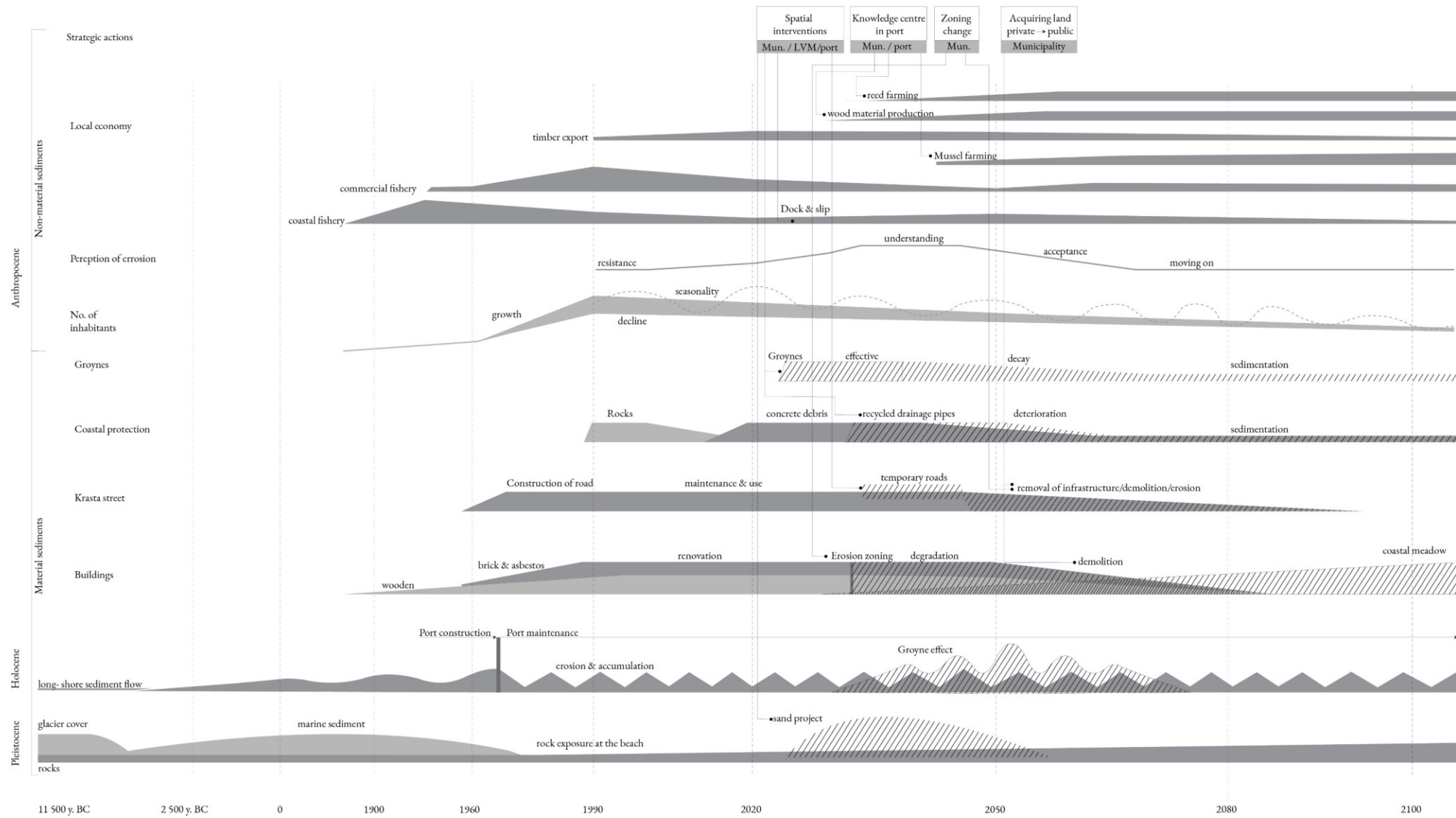


Erosion park



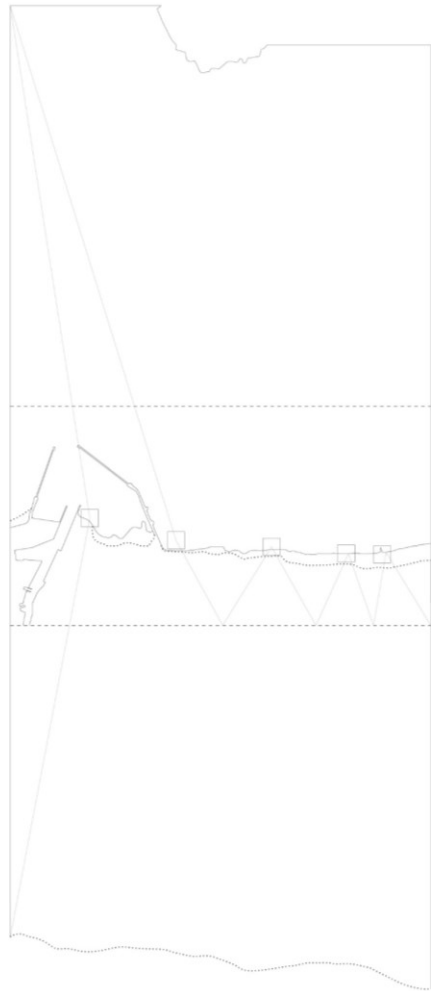




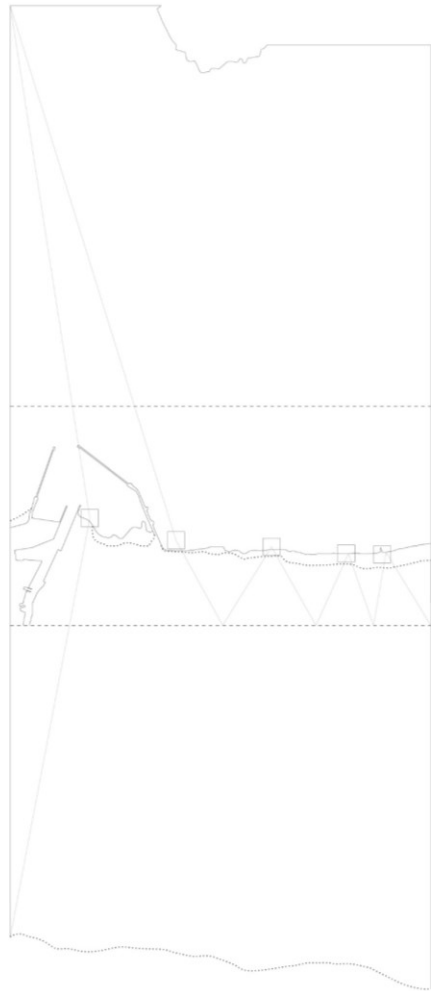


Timeline of sediments

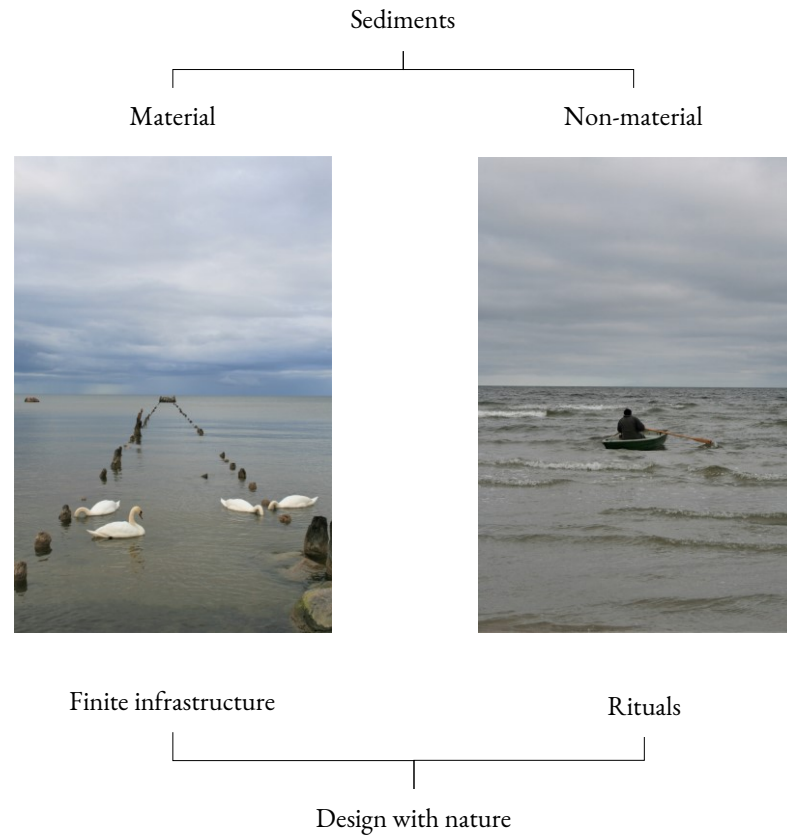
Conclusion



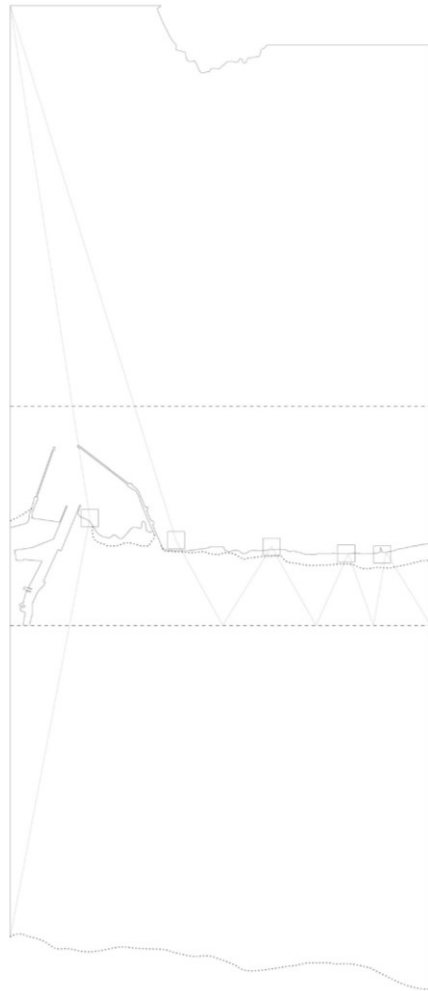
Redefinition of the coastline



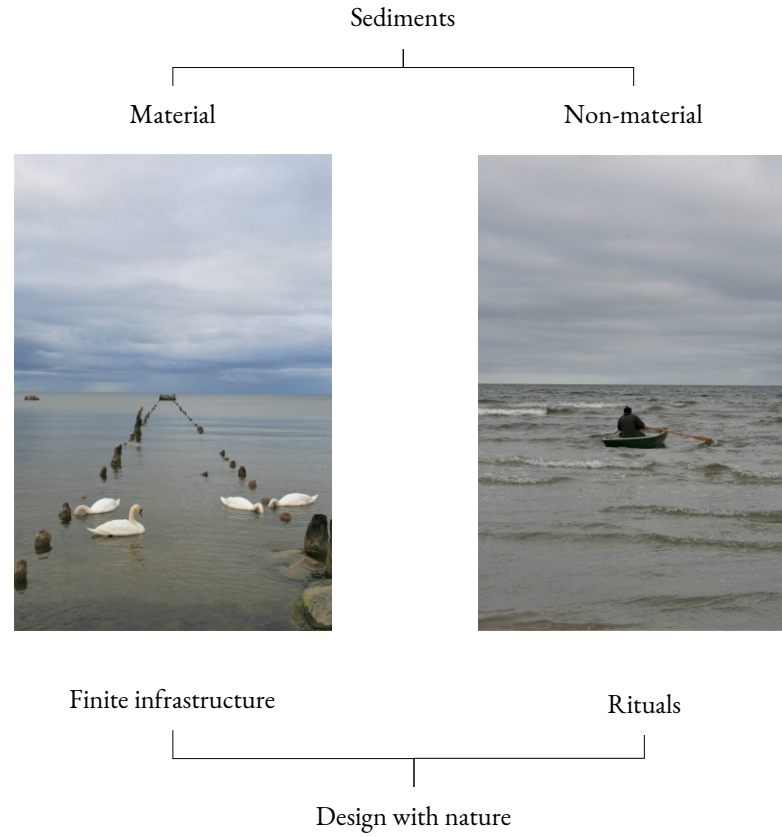
Redefinition of the coastline



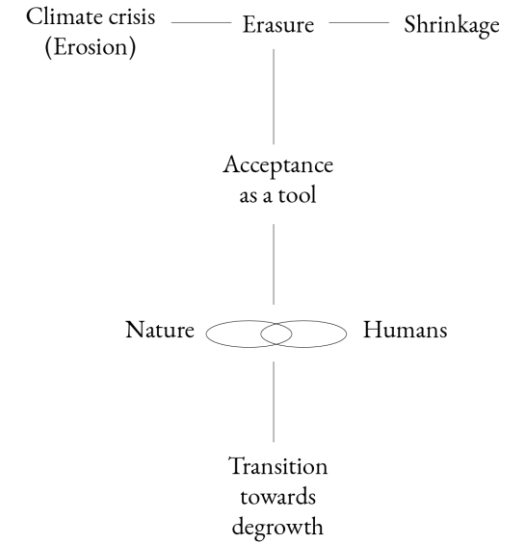
Reconceptualization of sedimentation



Redefinition of the coastline



Reconceptualization of sedimentation



Acceptance as a spatial planning and design tool



By giving time for people to adapt and accept the changes in the landscape and urban environment

By providing possibilities for new, localized economic activities that are linked with the natural processes.

How to **transition** the physical and socio-economic **errasure** on the coastal territory of the western part of the Gulf of Riga towards **sustainable degrowth** by using **acceptance** as a spatial planning and design tool?

By transitioning the understanding of errasure from a thread towards opportunity to create natural landscape

Answering the research question



Thank you!