DANUBE DELTA SETTLEMENTS.

Conservation potential and revitalization scenarios.

ANALYSIS OF THE EXISTING.
DOCUMENTARY PHOTOS AND PERSPECTIVES.

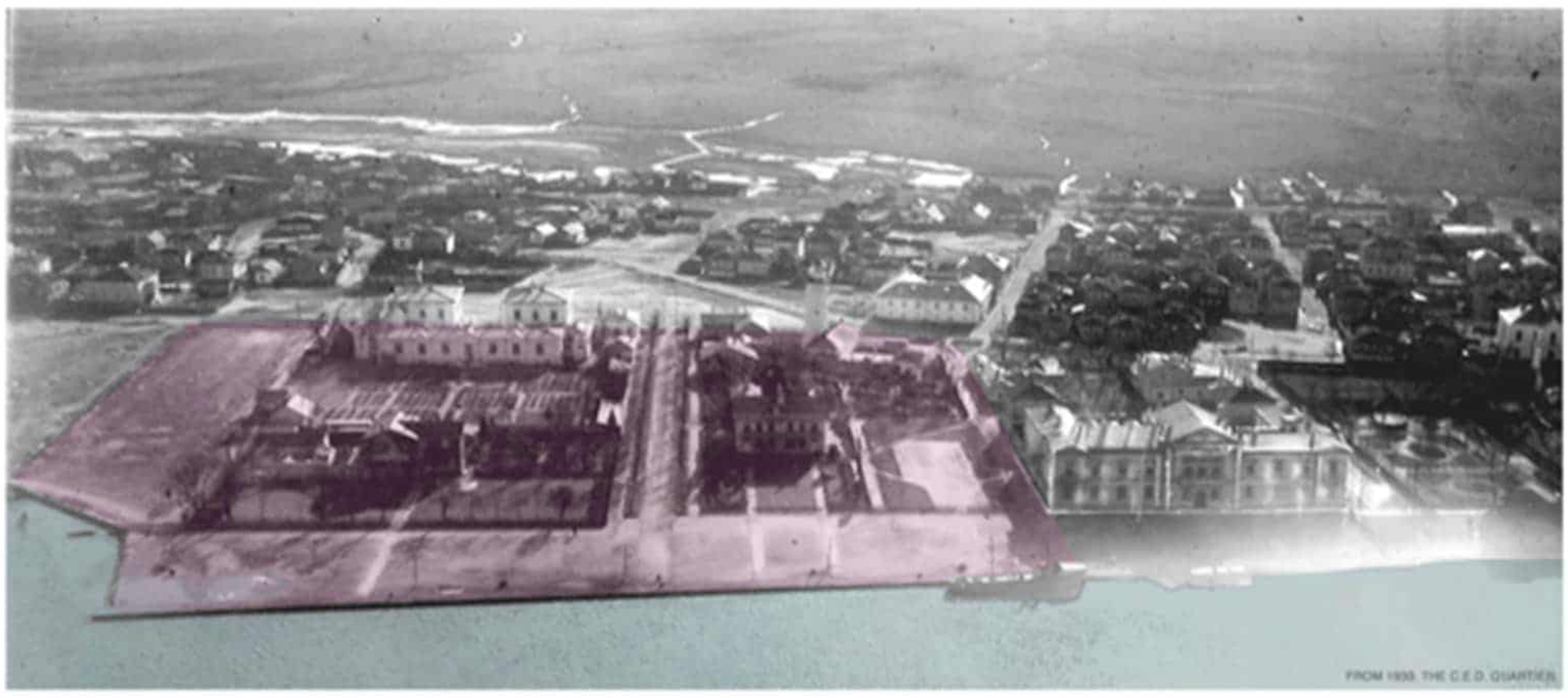
The geographical place Sulina is mentioned for the first time **in the year 950**, in the writing De administrare imperio of the Byzantine emperor Constantine VII Porphyrogenet. Through the Paris Peace Treaty of March 1856, the mouths of the Danube returned to Turkish rule.

Even now, the **European Commission of the Danube** - C.E.D. is being established, whose main duties were to regulate free movement on the Danube and ensure navigability at the mouths of the Danube. Created as a provisional body, with a mandate for two years, it extends its existence in Romania **until 1938**, when its main attributions will be taken over by the Romanian state.

C.E.D. it was made up of representatives of the great European powers: England, France, Austria, Prussia, Germany, Italy, Sardinia, Russia and Turkey. His duties were of a legislative, judicial, administrative and technical nature. It draws up the navigation and river police regulations in the maritime Danube sector, judges infringements against the navigation regulations, establishes and collects navigation fees, administers the Sulina port and executes studies and development works for navigation on the Sulina arm.

The **operational services of the C.E.D.**: House of Navigation, Technical Service, Navigation Inspection, Sulina Port Authority and Hospital Service, operated in Sulina.

Installation at Sulina of C.E.D. determines a **rapid development and modernization of the village**. Starting with the **year 1857**, an intense building activity was carried out, strongly supported by the subsidies granted by the C.E.D.

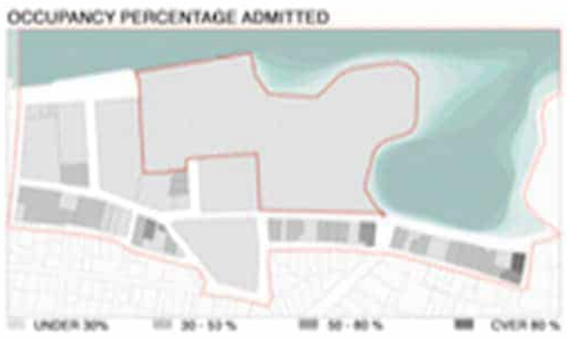


HEIGHT OF THE BUILDING

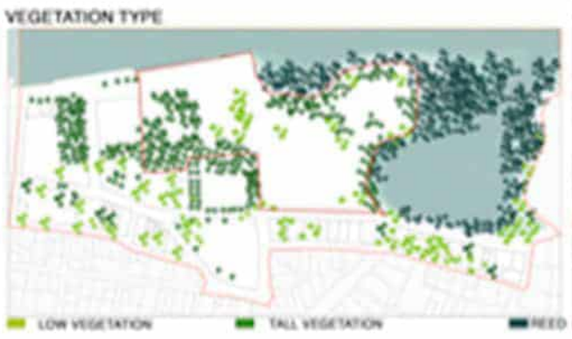
STATE OF THE BUILDING

FUNCTIONAL ZONING

OCCUPANCY PERCENTAGE ADMITTED



VEGETATION TYPE



CIRCULATION TYPE

DANUBE

STREET I, SEAFRONT

TINERETULUI STREET

REPUBLICII STREET

1 CAMP

2 HOSPITAL

3 LIGHTHOUSE

4 C.E.D. PALACE

5 SHOP

6 KINDERGARTEN

7 HIGH SCHOOL

8 MIDDLE SCHOOL

HOTEL IN RUINS

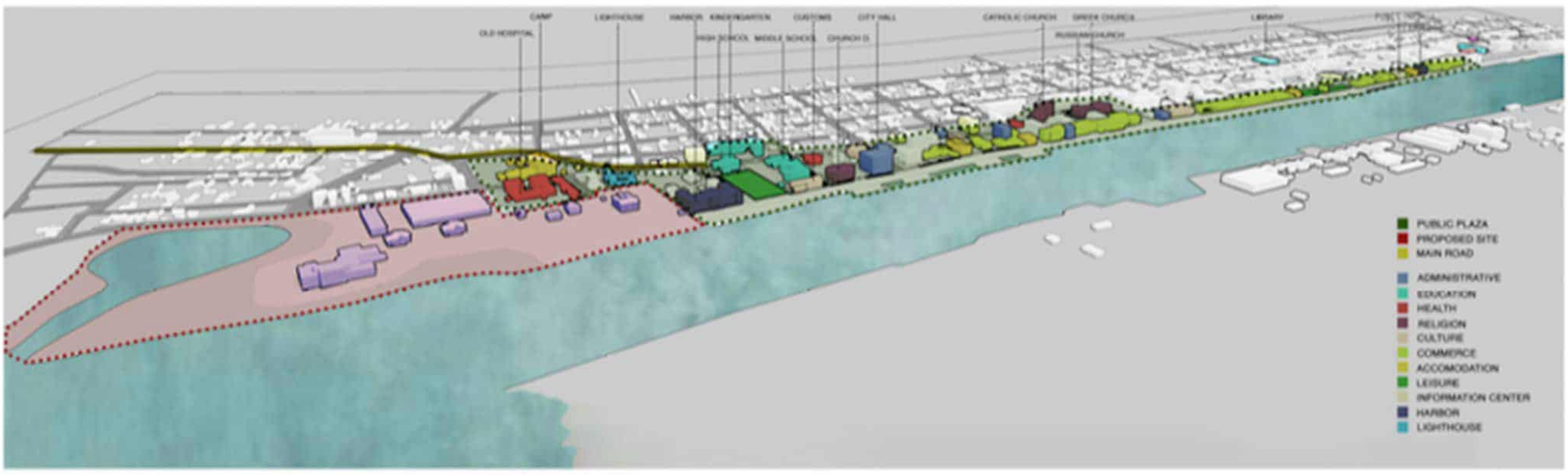
HALL

TWIN DWELLINGS of C.E.D. ABANDONED

HALL

OFFICE BUILDING ABANDONED

C.E.D. BUILDING



DANUBE DELTA SETTLEMENTS.

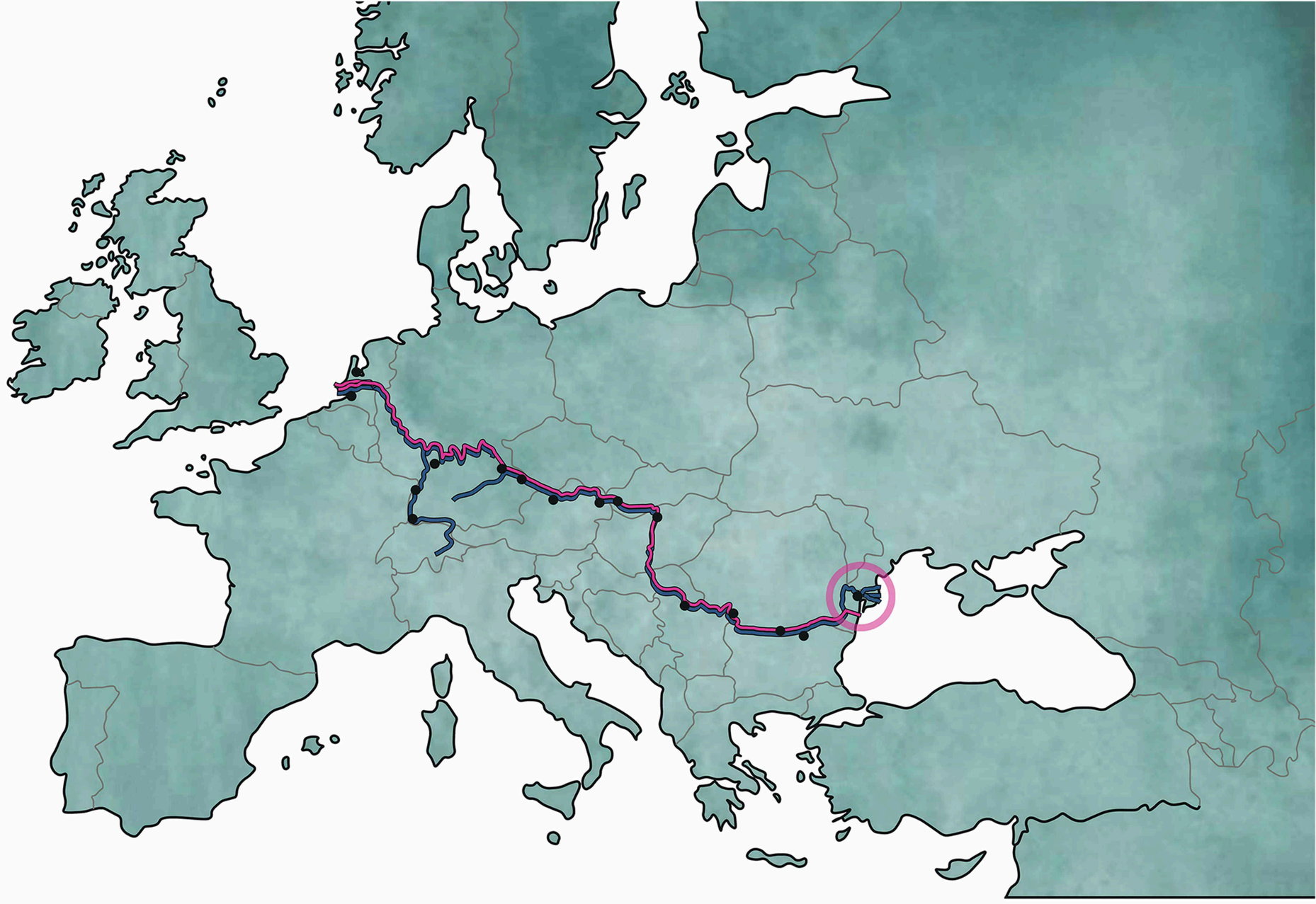
Conservation potential and revitalization scenarios.

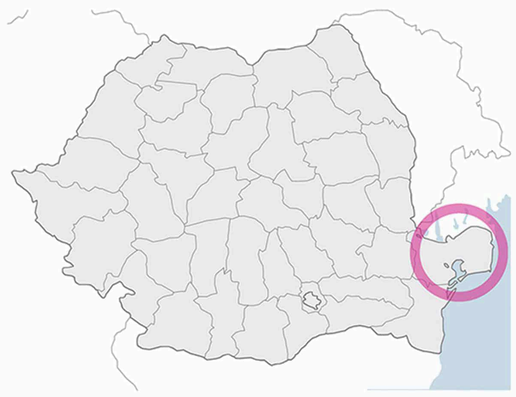
The long-lasting and continuous phenomenon that resulted from the Danube River's bifurcation in its maritime sector of discharge into the Black Sea and the deposition of alluvium, which resulted in the formation of a network of channels of various sizes, laying the foundations for what we now know as the Danube Delta. This is the region with a continuous formation, an annual flow of changes in the hydrographic component, and a primarily negative relief, all of them being tied to the level of the Danube and Black Sea waters.

The Danube has always been targeted because of its strategic position within Europe. The signing of the Paris Peace Treaties and the founding of the European Commission of the Danube (C.E.D.), an entity whose objective was to systematize the waterways, marked a watershed moment in 1856. The influence was recognized by the creation of various villages in the Danube Delta as harbors.

However, it should be noted that, aside from its navigable nature, the area is a one-of-a-kind development of lagoon systems and canals that have given rise to unconventional habitats. Since 1991, the Danube Delta has been designated as a Natural Biosphere Reserve, a UNESCO World Heritage Site, and the emphasis has switched to the natural surroundings. In terms of economic development, the value of biodiversity, the distinctive nature of landscapes, and relationships serve as magnets.

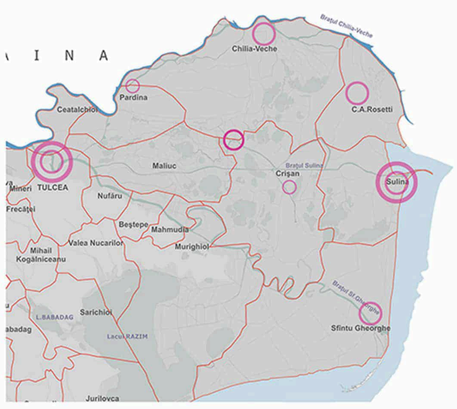
The Danube Delta was chosen as the venue for the development of the preliminary study and for the future thesis: the Delta is the continent's largest and most magnificent river wetland. Reed beds cover 2000 km2 in the Danube Delta. This natural reserve comprises more than 60% of the Danube Delta's pristine region, offering a rare chance to see its stunning vistas and riches. Its morphogenesis and annual expansion are also significant. Thus, its lovely scenery changes constantly. The delta receives 67 million tons of alluvium annually.





Map of Romania. The Danube Delta is highlighted.

The heart of the Danube Delta.

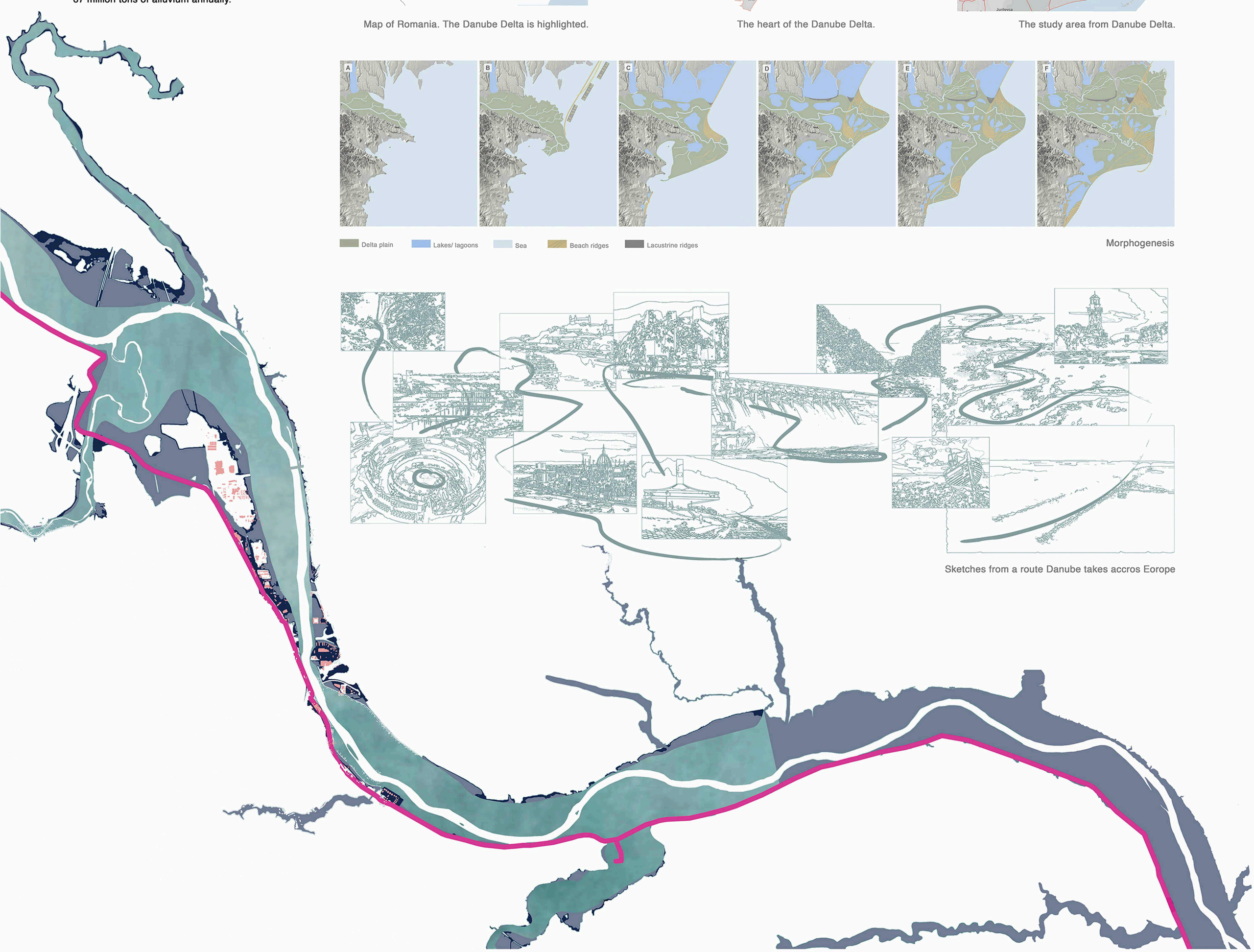


The study area from Danube Delta.

Delta plain | Lakes/ lagoons | Sea | Beach ridges | Lacustrine ridges

Morphogenesis

Sketches from a route Danube takes accros Eorope



Demography & wellbeing communities

S.W.O.T. analysis

Strengths

- The traditional family core is well preserved here, as are the community's daily/monthly rituals and beliefs;
- Heritage (Romanian, Russian, Ukrainian);
- Residents' knowledge of community issues;
- attracting people from all over the world to learn from the still archaic and unique communities here

Threats

- the dramatic and quick drop in population density each year;
- the decline in quality of life for residents caused by an unsteady income;
- migration to areas providing employment;
- with the dissolution of these villages, the loss of traditions and crafts

Weaknesses

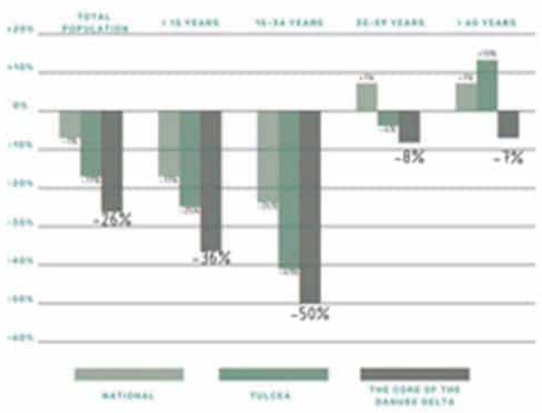
- the aging population;
- Poor access that led to very limited opportunities;
- migration of young people;
- the lack of general knowledge when it comes to the locals.

Opportunities

- train local groups to succeed their parents or acquire new professional training;
- preserving the area's unique heritage by preserving traditional skills and handcrafts;
- Academic and scientific initiatives focused on the Delta;

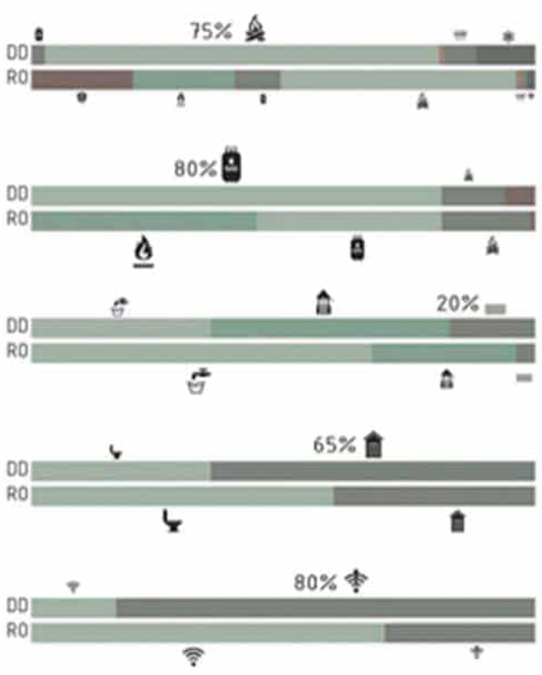
CHILIA BRANCH		SULINA BRANCH		SFÂNTU GHEORGHE BRANCH	
Settlements	*Population*	*Settlements*	*Population*	*Settlements*	*Population*
Ceatalchioi	412	Maliuc	236	Tudor Vladimirescu	385
Plauru	89	Gorgova	142		
Pătlăgeanca	227	Ilganii de Sus	53	Ilganii de Jos	167
Sălceni	105	Partizani	364	Băltenii de Jos	82
Pardina	682	Vulturu	45	*Uzlina*	*4*
Chilia Veche	**2232**	Crişan	470	**Sfântu Gheorghe**	**860**
Periprava	240	*Mila 23*	*460*		
		Sulina	**4350**		

The population in the settlements of the Danube Delta



Graphic showing population decline in DD(data from 2011)

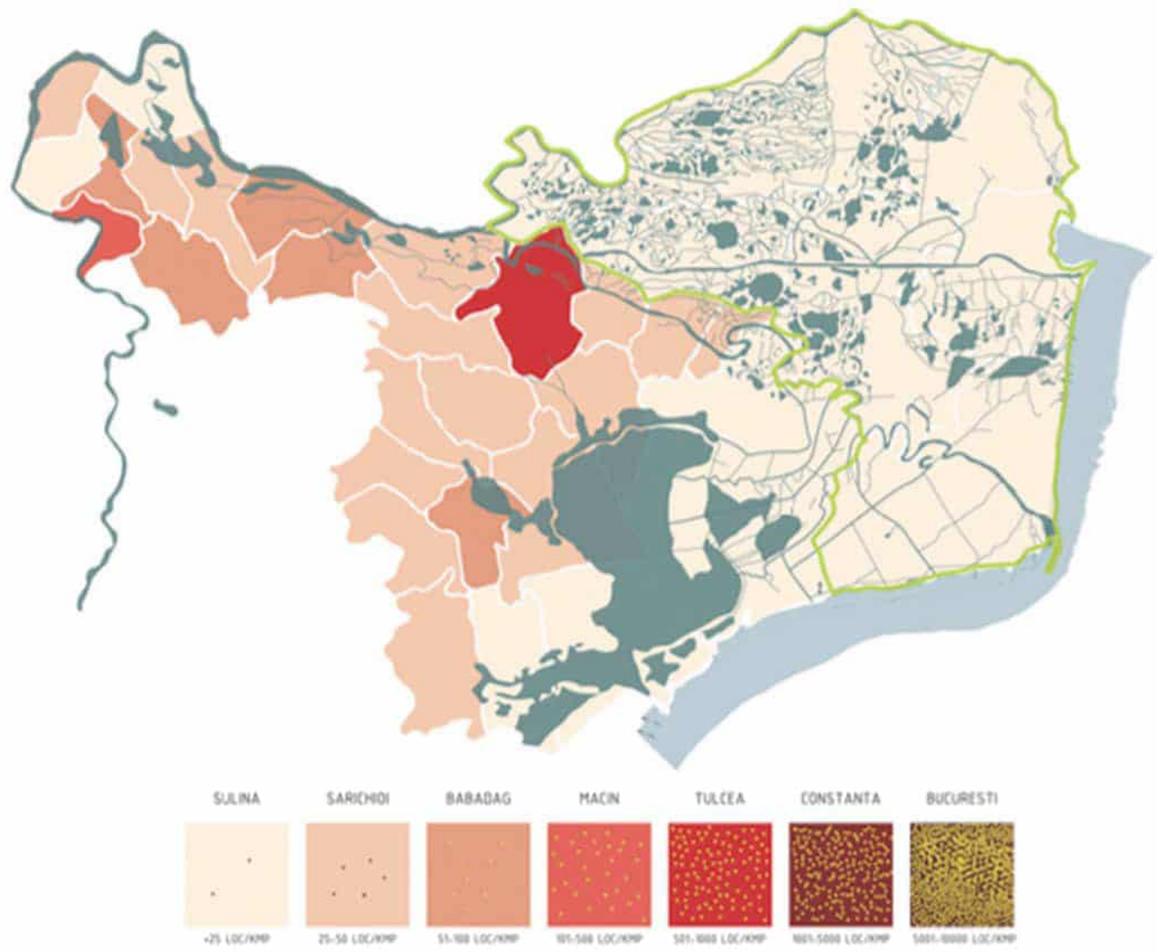
The population density is three people per square kilometer at the level of the Danube Delta, which is 10 times lower than the average for the county and thirty or more places lower than the average for the country (Integrated Strategy for Sustainable Development of the Danube Delta, 2016). Only the hamlet of Sulina and the village of Chilia Veche both have populations that are greater than one thousand persons each. The fact that poor accessibility and low density conditioned the existence of numerous utilities and amenities decreased the location's attraction, which has a negative influence on the demographic development of the area. This in turn has a negative influence on the growth of the population in the area. This had a detrimental effect on the region's overall rate of population growth. The emigration rate is the highest in the country, especially among young people, where it ranges from -50% to 15% and the result is an aging population.



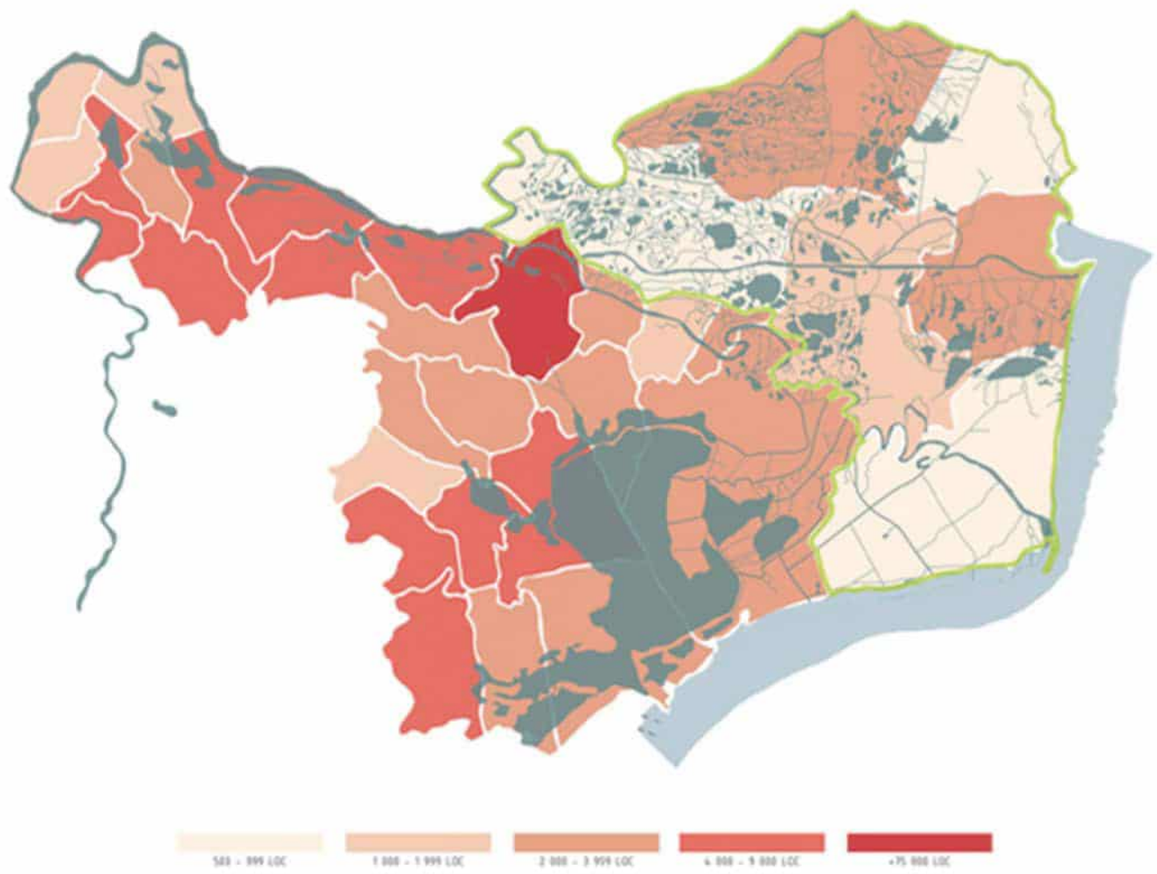
Utilities in the study area. The core of the Danube Delta registred one of the lowest proportions of households in Romania are connected to any kind of infrstructure in the contry (data from 2011 census statistics, SIDDD (2014).

The lowest proportion of households in Romania are connected to any kind of infrastructure, which records dramatic percentages of the number of families that have access to fundamental services. The population's low level of education reflects the reduced school offer and the dropout rate people do not have the minimum/ mandatory number of classes and the lack of vocational schools' results in a percentage of over 77% of unqualified people, making it difficult for them to find employment.

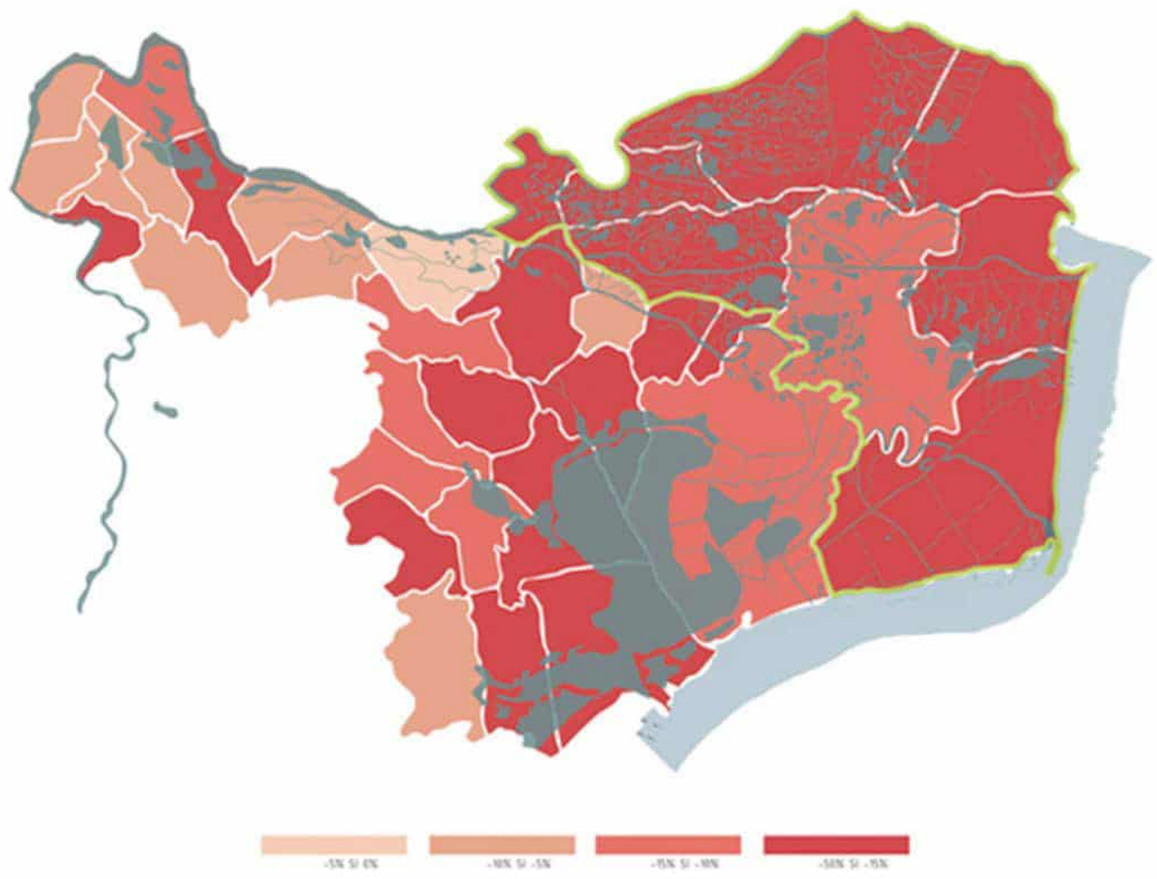
Because of the area's increased isolation, settlement growth has focused on the resources immediately adjacent to the land to profit from them and stagnate in the primary sector of economic activity, to which tourism has been added. Based on a comparison at the county level, the Danube Delta communities tend to cover largely 2-3 formal sectors of the labor force in the fields: agriculture and animal production, forestry and logging, fishing and aquaculture, transport and storage, accommodation and food services. Due to a lack of diversification, the people' well-being is dependent on these economic sectors, which in turn are dependent on environmental forces.



Density in the Danube Delta



Population in the Danube Delta



Emigration from the Danube Delta area

Biosphere Integrity
S.W.O.T. analysis

Threats

- External threats that are beyond local control;
- The number of species is affected by dirty water;
- Polluted rivers as a result of river crossings around Europe;
- Having difficulties when it comes to drinkable water;

Strengths

- **Strong national and international legal protection;**
- **High biodiversity, productive ecosystem;**
- **Europe's largest wetland and reed bed;**
- **Significant part of the area is still intact, unspoiled;**

Weaknesses

- Interventions under communism (major impact on landscape and biodiversity);
- Previous environmental harm: fisheries, siltation;
- Disorganized local authority unable to control the protected region;
- Locals distrust the government and are unwilling to comply.

Opportunities

- **Part of UNESCO's World Heritage List;**
- **Ecological restoration is practical and low-cost in the few areas where it is needed;**
- **Low population, vast ecosystem - sustainable natural resource usage, without having a significant footprint**

Resources & Energy
S.W.O.T. analysis

Threats

- Pressure on fish exports
- Environmental restoration on municipal revenue and employment
- Engaging older, dispersed communities is difficult.
- DD-unfamiliar visitors are replacing long-term residents.

Strengths

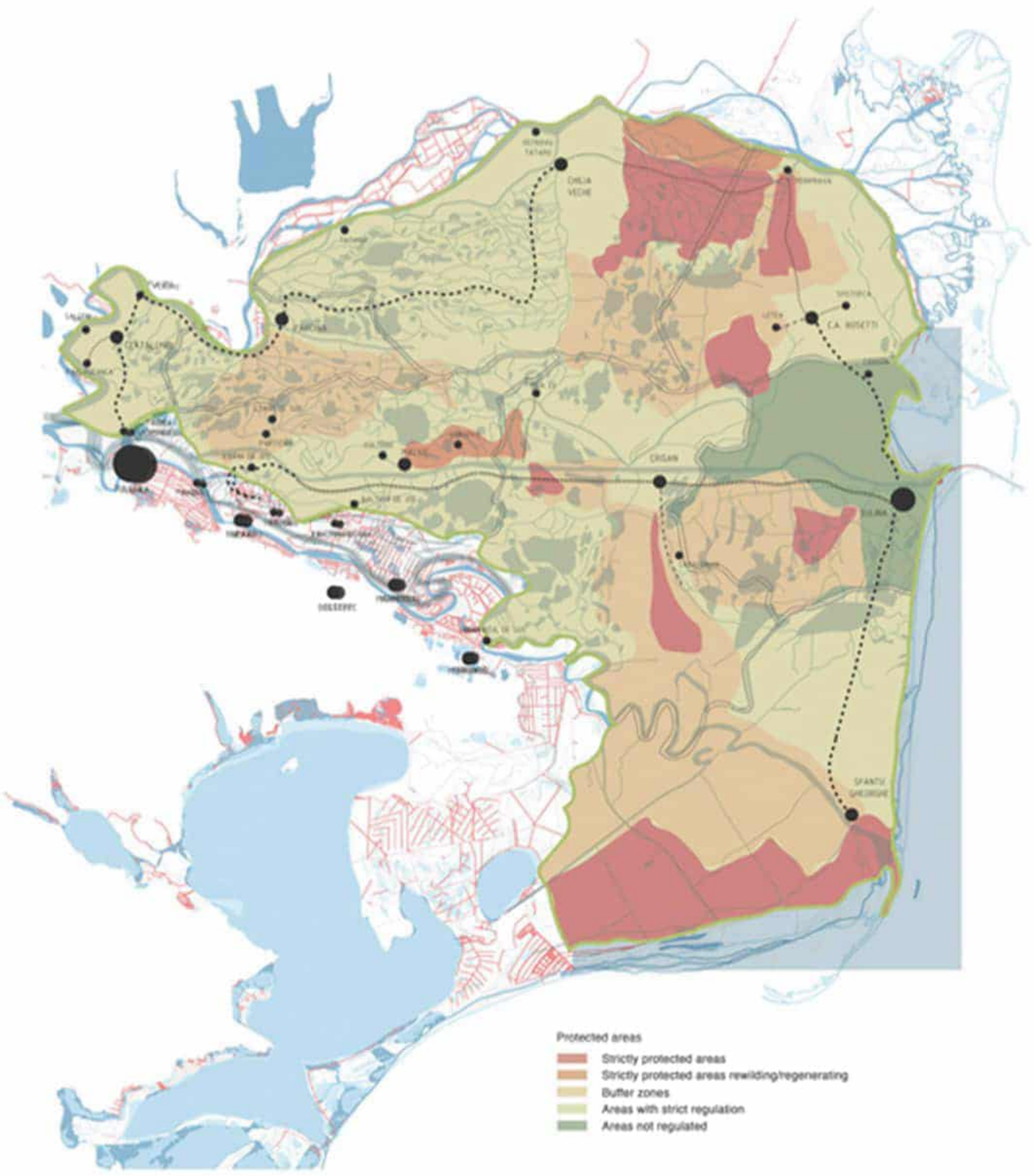
- **Strong national and international legal protection;**
- **High biodiversity, productive ecosystem;**
- **DD-savvy and DD-attached locals;**
- **Significant area still intact**

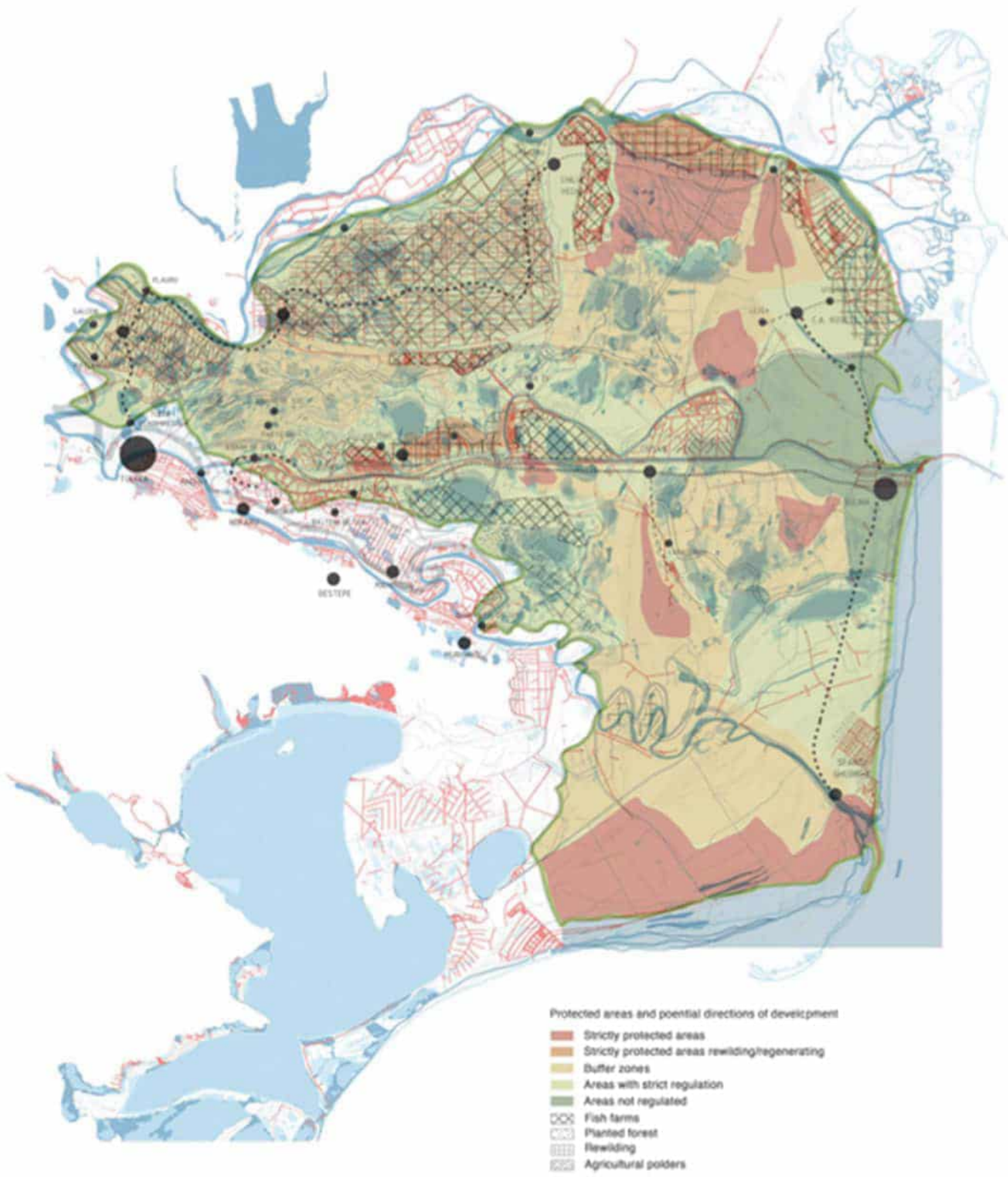
Weaknesses

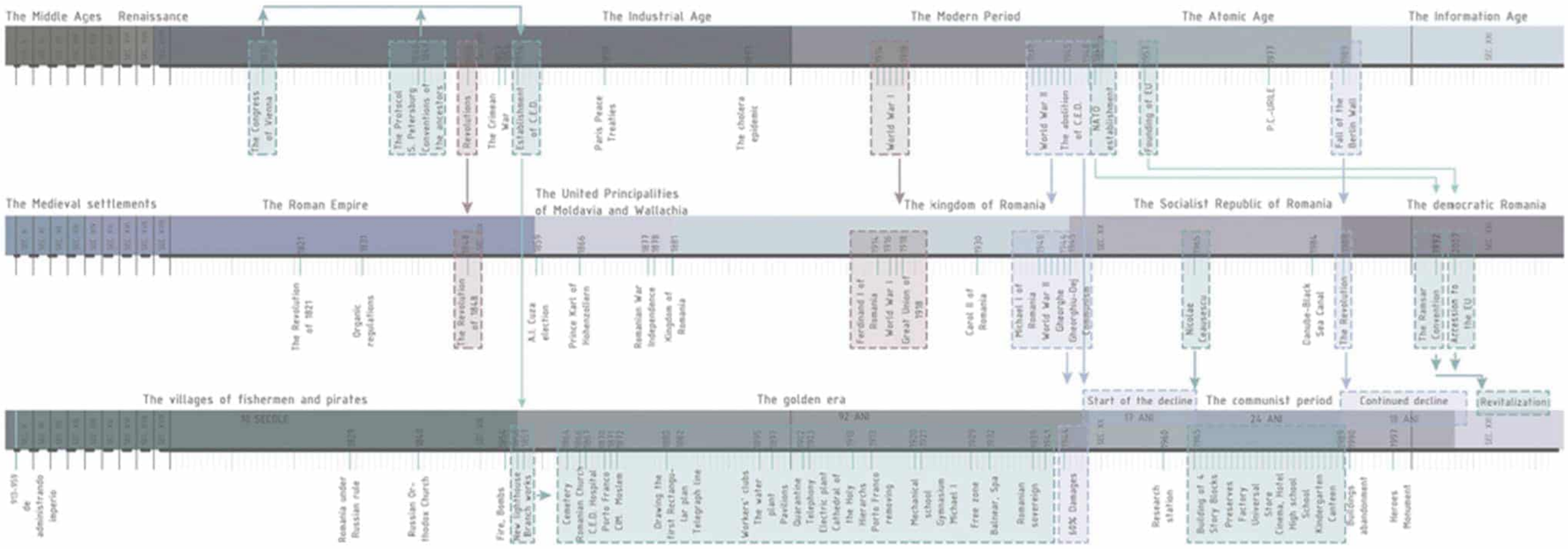
- Previous environmental harm: fisheries, siltation
- Inadequate data and models for managing complex, dynamic ecosystems
- Tension: Short-term needs - sustainable goals
- Locals lack communal resource management culture and experience.

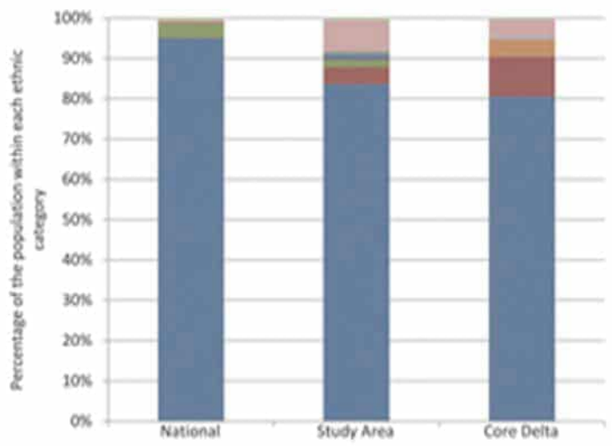
Opportunities

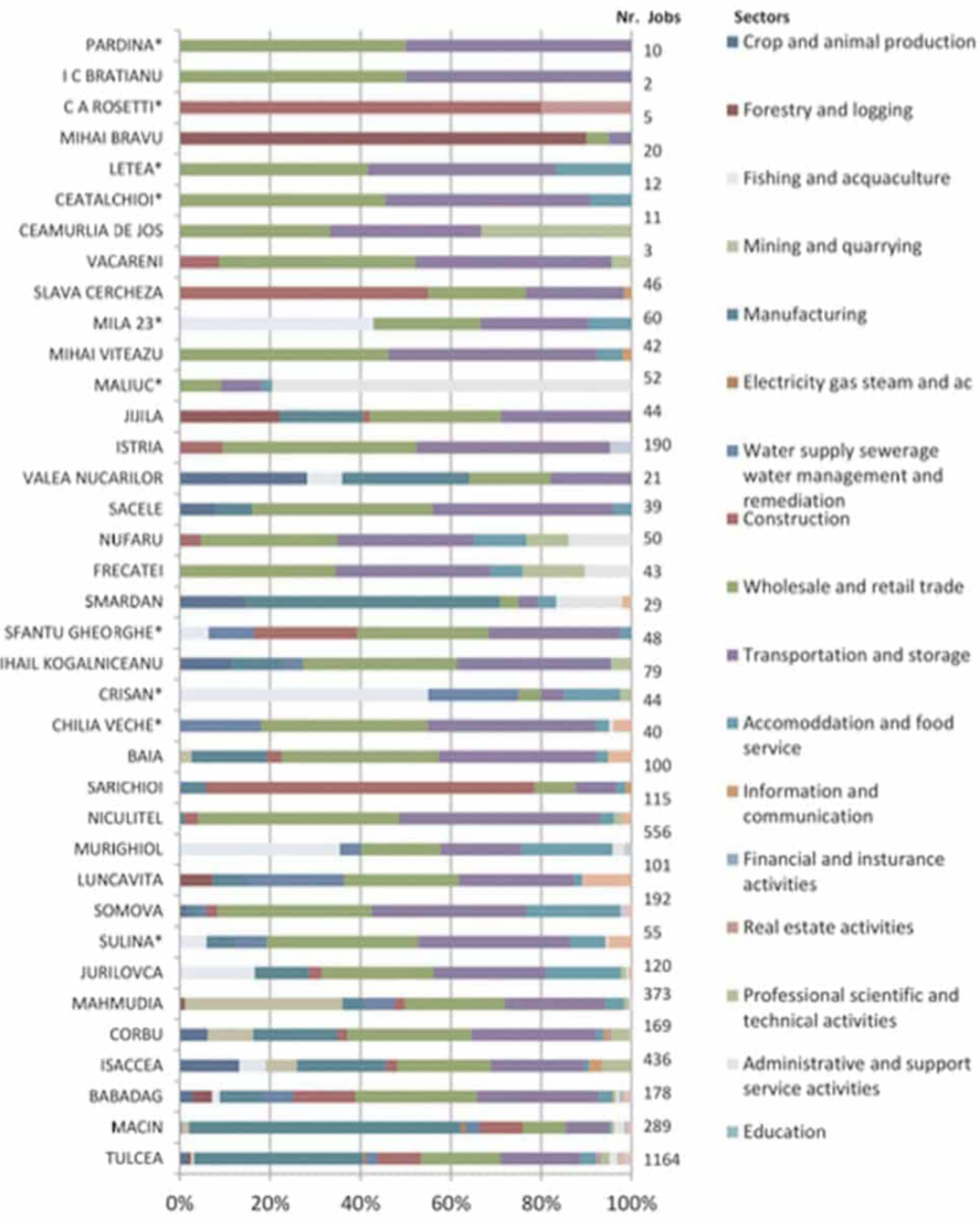
- **Ecological restoration is practical and low-cost.**
- **Low population, vast ecosystem - sustainable natural resource usage**
- **Benefits of local resource management**
- **ecotourism potential (unique assets)**











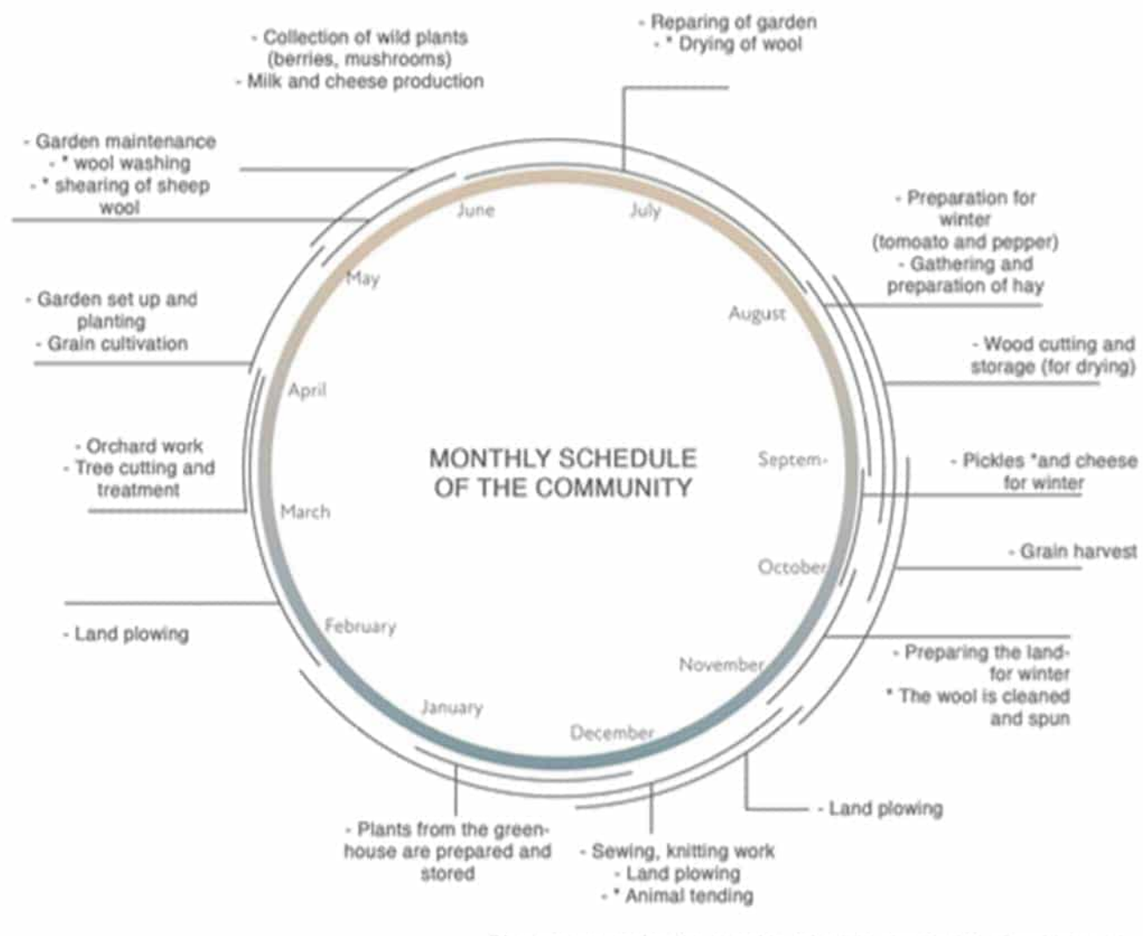


Diagram presenting the monthly schedule, the routine of residents of the Danube Delta

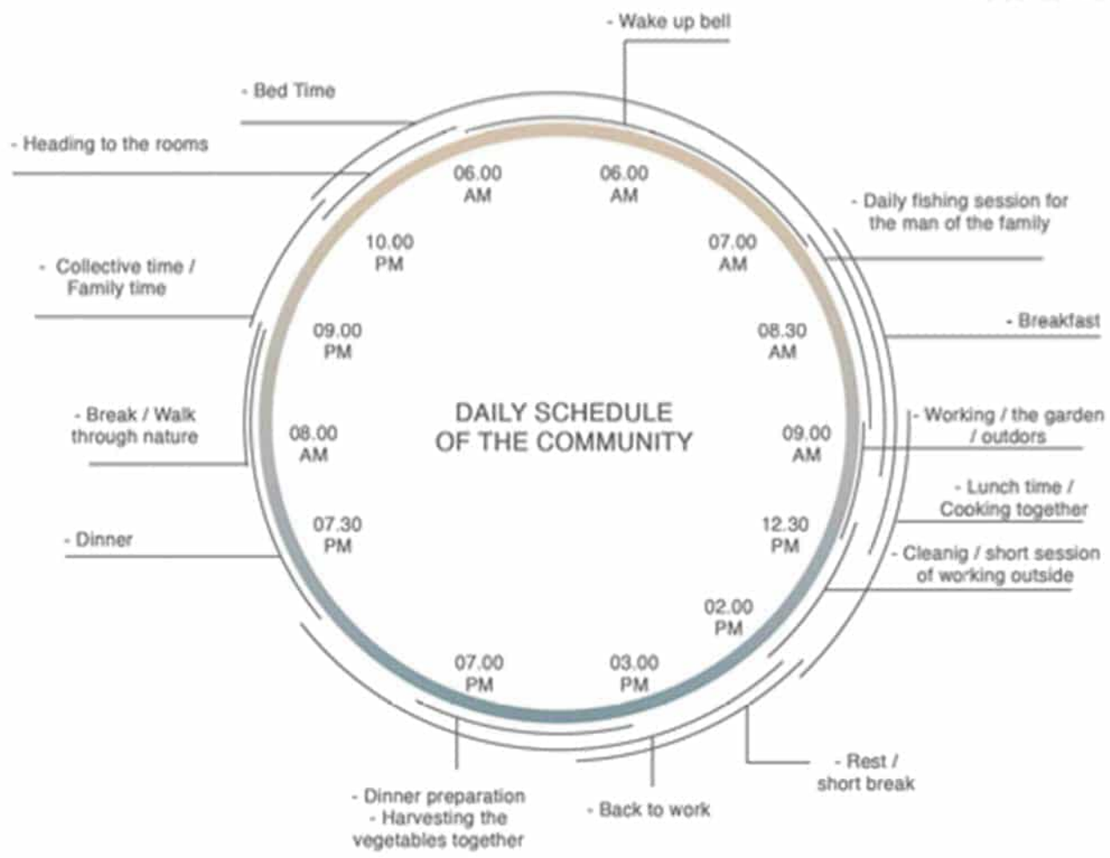
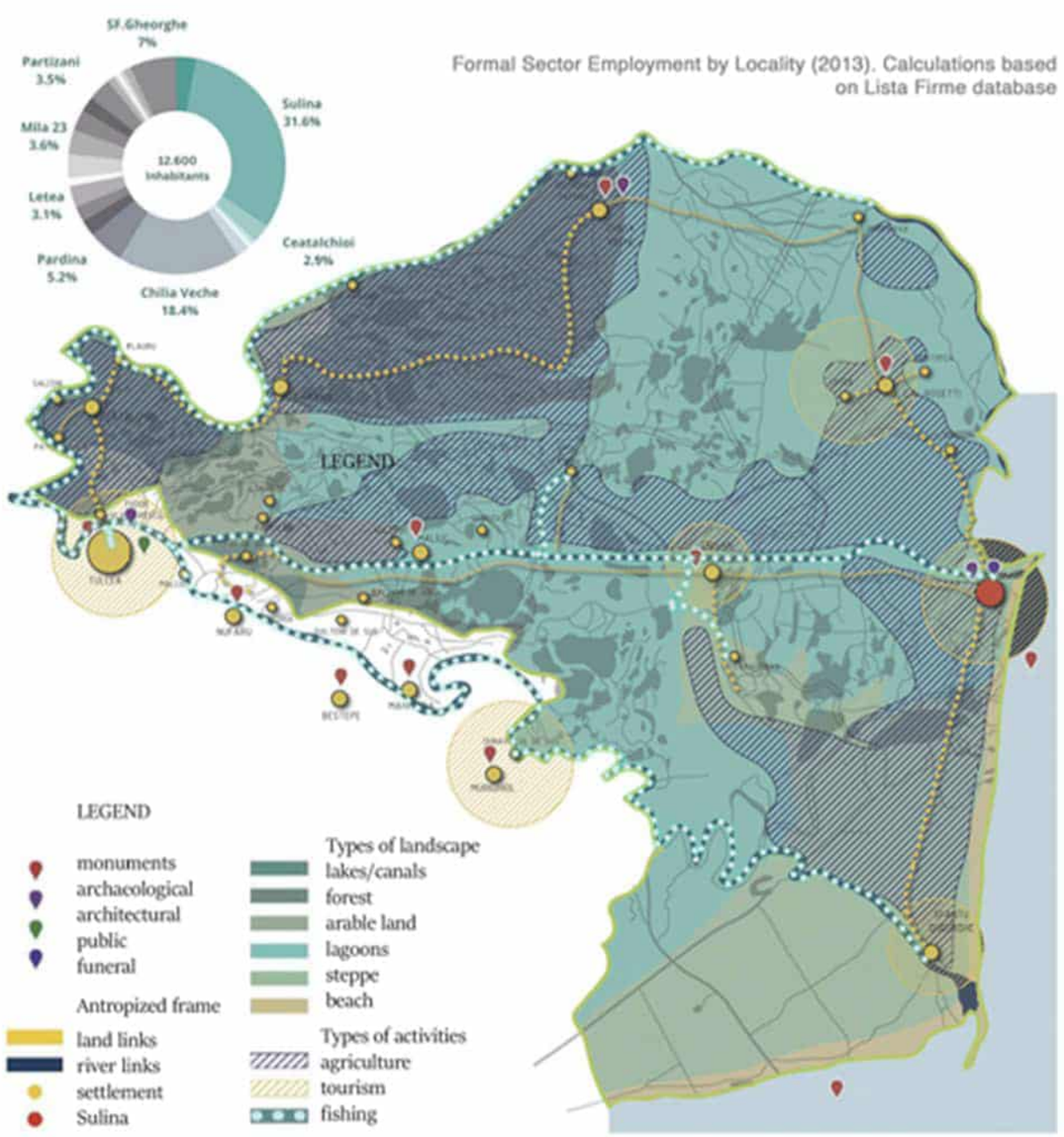
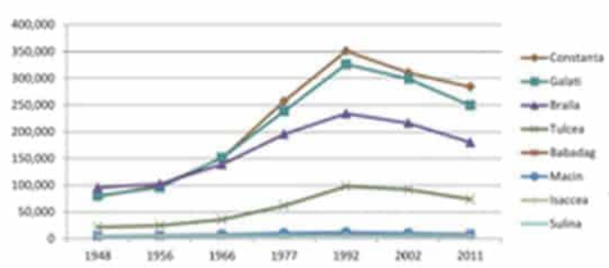


Diagram presenting the daily schedule, the routine of residents of the Danube Delta

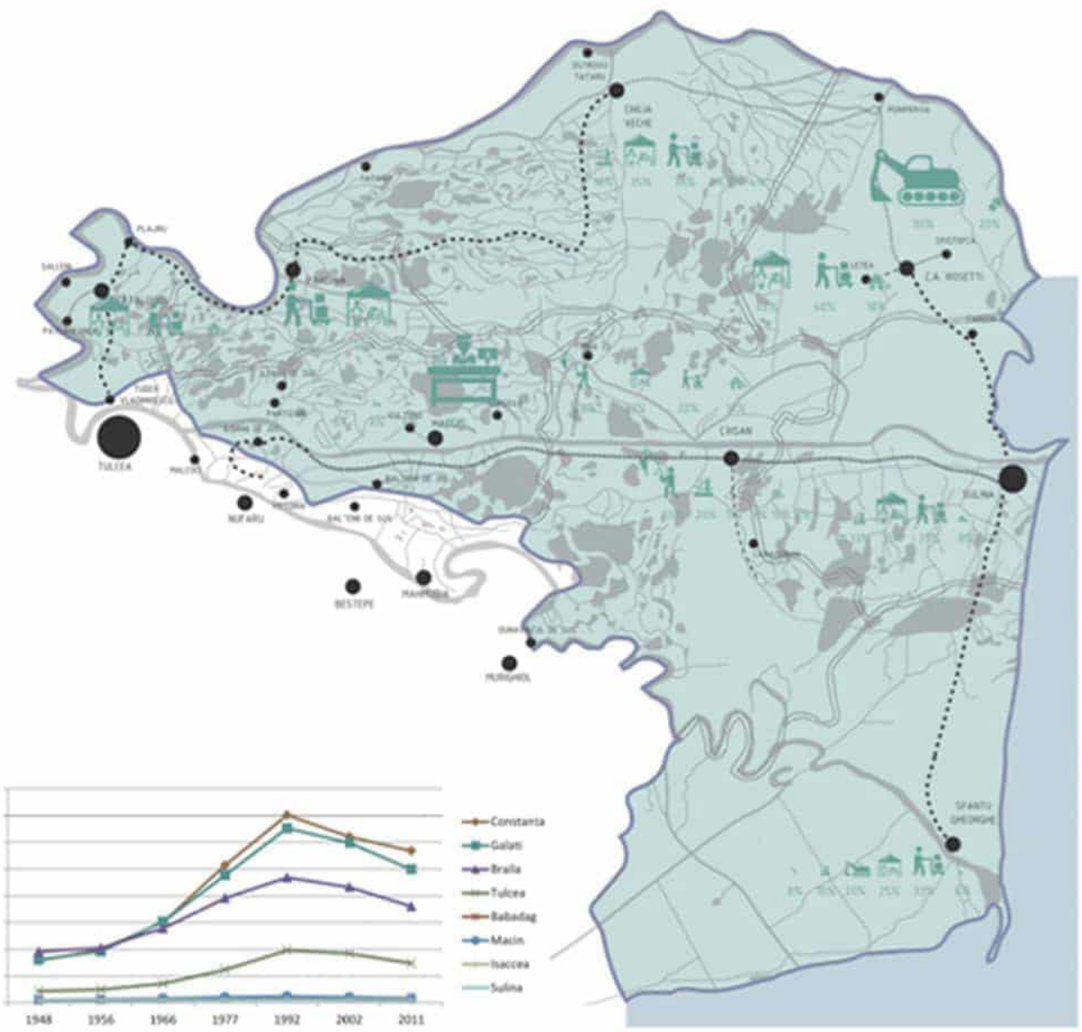


Formal Sector Employment by Locality (2013). Calculations based on Lista Firme database

Zoning of the types of economic activities in the Danube Delta



Population Decline in the Danube Delta Region after the 90s.



Areas of activity in the Danube Delta

Naval transportation proposal.

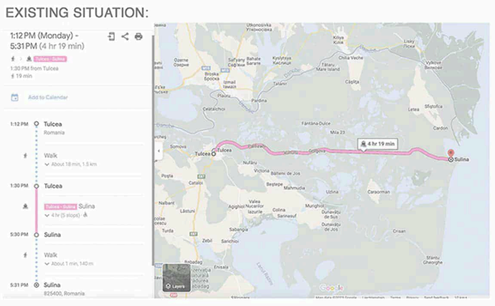
DANUBE DELTA SETTLEMENTS.

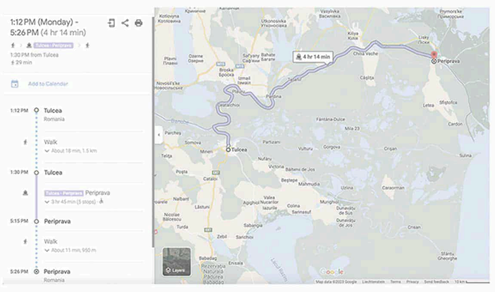
Conservation potential and revitalization scenarios.

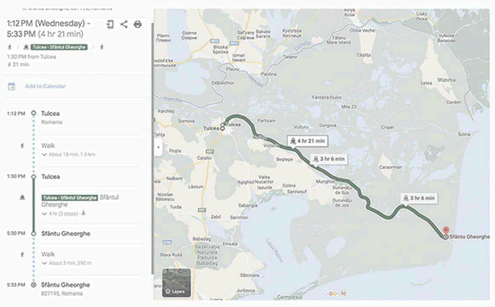
A **traditional 7.5 m petrol boat** consumes about **15 x more fuel** than a family car, leaving a heavy footprint on our planet. Multiply that number with the aprox. number of ships and boats in waters of the Danube Delta and it's easy to see that the **concept of traditional combustion engine boats is simply not sustainable**. Here maybe more important than it would normally be, it is a natural park, needing to be preserved, not exposed to CO2 emissions and to **the loud sounds** of the traditional boats.

The purpose is to **re-think efficiency** in marine transportation to radically push the performance boundaries of **electric boats** and ships. In order to do that a system developed 2013, and launched after 5 years of research called CANDELA technology is proposed for the whole study area **in order to improve** the transportation system.

EXISTING SITUATION:







SCHEDULE:

Route from Tulcea

Day	Ship type	Hour
Monday	Clasic	13:30
Wednesday	Clasic	13:30
Thursday	Semirapid	13:30
Friday	Clasic	13:30

Route from Sulina

Day	Ship type	Hour
Monday	Semirapid	07:00
Tuesday	Clasic	07:00
Thursday	Clasic	07:00
Friday	Semirapid	07:00

Route from Tulcea

Day	Ship type	Hour
Monday	Semirapid	13:30
Wednesday	Semirapid	13:30
Friday	Clasic	13:30

Route from Periprava

Day	Ship type	Hour
Tuesday	Semirapid	06:00
Thursday	Semirapid	06:00
Sunday	Clasic	06:00

Route from Tulcea

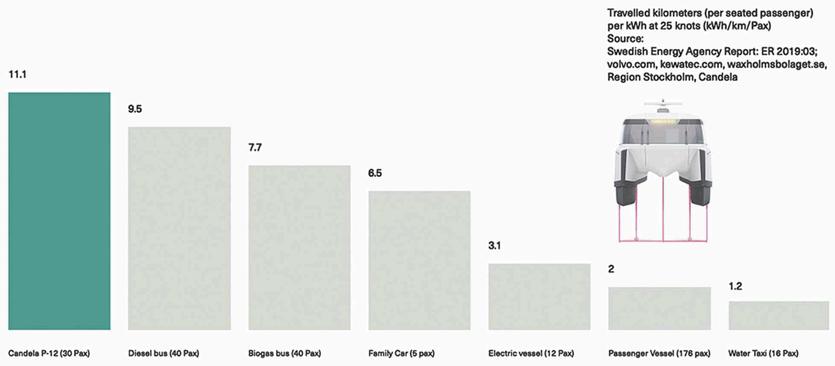
Day	Ship type	Hour
Monday	Clasic	13:30
Wednesday	Clasic	13:30
Friday	Semirapid	13:30

Route from Sfantul Gheorghe

Day	Ship type	Hour
Tuesday	Clasic	07:00
Thursday	Clasic	07:00
Sunday	Semirapid	07:00

High efficiency and low costs

Being 400% more energy efficient than any other fast vessel, the Candela P-12 uses less energy per passenger kilometre than a hybrid electric bus. For operators, this means up to 90% reduced fuel costs.



Energy consumption per passenger. kWh per kilometre, Per seated passenger (kWh/km/Pax)

	Traditional diesel ferry	Candela P-12	Reduction
Engine power	589 kW	88 kW	85 %
Energy consumption in service speed (kWh/Nm)	36 kWh	5 kWh	86 %
Cost of fuel/energy at service speed (€/h)	90 €	17 €	81 %
Local emissions (g Co2/h)	13460 g	0 g	100 %

** By replacing one large, conventional vessel with a fleet of P-12 Shuttles, a nimbler waterborne public transportation system can be put in place.*

CANDELA P-12 (above)

ROUTE I:

Boat ID	TULCEA	PARTIZANI	VULTURU	MALIUC	GORGOVA	OBREITINU	CRIŞAN	LUMINA	SULINA
C.P-12 Express	08.00	08.16	-----	08.37	-----	-----	09.08	-----	09.31
C.P-12 Express	12.00	12.16	-----	12.37	-----	-----	13.08	-----	13.31
C.P-12 Express	16.00	16.16	-----	16.37	-----	-----	17.08	-----	17.31
C.P-12 Regio	06.00	06.26	06.53	07.04	07.20	07.45	08.20	08.41	09.15
C.P-12 Regio	10.00	10.26	10.53	11.04	11.20	11.45	12.20	12.41	13.15
C.P-12 Regio	14.00	14.26	14.53	15.04	15.20	15.45	16.20	16.41	17.15
C.P-12 Regio	18.00	18.26	18.53	19.04	19.20	19.45	20.20	20.41	21.15

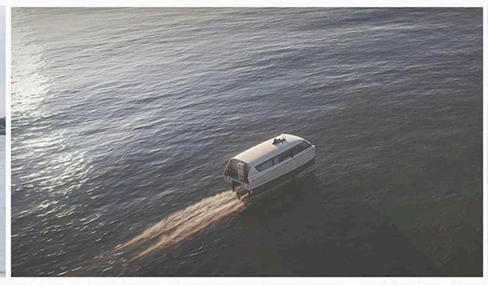
Connection: to Express Route II Regional Route III · Connection: to Regional Route II · Connection: to the opposite shore C.P-8

ROUTE I:

Boat ID	SULINA	LUMINA	CRIŞAN	OBREITINU	GORGOVA	MALIUC	VULTURU	PARTIZANI	TULCEA
C.P-12 Express	07.00	-----	07.23	-----	-----	08.04	-----	08.35	08.56
C.P-12 Express	12.00	-----	12.23	-----	-----	13.04	-----	13.35	13.56
C.P-12 Express	17.00	-----	17.23	-----	-----	18.04	-----	18.35	18.56
C.P-12 Regio	06.00	06.34	06.55	07.25	07.50	08.05	08.16	08.43	09.09
C.P-12 Regio	10.00	10.34	10.55	11.25	11.50	12.05	12.16	12.43	13.09
C.P-12 Regio	14.00	14.34	14.55	15.25	15.50	16.05	16.16	16.43	17.09
C.P-12 Regio	18.00	18.34	18.55	19.25	19.50	20.05	20.16	20.43	21.09

Connection: to Express Route II Regional Route III · Connection: to Regional Route II · Connection: to the opposite shore C.P-8

CANDELA P-8



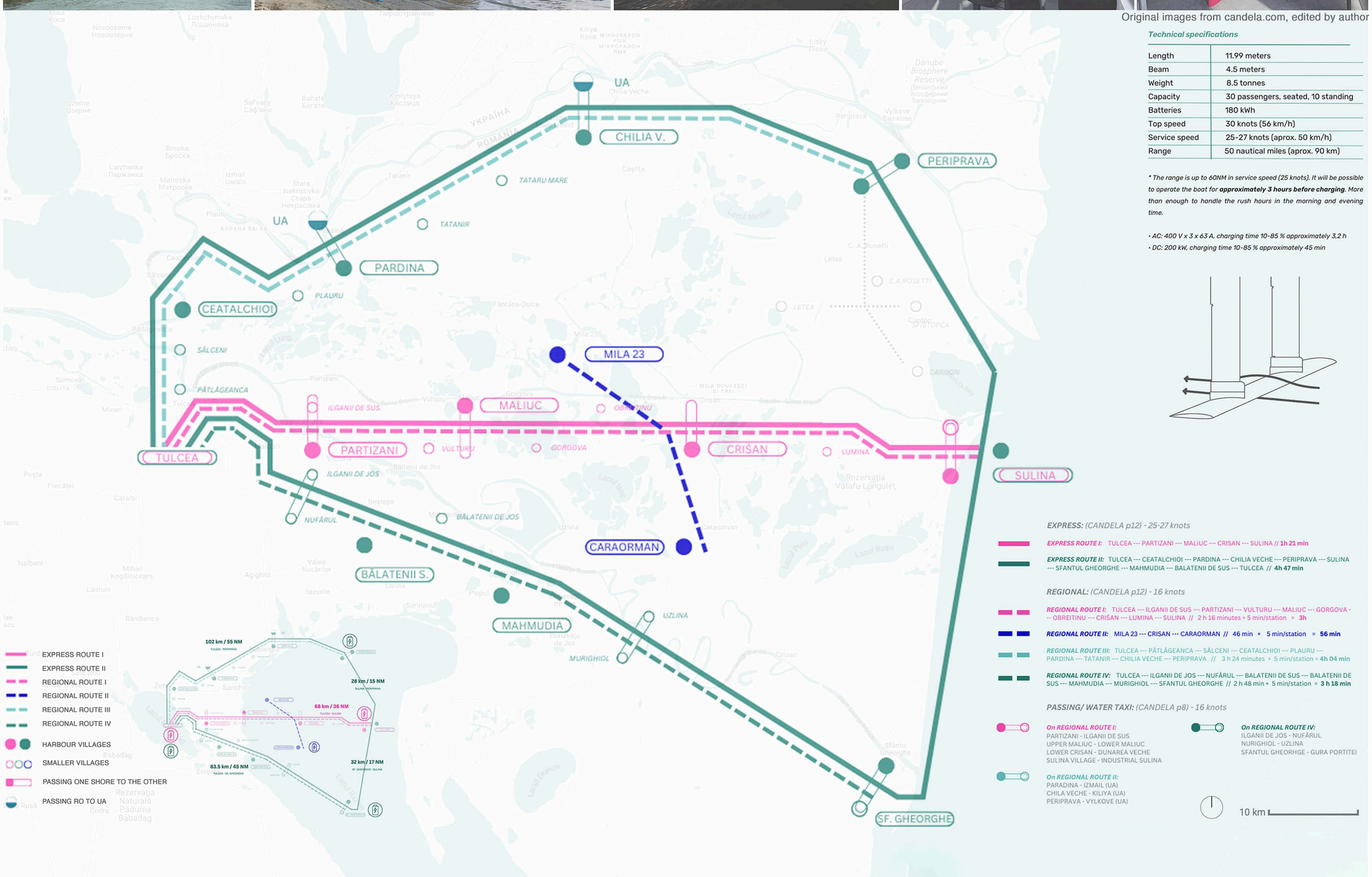
Original images from candela.com, edited by author

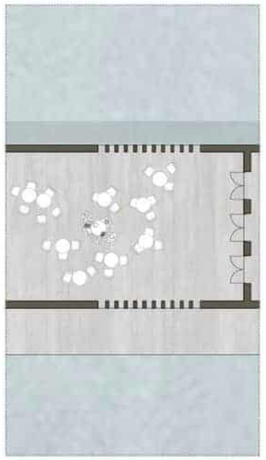
Technical specifications

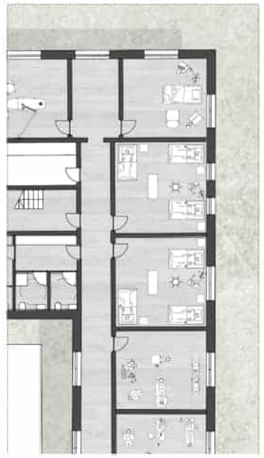
Length	11.99 meters
Beam	4.5 meters
Weight	8.5 tonnes
Capacity	30 passengers, seated, 10 standing
Batteries	180 kWh
Top speed	30 knots (56 km/h)
Service speed	25-27 knots (aprox. 50 km/h)
Range	50 nautical miles (aprox. 90 km)

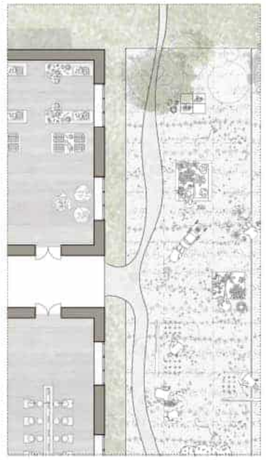
** The range is up to 60NM in service speed (25 knots). It will be possible to operate the boat for **approximately 3 hours before charging**. More than enough to handle the rush hours in the morning and evening time.*

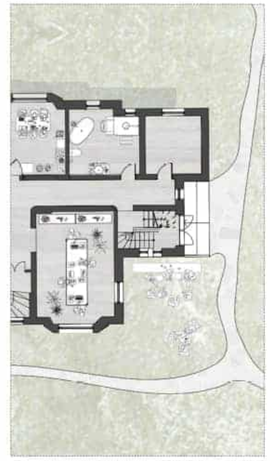
• AC: 400 V x 3 x 63 A, charging time 10-85 % approximately 3.2 h
• DC: 200 kW, charging time 10-85 % approximately 45 min











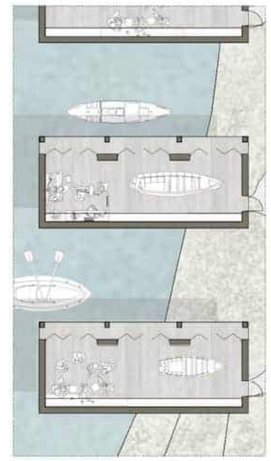
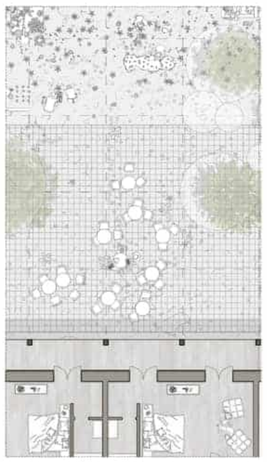
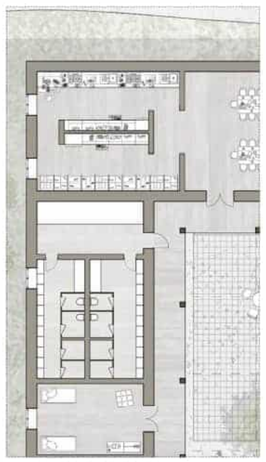
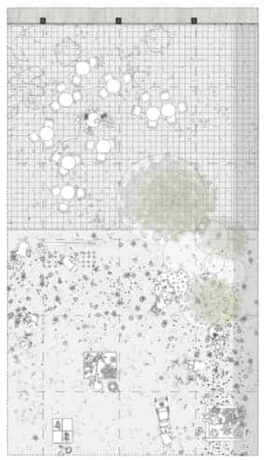
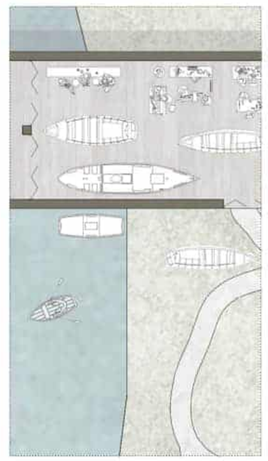


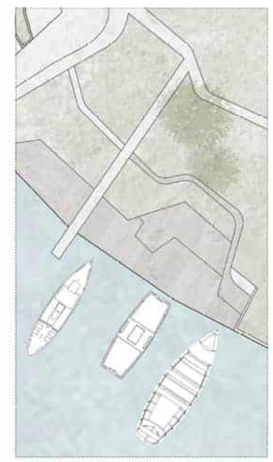
Diagram illustrating the monthly routine











Zoom in's on the plan to show the life cycles and daily activities

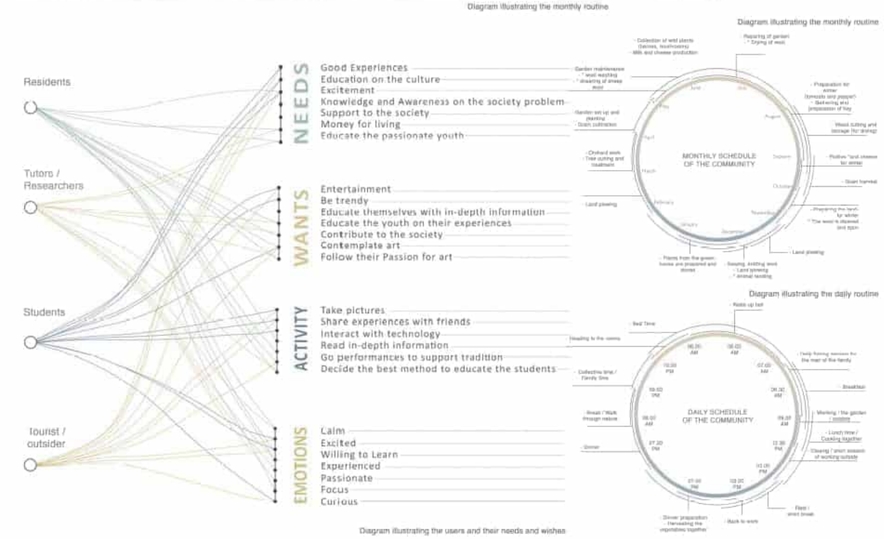


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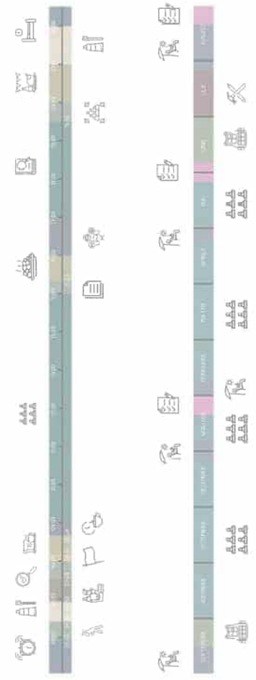
Diagram illustrating the daily routine

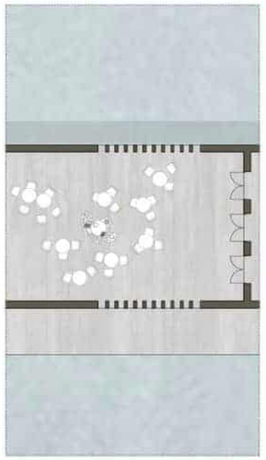
Diagram illustrating the users and their needs and wishes

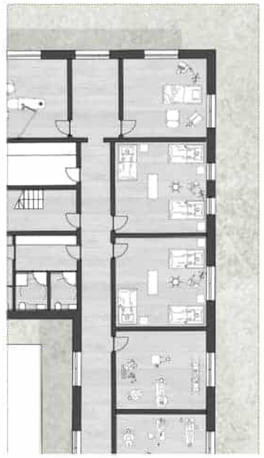
Perspective towards the pier and cafe

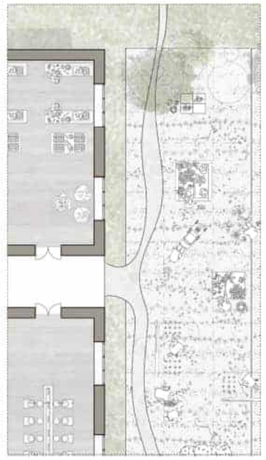
Perspective towards the pier and cafe coming from land

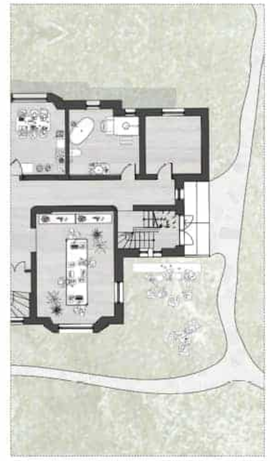
Perspective to the twin historical residences

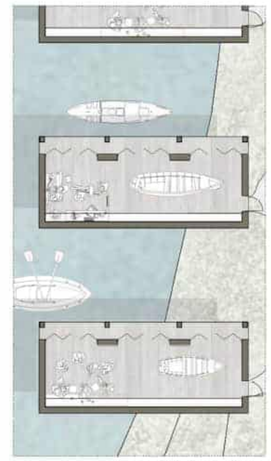












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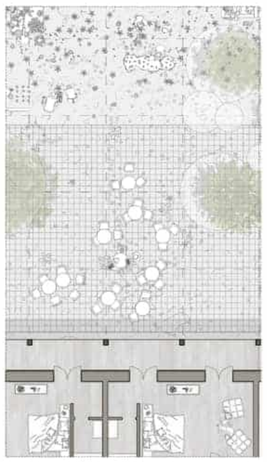

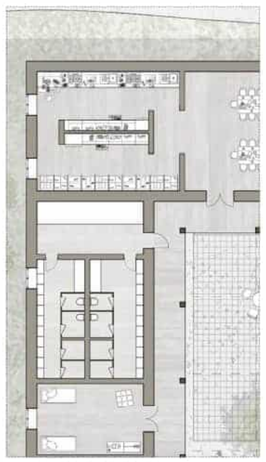

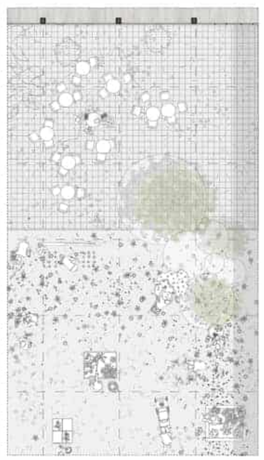

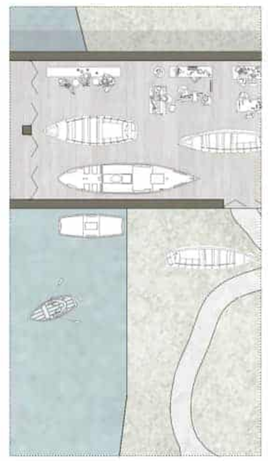

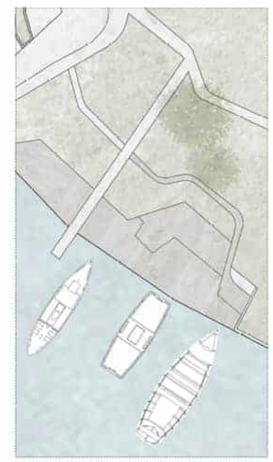

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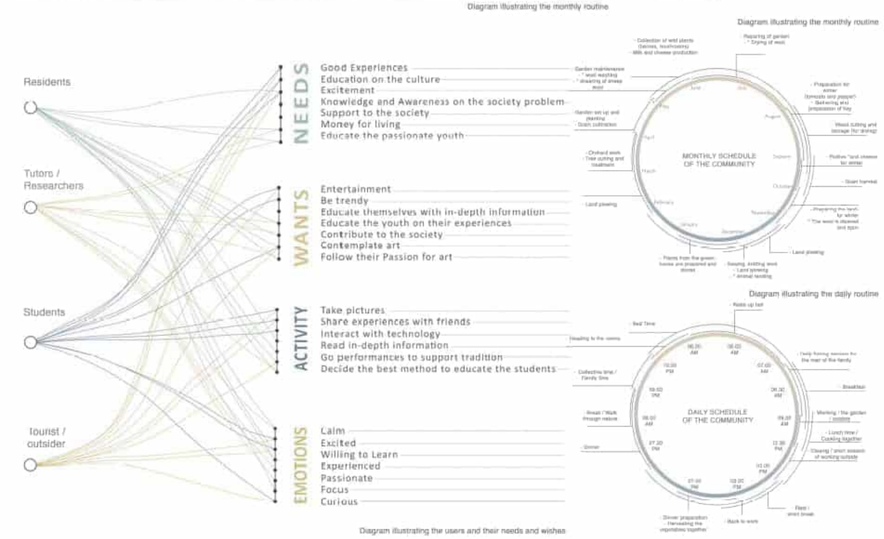

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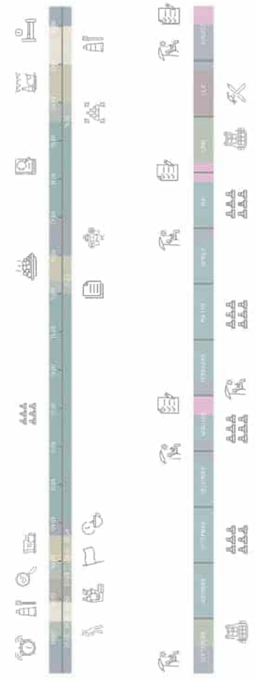
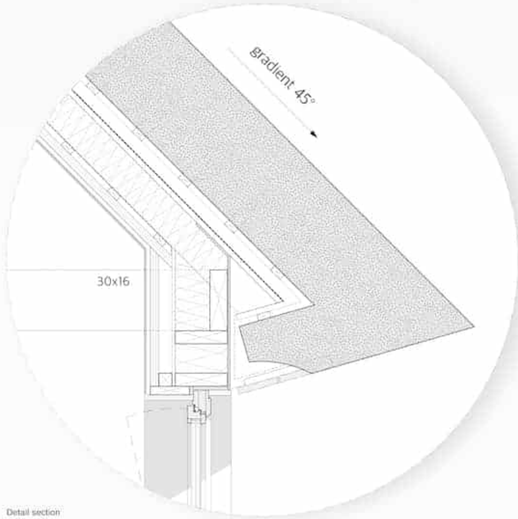


Detail sections
1: 25

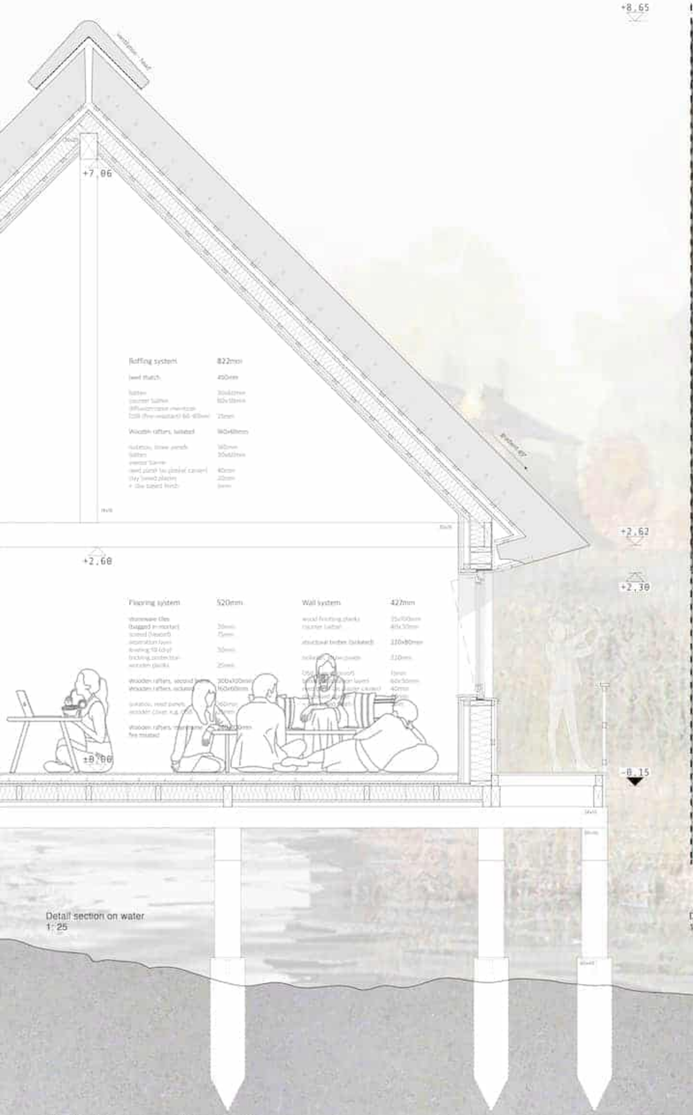
Roofing system	822mm
reed thatch	400mm
batten counter batten diffusion open membran OSB (fire resistant) 60-80mm	30x40mm 60x30mm 25mm
Wooden rafters, isolated	160x60mm
isolation, straw panels batten vapour barrier reed panel (as plaster carrier) clay based plaster + clay based finish	160mm 30x60mm 40mm 20mm 3mm

Wall system	427mm
wood finishing planks counter batten	25x100mm 40x30mm
structural timber (isolated)	220x80mm
isolation, straw panels	220mm
OSB (vapour proof) batten (installation layer) reed panel (as plaster carrier) clay based plaster + clay based finish	15mm 60x30mm 40mm 20mm 3mm

Flooring system	520mm
stoneware tiles (bagged in mortar) screed (heated) separation layer leveling fill (clay) trickling protection wooden planks	20mm 75mm 30mm 25mm
Wooden rafters, secondary frame Wooden rafters, isolated	300x100mm 160x80mm
isolation, reed panels wooden cover, e.g. OSB	300mm 25mm
Wooden rafters, mainframe fire treated	240x100mm

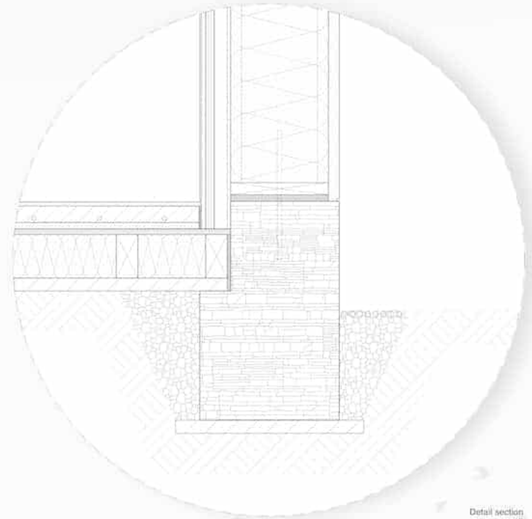


Detail section
1: 10

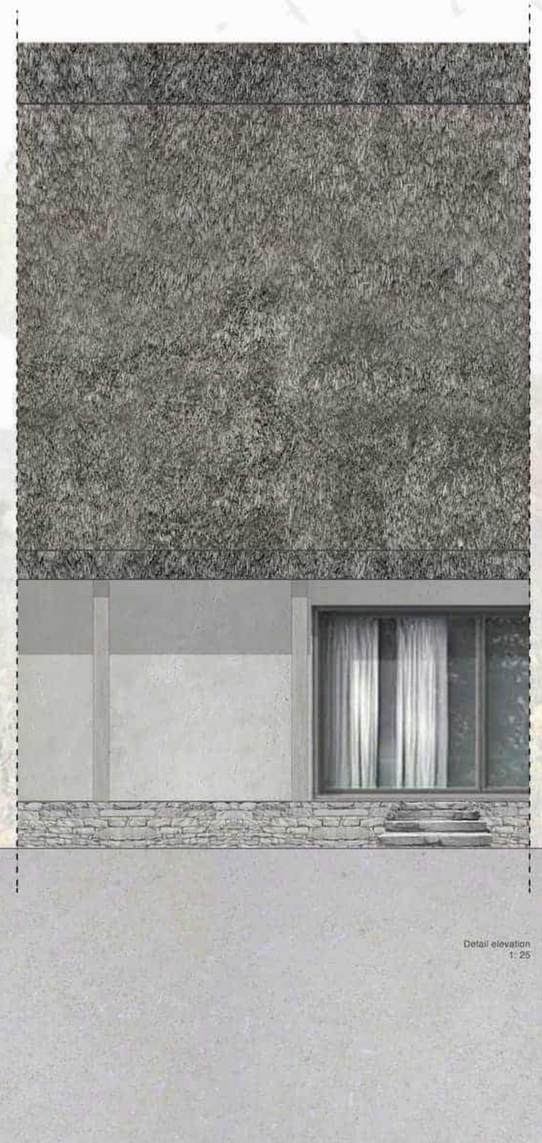


Detail section on water
1: 25

Detail elevation
1: 25



Detail section
1: 10

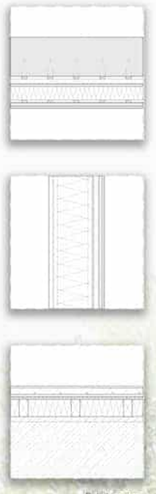


Detail elevation
1: 25

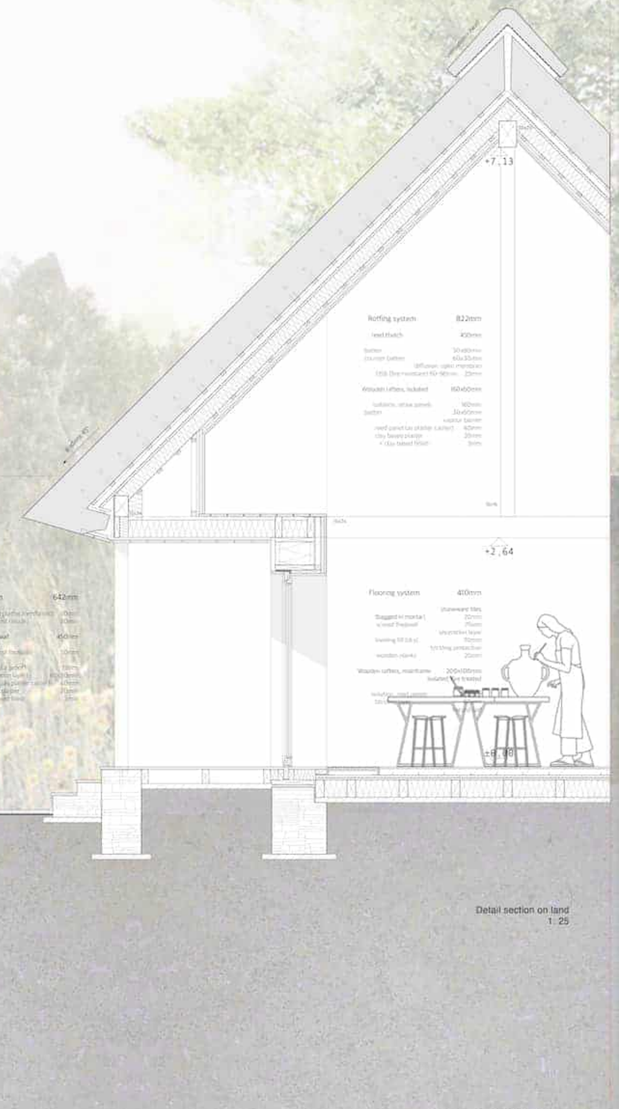
Roofing system	822mm
reed thatch	400mm
batten counter batten diffusion open membran OSB (fire resistant) 60-80mm	30x40mm 60x30mm 25mm
Wooden rafters, isolated	160x60mm
isolation, straw panels batten vapour barrier reed panel (as plaster carrier) clay based plaster + clay based finish	160mm 30x60mm 40mm 20mm 3mm

Wall system	642mm
lime based plaster (reinforced) wooden post (inside)	30mm 30mm
Straw/clay wall	450mm
wooden post (outside)	30mm
OSB (vapour proof) batten (installation layer) reed panel (as plaster carrier) clay based plaster + clay based finish	15mm 60x30mm 40mm 20mm 3mm

Flooring system	410mm
stoneware tiles (bagged in mortar) screed (heated) separation layer leveling fill (clay) trickling protection wooden planks	20mm 75mm 30mm 25mm
Wooden rafters, mainframe isolated, fire treated	200x100mm
isolation, reed panels leveling layer natural soil	200mm 80mm



Detail sections
1: 25



Detail section on land
1: 25

Dietrich Schwarz I David Kloeg

Master Thesis I SS23

Alina-Gabriela Dinu

Legend. Room program. Square meters.

1 PILOT ROOM PROGRAM

ROOM AREA	DESCRIPTION	PROPOSED m²
Docking Area	Space for boats to dock and moor	630 sqm
Slip Rentals Office	Administrative area for managing slip rentals and boat registrations	30 sqm
Charging Station	Area for recharging the F/V Cumulus boats and safety equipment	60 sqm
Maintenance Area	Space for basic boat maintenance tasks and minor repairs	40 sqm
Boaters' Sitting area (on deck, outside)	Comfortable area for boaters to relax, socialize, and enjoy the view	50 sqm
Passengers waiting area (on deck, outside)	Comfortable area for customers to relax, socialize, and enjoy the view while waiting	150 sqm
Restrooms/ Showers	Restrooms with sinks, toilets, and possibly showers	100 sqm
Storage Facility	Storage area for boating equipment, maintenance tools, and supplies	45 sqm
Marina / Info point	Administrative area for managing marina operations and customer service	50 sqm
	TOTAL	1000 sqm marina
		800 sqm

2 CAFE ROOM PROGRAM (on the pier)

ROOM AREA	DESCRIPTION	PROPOSED m²
Seating Area	Seating area for customers to enjoy their meals and beverages	170 sqm
Outdoor Seating Area (deck sitting Area)	Optional outdoor space for customers to dine al fresco	110 sqm
	Optional outdoor space for customers to be closer to nature (standing)	200 sqm
Counter/Cashier Station Station	Central space for ordering and cash transactions	5 sqm
Food Preparation Area	Dedicated area for coffee preparation and beverage service	15 sqm
	Space for preparing food items, such as sandwiches or baked goods	15 sqm
Display Bakery Area	Showcase for displaying baked goods and pastries	5 sqm
Storage Room	Space for storing dry goods, ingredients, and kitchen supplies	15 sqm
Restrooms (on the pier outside)	Facilities with toilets, sinks, and handwashing areas for customers and staff	50 sqm
Reception /outside Waiting Area	Space for greeting and seating customers waiting for a table	200 sqm
	TOTAL	~ 700 sqm

3 RESTAURANT ROOM PROGRAM

ROOM AREA	DESCRIPTION	PROPOSED m²
Dining Area	Seating area for customers to enjoy their meals	350 sqm
Reception/Waiting Area	Area for greeting and seating customers waiting for a table	47 sqm
Outdoor Seating Area	Optional outdoor space for customers to dine al fresco	Approx. 200 sqm
Lounge/ Bar	Counter space for serving drinks and interacting with customers	200 sqm
Kitchen	Food preparation area with cooking equipment and utensils	200 sqm
Restrooms	Facilities with toilets, sinks, and handwashing areas for customers	75 sqm
Storage Room	Space for storing dry goods, supplies, and non-perishable items	20 sqm
Walk-in Refrigerator	Refrigerated storage for perishable food items	15 sqm
Dishwashing Area	Space for washing, rinsing, and sanitizing dishes and kitchenware	9 sqm
Employee Break Room	Area for staff to take breaks and have meals	25 sqm
Employee Lockers	Area for staff to change into their working clothes and to put stuff	17 sqm
Employee restrooms, washroom	Area for staff to change into their working clothes and to put stuff/ shower/ toilets	22 sqm
Circulation	Area for customers and for staff to move from one space to the other	95 sqm
	TOTAL	~ 700 sqm

4 PERGOLA ROOM PROGRAM

ROOM AREA	DESCRIPTION	PROPOSED m²
Covered open space / Main Space	Shaded area for resting and socializing	175 sqm
	Optional area for additional seating, vendor activities,	70 sqm
Garden/Potted Plants	Greenery and potted plants to enhance the ambiance. (In the open space)	20-25 sqm
Pathways	Walkways for ease of movement within the pergola. (Under the open space)	10-15 sqm
	TOTAL	285 sqm

5 AUDITORIUM ROOM PROGRAM

ROOM AREA	DESCRIPTION	PROPOSED m²
Auditorium/Conference Hall	Main space for presentations, lectures and gatherings	350 sqm
Stage	Elevated platform for speakers and performers (optional)	35 sqm
Seating Area	Comfortable seating for attendees	350 sqm
Presentation Screen /audio-Visual Equipment	Large screen or projector with for displaying visual content	Screen: 6x4 sqm
	Equipment for sound amplification and visual presentations	Varies per setup
Reception/Entrance/ Foyer/ passageway	Area for greeting attendees and ticketing if applicable	45 sqm
Restrooms	Area for lounge over junior Ground and relaxing if applicable	25 sqm
Backstage Area	Space behind the stage for performers, preparation, or staff	30 sqm
Control Room	Room for audio, lighting, and audio-visual control during events	12 sqm
Restroom	Facilities with toilets, sinks, and handwashing areas for attendees	35 sqm
Storage Room	Space for storing audio-visual equipment, supplies, and materials	5 sqm
	TOTAL	850 sqm

6 OUTDOOR AMPHITHEATRE

ROOM AREA	DESCRIPTION	PROPOSED m²
Open Air Plaza/ Space	Outdoor space for theatrical performances and gatherings	220 sqm
Stage	Elevated platform for actors and performers, including backstage areas for actors, musicians, and technicians	20 sqm
Seating Area	Seating for audience members to enjoy the performances	150 sqm
Lighting Equipment	Lighting fixtures and equipment to enhance the mood and performances	5-7 sqm
Sound System	Audio equipment for amplifying sound during performances	Varies per setup
Backstage Area (optional)	Space behind the stage for performers, crew, and storage	20 sqm
Restrooms (inside)	Facilities with toilets, sinks, and handwashing areas for attendees	20 sqm
	TOTAL	275 sqm

7 STUDENT DORMITORY ROOM PROGRAM

ROOM AREA	DESCRIPTION	PROPOSED m²
Room 1-10	Dwelling/student rooms (10 in total) each a size of 25 square meters	25 sqm
Room 11-18	Larger student rooms (18 in total) with a size of 30 square meters	30 sqm
Common Kitchen	Shared kitchen area for students to prepare meals and snacks	72 sqm
Dining Area	Area for students to eat together or socialize	144 sqm
Lounge/Common Room	Shared space for relaxation, socializing, and recreational activities	180 sqm
Laundry Facilities	Room with washing machines and dryers for students' laundry needs	25 sqm
Restrooms	Facilities with toilets, showers, sinks, and handwashing areas	75 sqm
Storage Room	Space for students to store personal belongings and luggage	60 sqm
Reception/Office	Area for administrative staff to handle administrative tasks and inquiries	40 sqm
Bike parking	Area for students to park their bicycles, ensuring convenient and secure storage	30 sqm
Common garden	The whole area interconnecting all the spaces, fostering community through gardening	1000 sqm
	TOTAL	1680 sqm warm

8 EDUCATIONS' / RESEARCHERS' ACCOMMODATION ROOM PROGRAM x2

ROOM AREA	DESCRIPTION	PROPOSED m²
1 Bedroom	Individual bedrooms for professors to stay during their temporary positions	20-25 sqm
Shared Living Space	A common area for professors to socialize and relax, equipped with seating and amenities	50 sqm
Kitchen/Dining Area	Shared kitchen space for cooking and dining together	25 sqm
Bathroom Facilities	Facilities with toilets, showers, sinks, and handwashing areas for professors	15 sqm
Storage Rooms	Space for storing personal belongings, luggage, and equipment	15 sqm
Laundry Facilities	Room with washing machines and dryers for professors' laundry needs	15 sqm
Common Garden/Meeting Area	Outdoor space for relaxation and recreation	15-17 sqm
	TOTAL	~ 190 sqm

9 HOSPITAL FOR ALTERNATIVE MEDICINE

ROOM AREA	DESCRIPTION	PROPOSED m²
Reception/Waiting Area	Area for greeting and registering patients, as well as providing a comfortable waiting space	40 sqm
Consultation Rooms	Private rooms for healthcare professionals to meet with patients and discuss treatment options	10-15 sqm
Treatment Rooms	Dedicated rooms for alternative medicine treatments, such as acupuncture, herbal medicine, or Reiki	18-20 sqm
Examination Rooms	Rooms equipped for medical examinations, including physical assessments and diagnostic procedures	24 sqm
Therapy Rooms	Spaces for conducting therapy sessions, such as physical therapy, massage therapy, or rehabilitation exercises	47 sqm
Procedure Room 1 & 2	Rooms for minor medical procedures, such as wound care, injections, or small surgical interventions	32 sqm
Imaging Department	Area for imaging studies, such as X-rays or ultrasounds	32 sqm
Blood collection Laboratory	Space for collecting and preparing samples to take to the laboratory	45 sqm
	Space for conducting medical tests and analyzing samples	84 sqm
Pharmacy	Area for dispensing medications and providing pharmaceutical services	20 sqm
Pharmacy storage	Area for dispensing medications for the whole area. Bigger storage needed when there is no pharmacy in the area	40 sqm
Staff Lounge	Break room or lounge area for healthcare professionals to rest and recharge	40 sqm
Administrative Office	Office space for administrative tasks, medical records, and billing	20 sqm
Restrooms	Facilities with toilets, sinks, and handwashing areas for patients and staff	37 sqm
Storage Rooms	Space for storing medical supplies, equipment, and other records	50 sqm
	TOTAL	700 sqm

10 CAMPUS ROOM PROGRAM

11 PARK OF PATHS AND GARDENS

Dietrich Schwarz I David Kloeg

Master Thesis I SS23

Alina-Gabriela Dinu

Legend. Room program. Square meters.

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Maintenance Area	Space for basic boat maintenance tasks and minor repairs	40 sqm
Boaters' Sitting area (on deck, outside)	Comfortable area for boaters to relax, socialize, and enjoy the view	50 sqm
Passengers waiting area (on deck, outside)	Comfortable area for customers to relax, socialize, and enjoy the view while waiting	150 sqm
Restrooms/ Showers	Restrooms with sinks, toilets, and possibly showers	100 sqm
Storage Facility	Storage area for boating equipment, maintenance tools, and supplies	45 sqm
Marina / Info point	Administrative area for managing marina operations and customer service	50 sqm
	TOTAL	1000 sqm marina
		800 sqm

2 CAFE ROOM PROGRAM (on the pier)

ROOM AREA	DESCRIPTION	PROPOSED m²
Seating Area	Seating area for customers to enjoy their meals and beverages	170 sqm
Outdoor Seating Area (deck sitting Area)	Optional outdoor space for customers to dine al fresco	110 sqm
	Optional outdoor space for customers to be closer to nature (standing)	200 sqm
Counter/Cashier Station Station	Central space for ordering and cash transactions	5 sqm
Food Preparation Area	Dedicated area for coffee preparation and beverage service	15 sqm
	Space for preparing food items, such as sandwiches or baked goods	15 sqm
Display Bakery Area	Showcase for displaying baked goods and pastries	5 sqm
Storage Room	Space for storing dry goods, ingredients, and kitchen supplies	15 sqm
Restrooms (on the pier outside)	Facilities with toilets, sinks, and handwashing areas for customers and staff	50 sqm
Reception /outside Waiting Area	Space for greeting and seating customers waiting for a table	200 sqm
	TOTAL	~ 700 sqm

3 RESTAURANT ROOM PROGRAM

ROOM AREA	DESCRIPTION	PROPOSED m²
Dining Area	Seating area for customers to enjoy their meals	350 sqm
Reception/Waiting Area	Area for greeting and seating customers waiting for a table	47 sqm
Outdoor Seating Area	Optional outdoor space for customers to dine al fresco	Approx. 200 sqm
Lounge/ Bar	Counter space for serving drinks and interacting with customers	200 sqm
Kitchen	Food preparation area with cooking equipment and utensils	200 sqm
Restrooms	Facilities with toilets, sinks, and handwashing areas for customers	75 sqm
Storage Room	Space for storing dry goods, supplies, and non-perishable items	20 sqm
Walk-in Refrigerator	Refrigerated storage for perishable food items	15 sqm
Dishwashing Area	Space for washing, rinsing, and sanitizing dishes and kitchenware	9 sqm
Employee Break Room	Area for staff to take breaks and have meals	25 sqm
Employee Lockers	Area for staff to change into their working clothes and to put stuff	17 sqm
Employee restrooms, washroom	Area for staff to change into their working clothes and to put stuff/ shower/ toilets	22 sqm
Circulation	Area for customers and for staff to move from one space to the other	95 sqm
	TOTAL	~ 700 sqm

4 PERGOLA ROOM PROGRAM

ROOM AREA	DESCRIPTION	PROPOSED m²
Covered open space / Main Space	Shaded area for resting and socializing	175 sqm
	Optional area for additional seating, vendor activities,	70 sqm
Garden/Potted Plants	Greenery and potted plants to enhance the ambiance. (In the open space)	20-25 sqm
Pathways	Walkways for ease of movement within the pergola. (Under the open space)	10-15 sqm
	TOTAL	285 sqm

5 AUDITORIUM ROOM PROGRAM

ROOM AREA	DESCRIPTION	PROPOSED m²
Auditorium/Conference Hall	Main space for presentations, lectures and gatherings	350 sqm
Stage	Elevated platform for speakers and performers (optional)	35 sqm
Seating Area	Comfortable seating for attendees	350 sqm
Presentation Screen /audio-Visual Equipment	Large screen or projector with for displaying visual content	Screen: 6x4 sqm
	Equipment for sound amplification and visual presentations	Varies per setup
Reception/Entrance/ Foyer/ passageway	Area for greeting attendees and ticketing if applicable	45 sqm
Restrooms	Area for lounge over junior Ground and relaxing if applicable	25 sqm
Backstage Area	Space behind the stage for performers, preparation, or staff	30 sqm
Control Room	Room for audio, lighting, and audio-visual control during events	12 sqm
Restroom	Facilities with toilets, sinks, and handwashing areas for attendees	35 sqm
Storage Room	Space for storing audio-visual equipment, supplies, and materials	5 sqm
	TOTAL	850 sqm

6 OUTDOOR AMPHITHEATRE

ROOM AREA	DESCRIPTION	PROPOSED m²
Open Air Plaza/ Space	Outdoor space for theatrical performances and gatherings	220 sqm
Stage	Elevated platform for actors and performers, including backstage areas for actors, musicians, and technicians	20 sqm
Seating Area	Seating for audience members to enjoy the performances	150 sqm
Lighting Equipment	Lighting fixtures and equipment to enhance the mood and performances	5-7 sqm
Sound System	Audio equipment for amplifying sound during performances	Varies per setup
Backstage Area (optional)	Space behind the stage for performers, crew, and storage	20 sqm
Restrooms (inside)	Facilities with toilets, sinks, and handwashing areas for attendees	20 sqm
	TOTAL	275 sqm

7 STUDENT DORMITORY ROOM PROGRAM

ROOM AREA	DESCRIPTION	PROPOSED m²
Room 1-10	Dwelling/student rooms (10 in total) each a size of 25 square meters	25 sqm
Room 11-18	Larger student rooms (18 in total) with a size of 30 square meters	30 sqm
Common Kitchen	Shared kitchen area for students to prepare meals and snacks	72 sqm
Dining Area	Area for students to eat together or socialize	144 sqm
Lounge/Common Room	Shared space for relaxation, socializing, and recreational activities	180 sqm
Laundry Facilities	Room with washing machines and dryers for students' laundry needs	25 sqm
Restrooms	Facilities with toilets, showers, sinks, and handwashing areas	75 sqm
Storage Room	Space for students to store personal belongings and luggage	60 sqm
Reception/Office	Area for administrative staff to handle administrative tasks and inquiries	40 sqm
Bike parking	Area for students to park their bicycles, ensuring convenient and secure storage	30 sqm
Common garden	The whole area interconnecting all the spaces, fostering community through gardening	1000 sqm
	TOTAL	1680 sqm warm

8 EDUCATIONS' / RESEARCHERS' ACCOMMODATION ROOM PROGRAM x2

ROOM AREA	DESCRIPTION	PROPOSED m²
1 Bedroom	Individual bedrooms for professors to stay during their temporary positions	20-25 sqm
Shared Living Space	A common area for professors to socialize and relax, equipped with seating and amenities	50 sqm
Kitchen/Dining Area	Shared kitchen space for cooking and dining together	25 sqm
Bathroom Facilities	Facilities with toilets, showers, sinks, and handwashing areas for professors	15 sqm
Storage Rooms	Space for storing personal belongings, luggage, and equipment	15 sqm
Laundry Facilities	Room with washing machines and dryers for professors' laundry needs	15 sqm
Common Garden/Meeting Area	Outdoor space for relaxation and recreation	15-17 sqm
	TOTAL	~ 190 sqm

9 HOSPITAL FOR ALTERNATIVE MEDICINE

ROOM AREA	DESCRIPTION	PROPOSED m²
Reception/Waiting Area	Area for greeting and registering patients, as well as providing a comfortable waiting space	40 sqm
Consultation Rooms	Private rooms for healthcare professionals to meet with patients and discuss treatment options	10-15 sqm
Treatment Rooms	Dedicated rooms for alternative medicine treatments, such as acupuncture, herbal medicine, or Reiki	18-20 sqm
Examination Rooms	Rooms equipped for medical examinations, including physical assessments and diagnostic procedures	24 sqm
Therapy Rooms	Spaces for conducting therapy sessions, such as physical therapy, massage therapy, or rehabilitation exercises	47 sqm
Procedure Room 1 & 2	Rooms for minor medical procedures, such as wound care, injections, or small surgical interventions	32 sqm
Imaging Department	Area for imaging studies, such as X-rays or ultrasounds	32 sqm
Blood collection Laboratory	Space for collecting and preparing samples to take to the laboratory	45 sqm
	Space for conducting medical tests and analyzing samples	84 sqm
Pharmacy	Area for dispensing medications and providing pharmaceutical services	20 sqm
Pharmacy storage	Area for dispensing medications for the whole area. Bigger storage needed when there is no pharmacy in the area	40 sqm
Staff Lounge	Break room or lounge area for healthcare professionals to rest and recharge	40 sqm
Administrative Office	Office space for administrative tasks, medical records, and billing	20 sqm
Restrooms	Facilities with toilets, sinks, and handwashing areas for patients and staff	37 sqm
Storage Rooms	Space for storing medical supplies, equipment, and other records	50 sqm
	TOTAL	700 sqm

10 CAMPUS ROOM PROGRAM

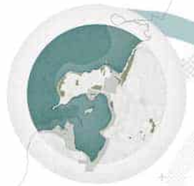
11 PARK OF PATHS AND GARDENS

Dietrich Schwarz I David Kloeg

Master Thesis I SS23

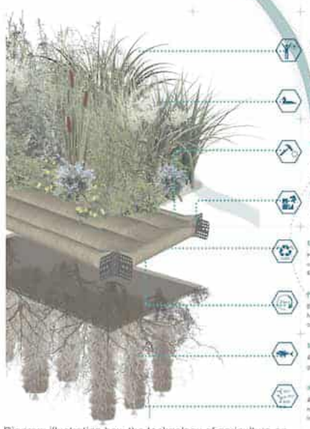
Alina-Gabriela Dinu

Masterplan proposal



DANUBE DELTA SETTLEMENTS.

Conservation potential and revitalization scenarios.



INCREASED WATERFRONT VALUE
The floating islands transform bord-edged waterbodies into living water parks, increasing public amenity and recreation on appeal, raising the value and quality of surrounding properties

A SAFE HAVEN FOR BIRDS
Specially tailored platforms provide a sheltered refuge for birds safe from disturbance. A mix of habitat types can be created for specific species.

RIVER READY STRENGTH
Biomatrix forms the strongest floating ecosystems available with a pull strength of over 2,500 kg. This allows our clients to install projects in challenging and dynamic water conditions.

DESIGN FLEXIBILITY
Five interlocking components can be configured to form hundreds of Floating Island and Floating Riverbank shapes and are connected with tough stainless steel quick connect flanges.

SUSTAINABILITY
Materials are carefully selected for recycled content and recyclability and only non-toxic materials are used. Once grown, the system is typically 60% living biomass and 35% marine engineered materials.

PRODUCT / INVESTMENT LONGEVITY
Biomatrix floating ecosystems are the longest lasting available using heavy duty marine engineering materials, including 316 Stainless Steel and HDPE with a typical lifetime of over 20 years.

STRONGER FISH STOCKS
A subsurface forest of roots provides shelter for fish and ideal feeding grounds, improving fish stocks

IMPROVED WATER QUALITY
A micro-wilderness of submerged roots creates an ideal habitat for millions of microorganisms, which use algae, carbon and excess nutrients in the water as a food source, purifying the water.

Diagram illustrating how the technology of agriculture on water operates, prelucrate by author from biomatrixwater.com

IDENTIFYING PRIORITIES

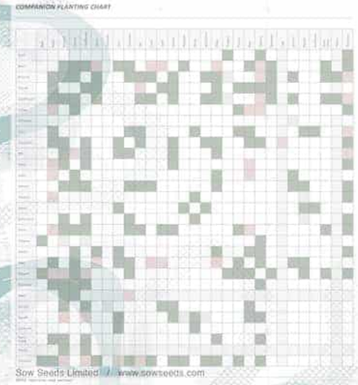
Raising the standard of living	Education & Health	Tourism	Agriculture	Mobility & Space
Raising the quality of the built environment and public spaces Creating jobs	Increased access to the education and care offer school children Increased access to vocational and technical education Specialized educational program for the Danube Delta area	Creation of accommodation units (agritourism, hotel, camping areas) Visiting infrastructure (infoKiosks, rest areas, attractions) Specialized workforce (training for hotel activities, tour guides)	Upgrading facilities for product collection / processing / marketing Diversification of agricultural and non-agricultural activities Stimulate organic farming activities Access to vocational education Land concession to young farmers	Improvement of inland waterways and ports

Priorities:

Increasing attractiveness for locals — *Increasing attractiveness for tourists*

1. • Jobs (by supporting SME's, small factories, production workshops)
   • Diversification of the educational offer
2. Improving the state of the built environment
3. Improving tourist infrastructure to ensure rest and diversification of activities, which will in turn increase the tourists season.

COMPANION PLANTING CHART



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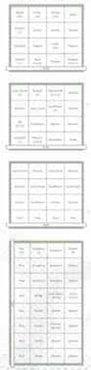
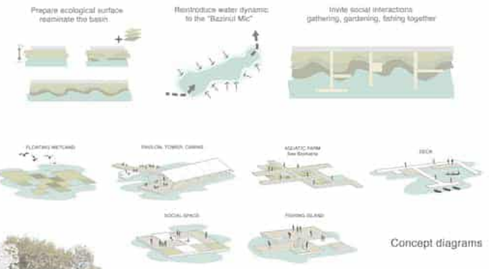
GUILDS CONFIGURATION



DIET AND SQUARE METERS

Swiss diet in kg or liter for liquids (the above tables) taken from "The holistic cultural landscape" by David Kloeg



Concept diagrams

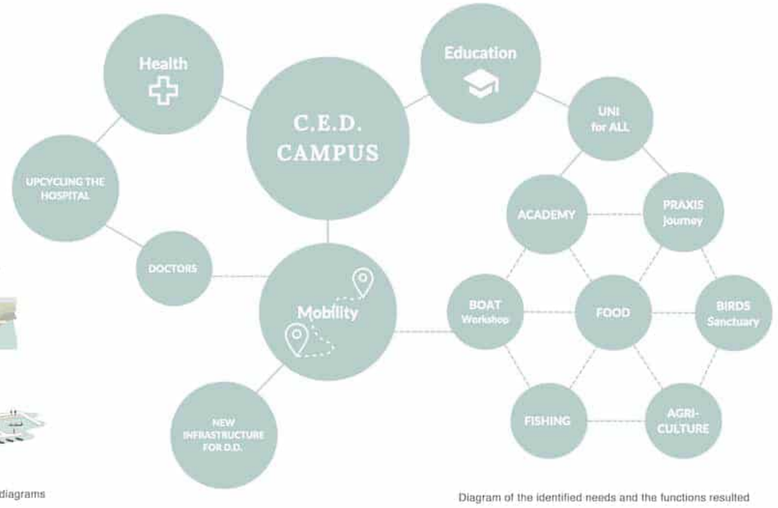
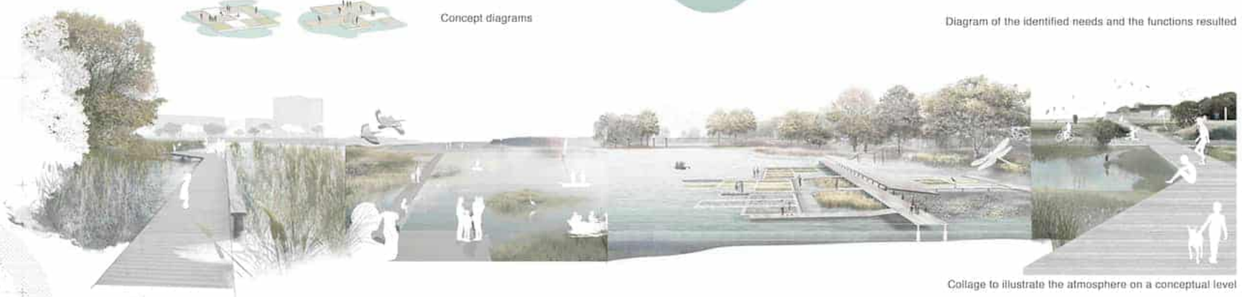


Diagram of the identified needs and the functions resulted



Collage to illustrate the atmosphere on a conceptual level

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